

MAP NO.: ASSESSMENT REPORT X  
105 D 6 PROSPECTUS  
CONFIDENTIAL X  
OPEN FILE

DOCUMENT NO: 092128  
MINING DISTRICT: WHITEHORSE  
TYPE OF WORK: GEOLOGICAL, GEOCHEMICAL

REPORT FILED UNDER: Aurum Geological Consultants Inc.

DATE PERFORMED: June 17 - September 1, 1987 DATE FILED: April 5, 1988

LOCATION: LAT.: 60°21'N AREA: Watson River  
LONG.: 135°10'W VALUE \$: 9,600.00

CLAIM NAME & NO.: FOUR F 1- 64 YA86930-6993  
FOUR F 67-109 YA86994-7035

WORK DONE BY: Tom Garagan

WORK DONE FOR: Havilah Gold Mines Ltd.

DATE TO GOOD STANDING:

REMARKS: #224 RED RIDGE / #78 INCO

In 1987, exploration included mapping, prospecting, soil, talus and rock sampling and some hand trenching. Three mineralized areas have so far been identified, the EAST and SADDLE zones and the INCO porphyry copper showing. The SADDLE zone, a 0.5-5 m wide zone of fracturing, alteration and quartz-sulphide veins, was exposed over a strike length of 30 m. A chip sample assayed 4.1 g/t Ag.



**GEOLOGICAL AND GEOCHEMICAL  
ASSESSMENT REPORT  
on the **092128**  
RED RIDGE PROPERTY**

Whitehorse Mining District  
June 17 to September 1, 1987

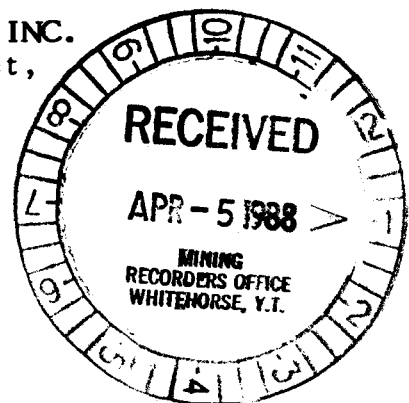
Claims: Four F 1-64 (YA86930-6993)  
Four F 67-109 (YA86994-7035)

Location: 1. NTS 105 D/6  
2. 40 Km South of Whitehorse, Y.T.  
3. Latitude 60 21'N  
Longitude 135 10'W

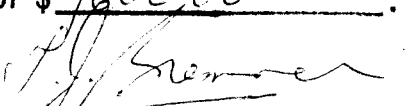
For:  
**HAVILAH GOLD MINES LTD.**  
208-260 West Esplanade Street  
North Vancouver, B.C.  
V7M 3G7

By:  
TOM GARAGAN; B.Sc, FGAC  
**AURUM GEOLOGICAL CONSULTANTS INC.**  
604-675 West Hastings Street,  
Vancouver, B.C.  
V6B 1N2

March 9, 1988



This report has been examined by  
the Geological Evaluation Unit  
under Section 53 (4) Yukon Quartz  
Mining Act and is allowed as  
representation work in the amount  
of \$ 7600.00.

*for*   
Regional Manager, Exploration and  
Geological Services for Commissioner  
of Yukon Territory.

## SUMMARY

The Red Ridge property consists of 107 contiguous mineral claims located in the Watson River Area, 40 kilometers south of Whitehorse, Yukon. It is accessible by road from Whitehorse.

The property is underlain by Mesozoic sediments and volcanics which are intruded by late Cretaceous granitoid rocks. Tertiary rhyolite and andesite dykes cut all units on the property in a north to north-east direction. The property is interpreted to be a suitable geological host for precious metal deposits.

Exploration during the 1987 season consisted of geological mapping, prospecting, soil and talus fine sampling, rock sampling and some preliminary hand trenching. At least 3 zones of mineralization have now been identified on the property. The East Zone (described by Keyser, 1986) consists of a poorly exposed quartz sulphide vein with precious metal values up to 180.9 opt silver in a select grab sample. Additional soil sampling in this area during the 1987 season has outlined two additional soil geochemical anomalies with geochemical values up to 16 ppm silver and 470 ppm lead. The Saddle Zone consists of a 0.5 to 5 meter wide fracture, alteration and quartz sulphide zone exposed in trenches for 30 meters along strike. Geochemical values are up to 1.12 opt gold and 11 opt silver in a select grab sample and 4100 ppb gold (approx. 0.13 opt) and 1.84 opt silver over 1 meter. Soil geochemical sampling in this area indicates the presence of at least one other zone and suggests the zone may extend beyond the known exposures. A poorly developed porphyry copper system (Inco Showing) has been located on the southeast side of the property. At least two other veins and several other geochemically anomalous soil samples have been located.

The results of the 1987 exploration warrant a followup program during the 1988 season. A two phase success contingent program consisting of trenching followed by diamond drilling is recommended. The cost of the Phase I trenching program is estimated at \$ 50,000. The extent and cost of the Phase II diamond drill program will depend on the results of the Phase I program.

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## INTRODUCTION

This report was prepared at the request of Mr. L. Bratvold, President of Havilah Gold Mines Ltd. It describes exploration carried out under the supervision of Aurum Geological Consultants Inc. during the 1987 field season. Exploration consisted of geological mapping, prospecting, geochemical sampling and hand trenching. Work was carried out between June 17 and September 1, 1987.

## LOCATION, ACCESS and PHYSIOGRAPHY

The Red Ridge property is located 40 kilometers south of Whitehorse in the Watson River area of the Yukon Territory. Centered at latitude 60 21'N and longitude 135 10'W, the claims cover part of the ridge, known as Red Ridge, separating Thompson and Morrison Creeks from the Watson River. The Mt. Skukum gold-silver mine is located 25 kilometers to the southwest (Figure 1).

Access to the property is by gravel road to Annie Lake from the Whitehorse-Carcross Highway, and then by four wheel drive road along Thompson Creek. Alternate access is by helicopter from Whitehorse or from a seasonal base at the Mt. Skukum Minesite.

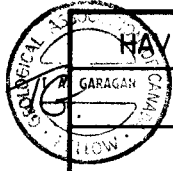
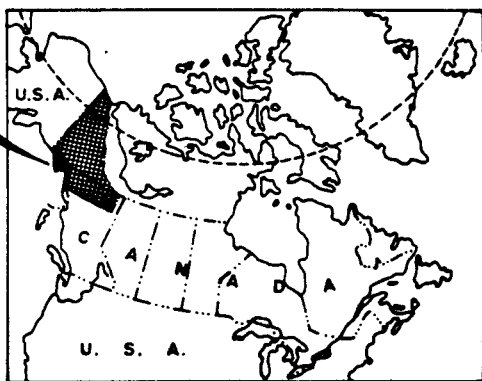
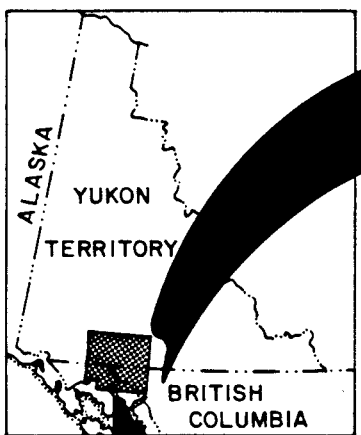
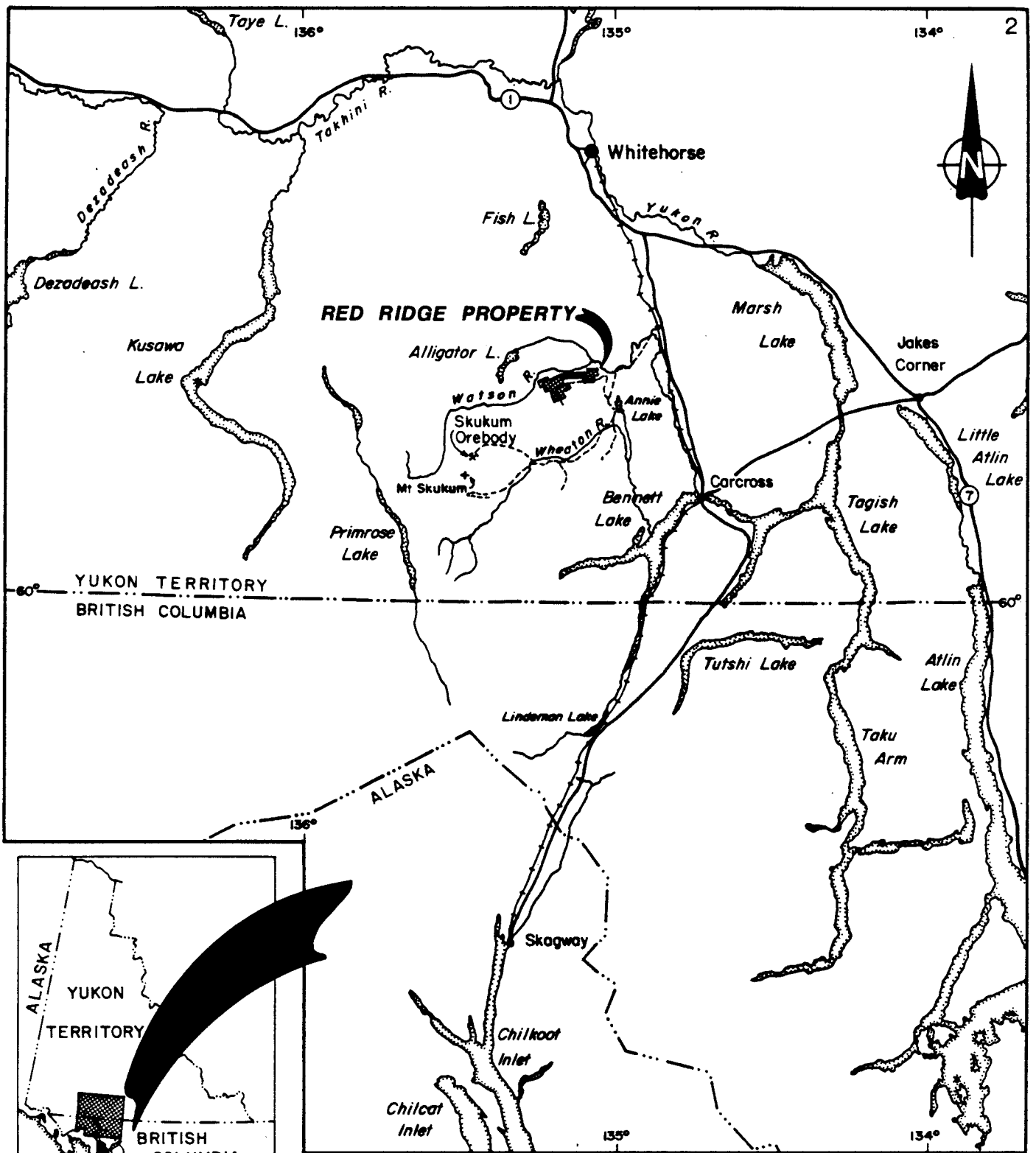
The claims cover the 5 kilometer long east-west trending Red Ridge. The ridge is bordered on the north by the Watson River and by Thompson Creek to the south. The top of the ridge is rounded and locally consists of small plateaus. Most of the property is above treeline with some spruce and dwarf birch occurring at lower elevations. Elevations on the property range between 1646 meters (5400' on Mule Hill) and 914 meters (3000' in Thompson Creek).

## CLAIM STATUS

The property consists of 107 contiguous unsurveyed mineral claims staked under the Yukon Quartz Mining Act (Figure 2). The property is located in 105D/6 of the Whitehorse Mining District and covers approximately 2200 hectares (5400 acres). Claim data are as follows:

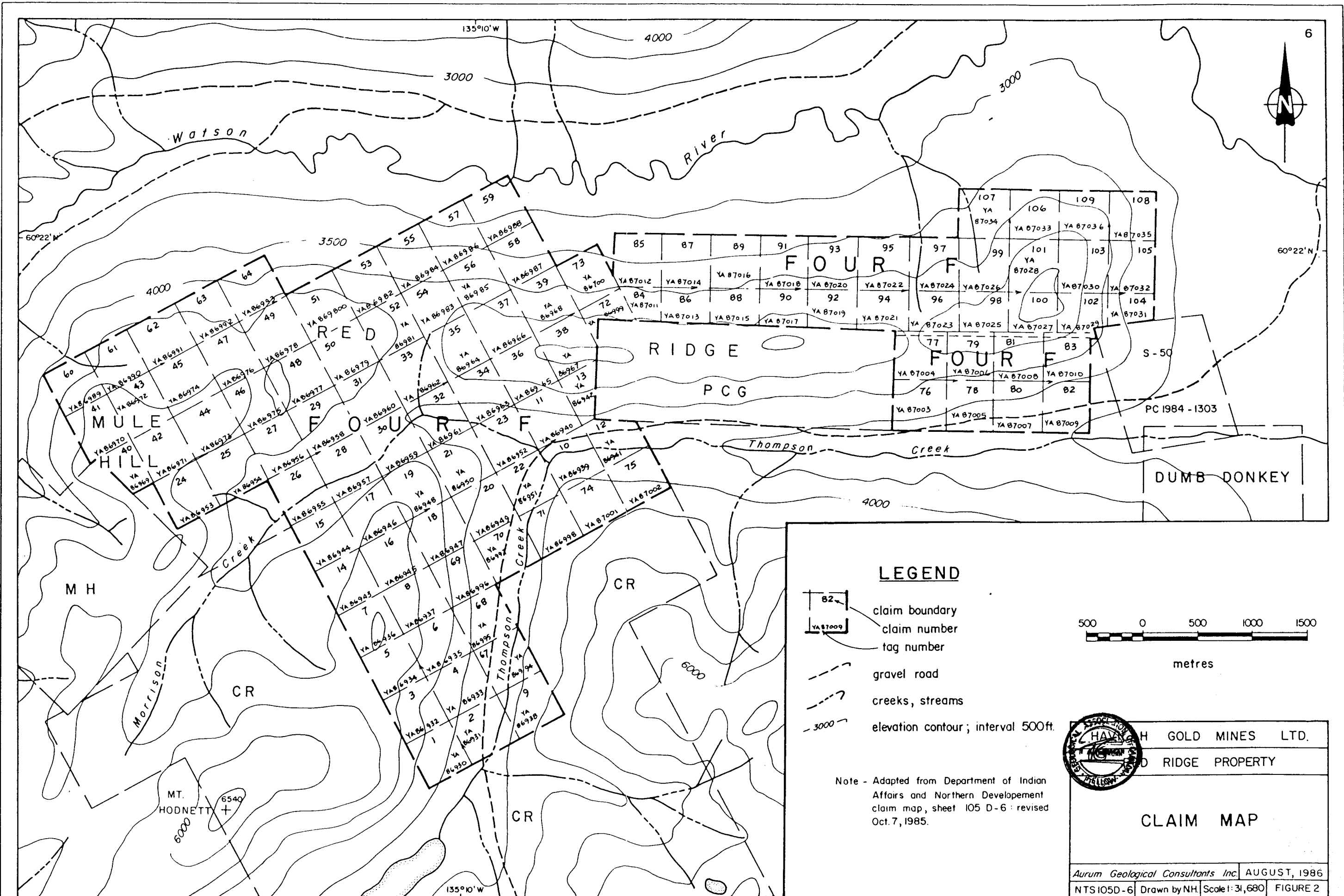
<u>Claim Name</u>	<u>Grant Numbers</u>	<u>Recording Date</u>	<u>Expiry Date</u>
Four F 1-64	YA86930-86993	June 10, 1985	Sept 10, 1988
Four F 67-109	YA86994-87035	June 10, 1985	Sept 10, 1988

The claims are collectively known as the Red Ridge property and are 100% owned by Havilah Gold Mines Ltd.









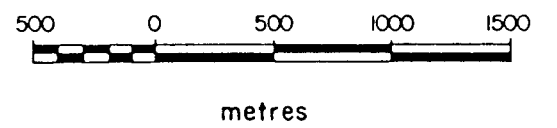
HAVILAH GOLD MINES LTD.  
 RED RIDGE PROPERTY  
  
**LOCATION**

Aurum Geological Consultants Inc. AUGUST, 1986  
 Drawn by N.H. Checked by R.H. Scale 1:1,000,000 FIGURE 1




**LEGEND**

-  claim boundary
-  claim number
-  tag number
-  gravel road
-  creeks, streams
-  elevation contour; interval 500ft.



Note - Adapted from Department of Indian Affairs and Northern Development claim map, sheet 105 D-6; revised Oct. 7, 1985.



**H GOLD MINES LTD.**  
D RIDGE PROPERTY

**CLAIM MAP**

Aurum Geological Consultants Inc.	AUGUST, 1986
NTS 105D-6	Drawn by NH Scale 1:31,680 FIGURE 2

## HISTORY

Considerable exploration and some mining was carried out in the Wheaton and Watson River areas in the late 1800's and early 1900's. Several gold and silver (and related metals) deposits and occurrences were discovered at this time. The Idaho Hill silver-lead veins, discovered in 1898 (Cairnes, 1906) and the Legal Tender silver-gold vein, discovered in 1906 (Cairnes, 1912), are located within 5 kilometers of the Red Ridge property.

Exploration in the area resumed in 1981 with the discovery of the Mt. Skukum gold-silver ore body by AGIP Canada Ltd. Production commenced in March, 1986 and the 1987 production is estimated at 101 thousand tonnes (102,600 short tons) containing over 1.6 million grams (51440 troy ounces) gold and 1.1 million grams (35,365 troy ounces) silver (1987 Yukon Mining and Exploration overview). A second significant gold-silver deposit was discovered in 1985 by Omni Resources Inc. at Skukum Creek, 7 kilometers southeast of Mt. Skukum. Published reserves (The Northern Miner, February 15, 1988) are 821,000 tons averaging 0.225 opt gold and 8.96 opt silver. A production decision is expected in the spring of 1988.

The eastern part of the present Red Ridge property was explored as a porphyry copper-molybdenum target in the 1970's by Inco Limited (D.I.A.N.D. Geology and Exploration 1979-80, pg. 163). Results of this program are not known.

The present property was staked by MBW Surveys Ltd. for Havilah Gold Mines Ltd. to cover potential precious metal bearing ground in June 1985. Exploration in 1985 and 1986 consisted of geological mapping, prospecting and geochemical sampling. Some trenching and blasting was carried out on the East zone in 1986 (Keyser, 1986). The 1987 exploration program is described in this report.

## REGIONAL GEOLOGY

The Red Ridge property is located within the Coast Plutonic Complex near its eastern margin. The regional geology has been well described by Cairnes (1912), Wheeler (1961) and Lambert (1974) and will only be summarized here.

The Coast Plutonic Complex consists of Jurassic to Cretaceous granitoid rocks which intrude and underlie low grade metamorphosed sediments and volcanics of the Mesozoic Whitehorse-Nechako Trough. These rocks are unconformably overlain by Tertiary andesite and rhyolite flows and pyroclastics in the Mt. Skukum and Bennett Lake areas. Rhyolite and andesite dykes and plugs related to these Skukum Group volcanics are found through-

out the region.

The regional structural trend is northwest. This is cut by late Tertiary structures, many of which are northeast to east-west trending.

## GEOLOGY OF THE RED RIDGE PROPERTY

The Red Ridge property is underlain by lower Mesozoic to Triassic volcanics and sediments which are intruded by a Cretaceous granodiorite. These units are in turn intruded by Tertiary rhyolite and andesite dykes. The property geology has been described by Keyser (1986) and will only be summarized here. The geology is shown in Figure 3.

Mafic to intermediate unnamed basaltic andesite flows, breccias and some tuffs of probable lower Mesozoic age occur on the west half of the property. These units are in fault contact with other Mesozoic sediments and volcanics and are intruded by granodiorite.

Massive dark to medium green andesite flows and breccias of the Triassic Lewes River Group occur on the northeast corner of the property. The volcanics are locally sheared to form a chlorite schist and contain several zones of epidote alteration. The volcanics are intruded and are in fault contact with the granodiorite.

Fine grained clastic sedimentary rocks of the Jurassic Laberge Group are exposed in the central part of the claims. These rocks are intruded and hornfelsed by Cretaceous granodiorite. The hornfelsed rocks are rusty weathering and form a large gossan along the central part of Red Ridge.

Cretaceous medium grained granodiorite intrudes the lower Mesozoic strata in several locations on the Red Ridge property. The intrusion is the prominent rock type on the east half of the property. Porphyry copper style (see Alteration and Mineralization) mineralization occurs within the granodiorite on the east side of the property. Although the granodiorite in this zone is texturally similar to the granodiorite on other parts of the property, it may represent a younger phase.

Tertiary rhyolite and andesite dykes intrude all units on the property. The dykes are steeply dipping and usually trend in a north-south direction. There is a strong spatial relationship between vein style mineralization (East and Saddle zones) found on the property and some of the dykes.

## ALTERATION AND MINERALIZATION

### Introduction

At least 3 zones of mineralization have been found on the claims. The East and Saddle zones consist of sulphide-bearing quartz veins and shear zones found on the east side of the property. The East Zone (Figure 4), consisting of trench exposures and float of galena bearing quartz veins with values up to 180.9 opt silver in a select grab sample, has been described by Keyser (1986) and will not be described here. A zone of porphyry copper style mineralization (Inco showing) is located near and outside the southeast corner of the property. Several other zones of veining and alteration are found throughout the claims.

### Saddle Zone

Several small outcrops and boulders of silicified granodiorite and quartz-galena veins were found over a 20 meter by 50 meter area in a small saddle near the east end of the property. Two initial grab samples from this zone (Saddle Zone) contained 0.365 opt gold and 9.65 opt silver, and 1.12 opt gold and 11 opt silver. As a result, a soil grid was established and 7 trenches were dug over 35 meters of strike length (for discussion of results see Exploration). The Saddle Zone geology is shown in Figures 5 and 6.

The Saddle Zone has been exposed in 6 trenches for 30 meters along strike. Outcrops of silicified granodiorite found 30 meters north of the zone indicate the zone may extend an additional 50 meters to the north. Anomalous precious metal values in soil samples collected 25 and 150 meters south (and down hill) indicate the zone could extend further to the south. The zone consists of a 50 cm to up to at least 5 meter wide zone of manganese stained, clay altered, silicified, and fractured granodiorite. The zone contains a series of quartz veins with trace to several percent galena and chalcopyrite. Precious metal values are not limited to samples with sulphides indicating the presence of free gold or electrum. Individual veins are between 5 cm and 50 cm wide (average 10 to 30 cm). The veins are surrounded by a quartz stockwork zone up to 1.5 meters wide. The zone appears to trend 020/70W.

Outcrops of a parallel rhyolite dyke are located 25 meters east of the Saddle Zone. Several soil samples taken adjacent to the dyke contain anomalous precious metal values (see Exploration) indicating the presence of at least one other sub-parallel zone of veining.

## **Inco Showing**

A poorly developed porphyry copper system has been located near and outside the southeast corner of the property. This zone is believed to be the same zone explored by Inco in the 1970's (?). Mineralization consists of pyrite, chalcopyrite and bornite with associated malachite occurring along fracture surfaces and in some veins. The fractures are sparsely distributed over a 250 by 300 meter area. Secondary potassium feldspar is associated with several of the veins and fractures and the granodiorite is weakly to locally moderately sericitized and argillically altered throughout the area. This zone has little economic potential as a porphyry copper or porphyry copper-gold prospect.

## **Other Showings**

Two other zones of veining and alteration were found 200 meters and 450 meters west of the Saddle Zone. Other veins of little economic potential were discussed by Keyser (1986).

Several outcrops of bull quartz occur along and below a sheep trail 450 meters west of the Saddle Zone. The "Sheep" Vein trends in an east-west direction and can be followed in outcrop and float for approximately 100 meters. The vein is up to 1 meter wide. It contains trace galena and chalcopyrite. The total strike length of the vein is not known. A soil sample taken below the vein contains 1200 ppb gold.

A small outcrop of carbonate altered granodiorite with quartz stockwork is located 200 meters west of the Saddle Zone. The soil is oxidized adjacent to the outcrop and contains up to 2400 ppb gold. The stockwork zone trends 095/90. The extent of this zone is not known and more work is required to define this zone.

## **EXPLORATION**

### **Introduction**

Exploration on the Red Ridge property consisted of geological mapping, prospecting, soil and talus fine sampling and rock sampling. Additional (to 1986 work) soil sampling was done at 25 meter by 25 meter centers on the East Zone grid to cover a 370 meter by 250 meter area. A 150 meter by 100 meter soil grid (samples collected at 25 meter by 25 meter centers) was established over the newly discovered Saddle Zone. Seven small trenches were also dug with pick and shovel in this area. Talus fine sampling was carried out at 25 to 50 meter intervals around the ridge on the east half of the property and southeast of Mule Hill. A total of 394 soil samples and 37 rock samples were col-

lected on the property. All samples were analysed for gold, silver and lead by Bondar-Clegg and Company Ltd. of Vancouver and Whitehorse. The sample locations and results are given in Figures 3 to 6 and the results and analytical methods are in Appendix A. Rock sample descriptions are in Appendix B.

### **East Zone**

Additional soil sampling on the East Zone grid has outlined at least two other zones of anomalous silver and lead values away from the East Zone (Figures 4a and 4b). The two other zones are located on the northwest side of the grid and form broad elliptical anomalies up to 150 meters long by 80 meters wide. The anomalies trend in a north-south direction and contain values up to 16 ppm silver and 470 ppm lead. The anomalies are similar in size and strength to the East Zone anomaly proper (area around trenches, discussed by Keyser, 1986).

Single and two point anomalies are randomly distributed on other parts of the grid. Values are up to 110 ppb gold, 12 ppm silver and 305 ppm lead. No additional sampling was carried out at and around the East Zone trenches.

### **Saddle Zone**

Several rock samples (grab and chip) were collected from the trenches and boulders and subcrop in the Saddle Zone area. Values in select grab samples from subcrop and boulders are up to 0.365 opt gold and 9.65 opt silver and 1.12 opt gold and 11.0 opt silver. Rock geochemical values within the trenches are up to 4100 ppb gold (approx. 0.12 opt) and 1.84 opt silver over 1 meter and 6500 ppb gold (approx. 0.19 opt) and 9.46 opt silver over 0.3 meters. Several other grab and chip samples from the trenches contain >1000 ppb gold (>0.029 opt) and 1 opt silver (Figure 6). The precious metal values are not limited to samples with high sulphide content indicating the presence of free gold.

Soil samples from the grid in the trench area contain up to 7700 ppb gold and >50 ppm silver (Figure 5). A sample taken 25 meters south along strike from the trenches contains 2000 ppb gold and 26 ppm silver. This sample may represent some down slope movement, but may also indicate an additional 25 meters of strike length to the zone. In addition, two consecutive talus fine samples collected at 25 meter intervals approximately 150 meters south of the saddle zone (along strike of the zone) contain 960 and 2600 ppb gold and >50 ppm silver (both samples, Figure 3). The zone may therefore extend an additional 150 meters to the south, but the samples could also represent downslope geochemical dispersion.

Soil samples taken at 0+75N/0+50E and 0+25N/0+25E contain

440 ppb gold and >50 ppm silver and 400 ppb gold and 19 ppm silver respectively (Figure 5). In the same area, a sample at 0+50N/0+25E contains 240 ppb gold and 3.8 ppm silver. These three anomalous samples indicate the presence of at least one other subparallel zone of veining and will require more exploration to locate it.

### **Inco Showing**

Several talus fine samples and 3 rock samples were collected within this area. Grab samples from chalcopyrite bearing veins contain up to 220 ppb gold and 11 ppm silver. Geochemical values within the talus fine samples are up to 90 ppb gold and 1.3 ppm silver. This zone appears to have little precious metal potential.

### **Other Zones**

Two consecutive soil samples collected at 25 meter intervals 200 meters west of the Saddle Zone contain 50 and 75 ppb gold and 4.3 and 30 ppm silver (Figure 3). A grab sample of intensely carbonate and quartz altered granodiorite from this area contains 1100 ppb gold and 4.12 opt silver. A soil sample consisting of oxidized material directly below this outcrop contained 2400 ppb gold, >50 ppm silver and >10,000 ppm lead. Much more exploration is required in this area.

Talus fine samples collected below the outcrops of bull quartz veins (Sheep Zone) 450 meters west of the Saddle Zone contain up to 1200 ppb gold (Figure 3). Several chip samples and grab samples from these outcrops contain near background levels of gold and silver. Although the high gold in soil may be related to some localized mineralization in this vein, some additional sampling is required.

Several talus fine samples collected on the northeast side of Red Ridge (Figure 3) contain slightly anomalous gold and silver values of between 55 and 160 ppb gold and 1.8 and 6.6 ppm silver. The source(s) of these anomalies are not known and more prospecting, mapping and sampling is required in this area.

### **CONCLUSIONS AND RECOMMENDATIONS**

The Red Ridge property is underlain by Mesozoic sediments and volcanics which are intruded by late Cretaceous granitoid rocks. Tertiary rhyolite and andesite dykes cut all units in a north to north-east direction. Vein type gold-silver deposits in the Wheaton River district are typically spatially related to felsic dykes. Hence, the geology of the Red Ridge property is

permissive to the formation of precious metal mineralization.

Several zones of mineralization have been found on the property. The most significant zones consist of the East Zone, the Saddle Zone and the Inco Showing, all of which are located on the eastern side of the property.

The East Zone consists of trench exposures, subcrop and float of galena bearing quartz veins with values up to 180.9 opt silver in a select grab sample. Exploration in this area in 1987 consisted of additional soil sampling away from the trenches. Two broad elliptical silver-lead soil geochemical anomalies with values up to 16 ppm silver and 470 ppm lead were located. These two anomalies are similar in size and strength to the original East Zone anomaly suggesting the presence of other veins in this area.

The Saddle Zone consists of a 0.5 to 5 meter wide zone of fracturing, clay alteration, silicification and quartz veining which has been exposed in trenches for 30 meters along strike. The veins consist of galena and chalcopryrite bearing quartz veins individually up to 0.5 meters wide. Grab samples within this zone contain up to 1.12 opt gold and 11.0 opt silver. Chip samples within the trenches contain up to 4100 ppb gold and 1.84 opt silver over 1 meter. Soil samples anomalous in gold and silver downhill and along strike indicate that this zone may have a much greater strike length than that explored by trenching. A second parallel zone may be located 25 meters east of this zone. Considering the limited exploration carried out on the Saddle Zone area, the results are highly encouraging and worthy of followup exploration.

Two other zones of quartz veining have been located west of the Saddle Zone. The better of these, located 200 meters west of the Saddle Zone consists of a poorly exposed zone of silicified and carbonate altered granodiorite carrying 2400 ppb gold and >50 ppm silver in a soil sample and 1100 ppb gold and 4.12 opt silver in a grab sample. More exploration is required on this zone. The Sheep Vein is located 450 meters west of the Saddle Zone. Although soil samples from this area contain spot highs of up to 1200 ppb gold, rock samples taken so far are low in gold, some more sampling is required to define the source of anomalous gold in the soil.

The Inco Showing consists of a poorly developed porphyry copper system located near and outside the southeast corner of the property. Although the porphyry copper zone of mineralization appears to have little economic potential, the East Zone and Saddle Zone veins are probably related to it. Porphyry copper deposits and occurrences often contain peripheral precious metal veins. Veins in the Mount Nansen area are an example of

this (Sawyer and Dickinson, 1970). If the East and Saddle Zone veins are related to the porphyry copper system, then the Tertiary rhyolite dykes are later than the mineralization and only act as a guide to structures, not to mineralization.

The results of the 1987 exploration program warrant a followup program during 1988. A two stage program is recommended, where the second stage is contingent on the results of the initial program. The following program and budget is recommended.

#### Phase I Program

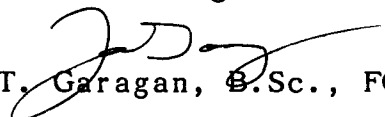
1. Cat Trenching of East Zone and Saddle Zone.
2. Trenching of secondary anomalies in the East and Saddle Zone areas.
3. Further sampling and mapping in the alteration zone 200 meters west of the Saddle Zone and on other anomalies located during reconnaissance sampling.

#### Phase I Budget

Geology & Prospecting	\$ 10,000
Geochemistry	10,000
Trenching	15,000
Camp Costs & Rental	5,000
Truck Rentals & Fuel	1,000
Report Writing & Data Compilation	5,000
Subtotal	\$ 46,000
Contingency approx. 10%	<u>4,000</u>
<b>Total</b>	<b>\$ 50,000</b>

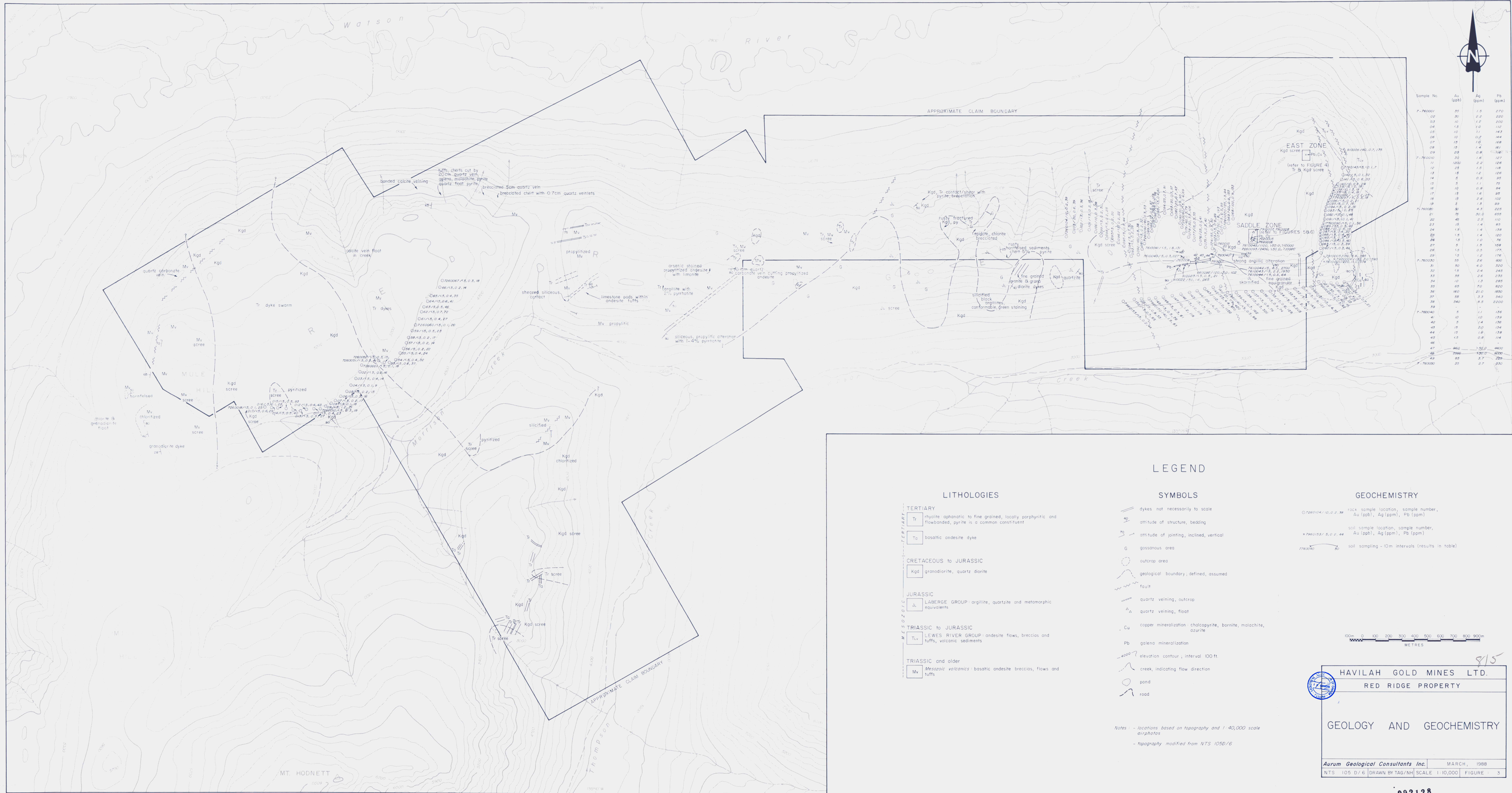
The Phase II program would consist of diamond drilling to followup the phase I program. The amount of drilling and total budget for the Phase II program would depend on the results of the Phase I program. A minimum budget of \$100,000 is anticipated.

Respectively submitted,  
Aurum Geological Consultants Inc.

  
T. Garagan, B.Sc., FGAC

## REFERENCES

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- Keyser, H.J., 1986: Geological and Geochemical Assessment Report on the Red Ridge Property, Whitehorse M.D., Assessment Report for Havilah Gold Mines Ltd. BY A.G.C.I.
- Lambert, M.B., 1974: The Bennett Lake Cauldron Subsidence Complex, British Columbia and Yukon Territory. G.S.C. Bulletin 227.
- Sawyer, J.B.P. and Dickinson, R.A., 1976: Mount Nansen, In Porphyry Deposits of the Canadian Cordillera, CIM Special Volume No. 15, pages 336-343.
- Wheeler, J.O., 1961: Whitehorse Map Area, Yukon Territory, 105D, G.S.C. Memoir 312.



Sample No.	Au (ppb)	Ag (ppm)	Pb (ppm)
7-760001	55	1.5	27.0
02	30	2.2	220
03	10	1.2	100
04	1.5	1.0	110
05	10	1.1	143
06	10	0.7	144
07	1.5	1.0	168
08	15	1.4	161
09	20	0.8	166
10	35	1.6	123
11	1000	2.2	126
12	25	1.5	118
13	18	1.2	126
14	5	0.9	95
15	5	1.1	75
16	10	0.8	84
17	15	1.4	95
18	15	2.6	102
19	5	1.3	99
20	30	4.3	225
21	70	30.0	655
22	45	2.5	110
23	15	1.4	89
24	1.5	1.4	126
25	1.4	1.0	120
26	1.5	1.0	76
27	5	1.5	156
28	1.5	0.5	175
29	1.5	1.2	176
30	55	2.8	100
31	5	2.4	245
32	35	2.6	235
33	10	1.3	285
34	65	7.0	820
35	160	21.0	850
36	37	3.3	240
37	540	8.5	2200
38	-	-	-
39	5	1.1	126
40	1.0	1.0	132
41	5	1.4	136
42	15	2.0	134
43	15	1.8	136
44	1.5	0.8	114
45	-	-	-
46	-	-	-
47	460	7.0	460
48	2900	130.0	4000
49	85	3.7	225
50	35	2.7	230

**LEGEND**

**LITHOLOGIES**

- TERTIARY**
  - Tr rhyolite aphanitic to fine grained, locally porphyritic and flowbanded, pyrite is a common constituent
  - Ta basaltic andesite dyke
- CRETACEOUS to JURASSIC**
  - Kgd granodiorite, quartz diorite
- JURASSIC**
  - JL LABERGE GROUP: argillite, quartzite and metamorphic equivalents
- TRIASSIC to JURASSIC**
  - TLV LEWES RIVER GROUP: andesite flows, breccias and tuffs, volcanic sediments
- TRIASSIC and older**
  - Mv Mesozoic volcanics: basaltic andesite breccias, flows and tuffs

**SYMBOLS**

- dykes not necessarily to scale
- attitude of structure, bedding
- attitude of jointing, inclined, vertical
- gossanous area
- outcrop area
- geological boundary; defined, assumed
- fault
- quartz veining, outcrop
- quartz veining, float
- copper mineralization: chalcopyrite, bornite, malachite, azurite
- galena mineralization
- elevation contour, interval 100 ft.
- creek, indicating flow direction
- pond
- road

**GEOCHEMISTRY**

- rock sample location, sample number, Au (ppb), Ag (ppm), Pb (ppm)
- soil sample location, sample number, Au (ppb), Ag (ppm), Pb (ppm)
- soil sampling - 10m intervals (results in table)

Notes: - locations based on topography and 1:40,000 scale airphotos  
 - topography modified from NTS 1050/6

815

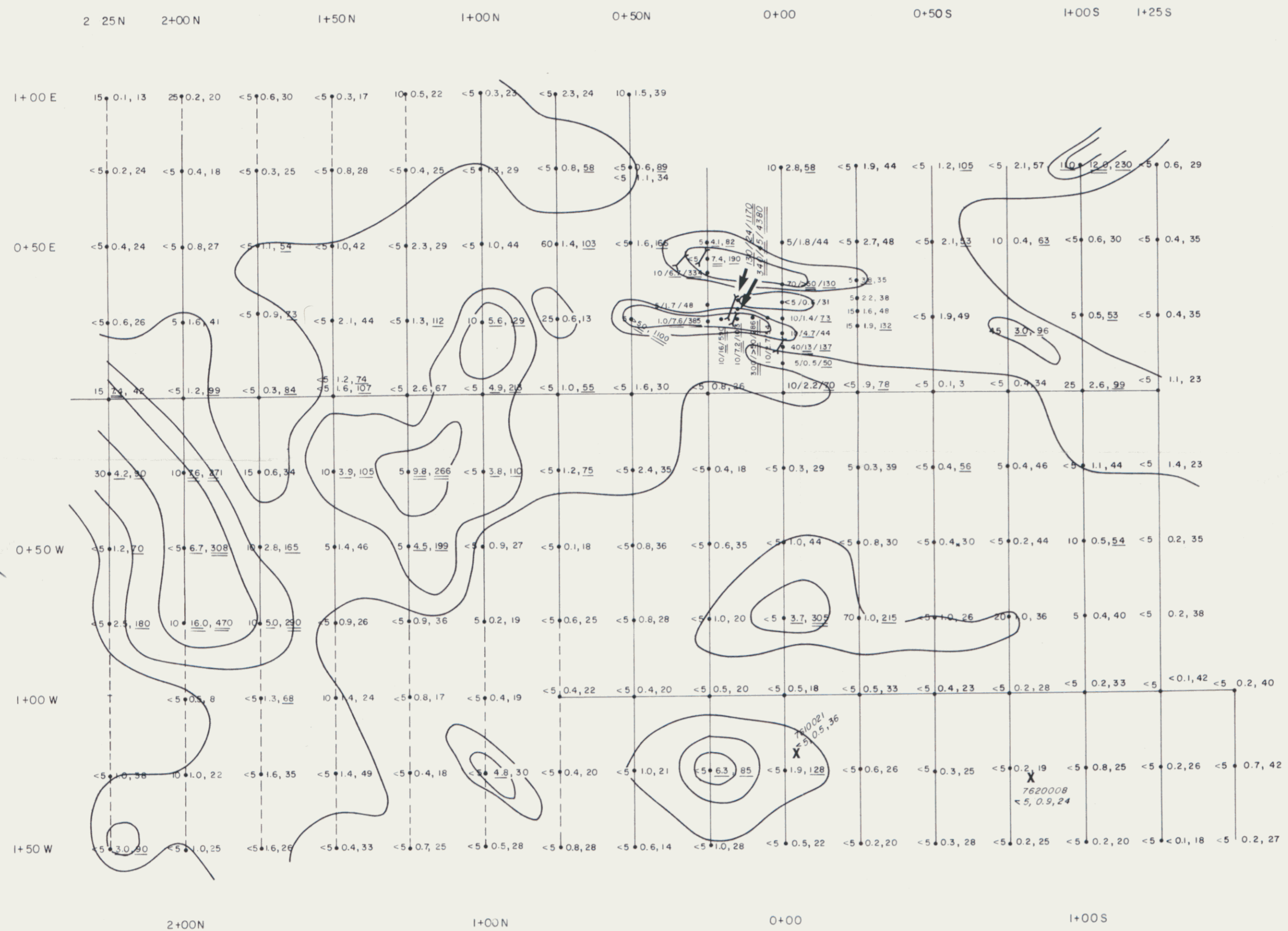
**HAVILAH GOLD MINES LTD.**  
**RED RIDGE PROPERTY**

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**GEOLOGY AND GEOCHEMISTRY**

---

Aurum Geological Consultants Inc.      MARCH, 1988  
 NTS 105 D/6 DRAWN BY TAG/NH SCALE 1:10,000 FIGURE 3



**LEGEND**

- Grid location
- Trench locations
- 1986 & 1987 soil sample location  
gold (ppb), silver (ppm), lead (ppm)
- Rock sample location Au (ppb), Ag (ppm), Pb (ppm)
- Ag Contoured interval 1, 3 and 5 ppm

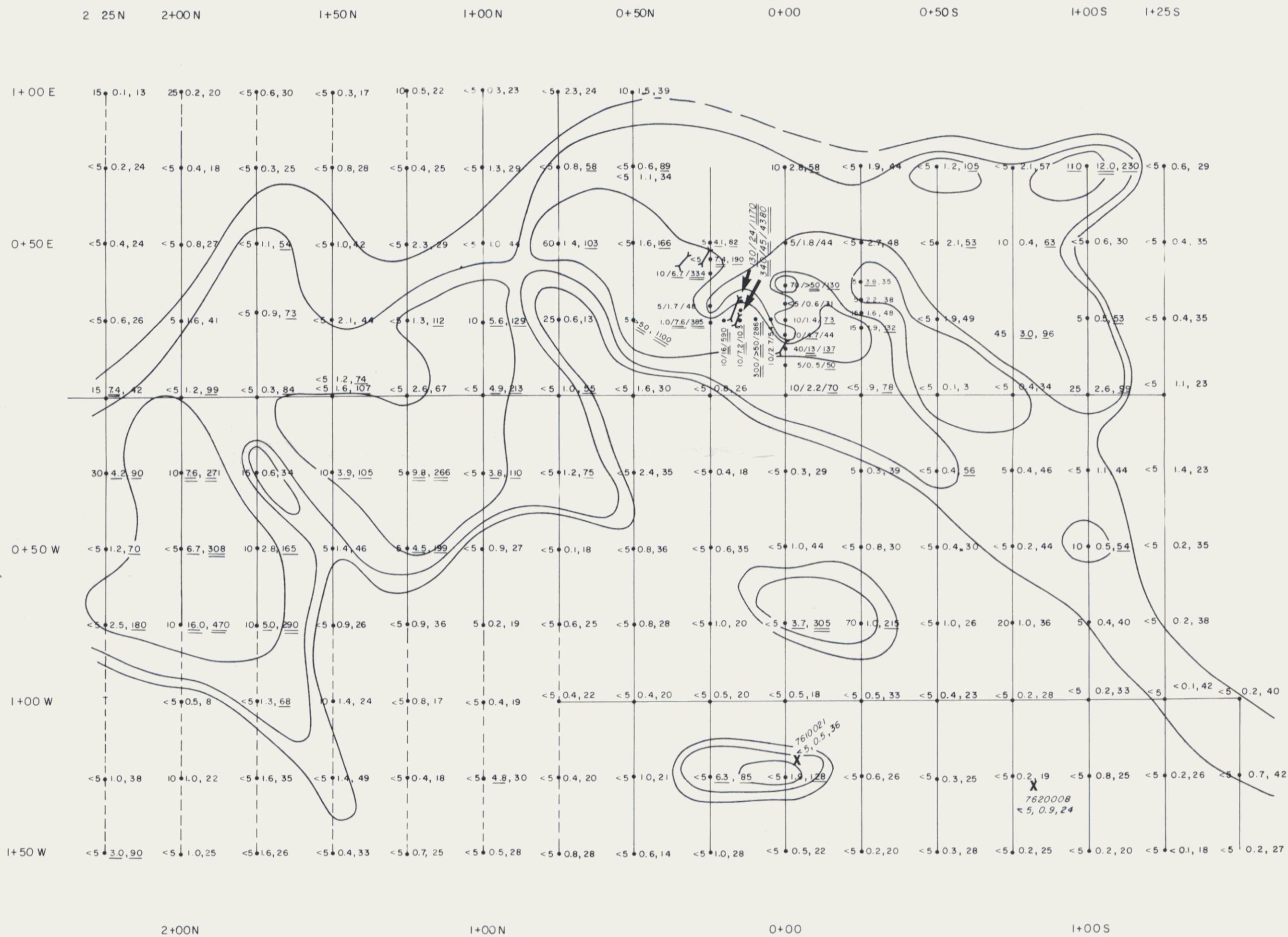
**Havilah Gold Mines Ltd.**

**RED RIDGE PROPERTY**

**East Zone Soil Geochemistry  
Contoured Ag Geochemistry**

092128 813

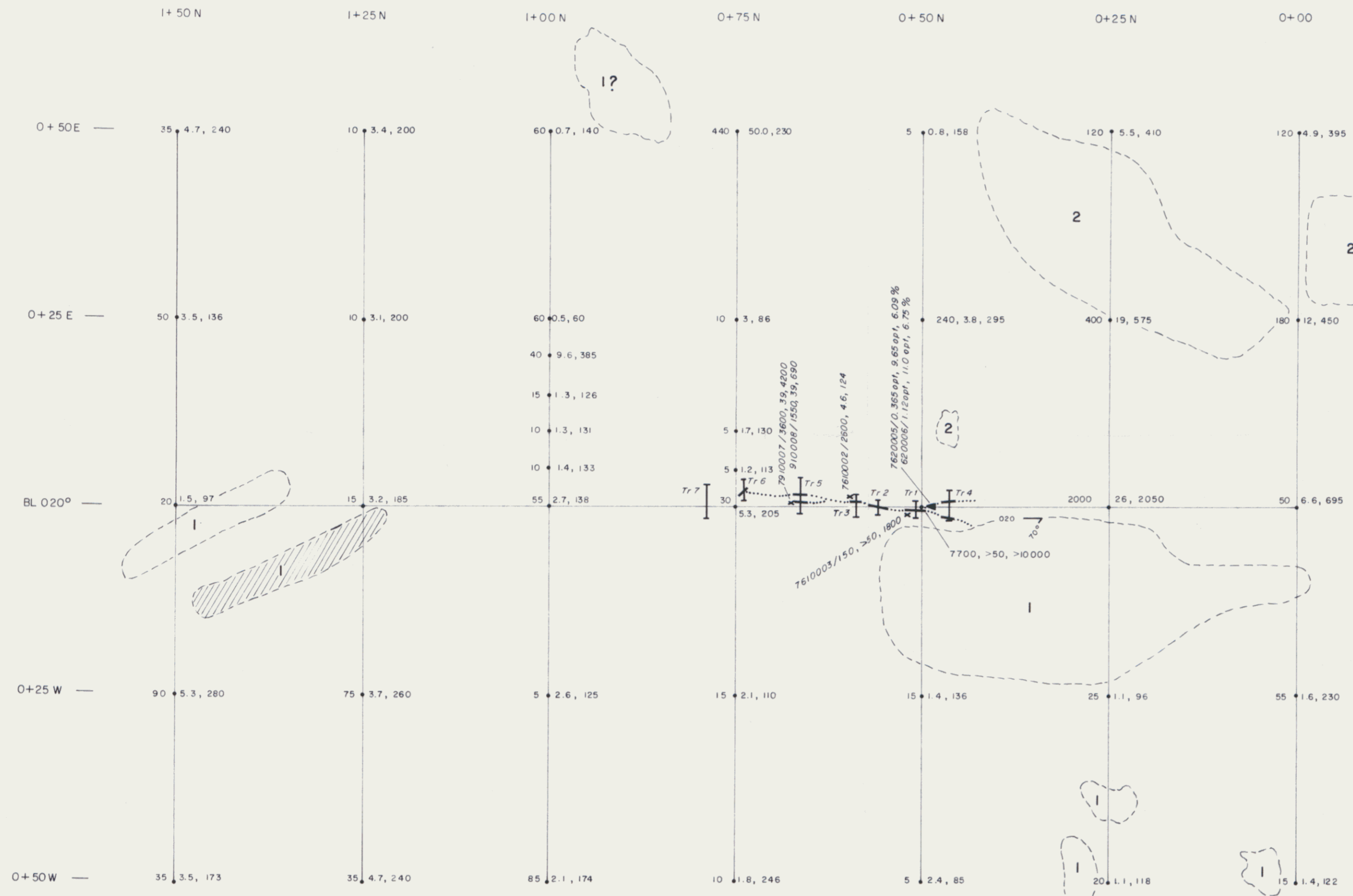
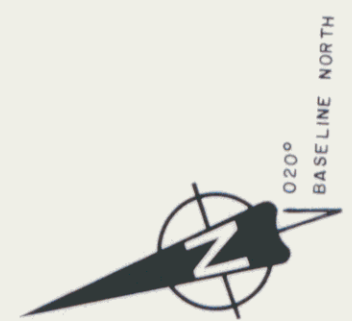
<b>Aurum Geological Consultants Inc.</b>			DATE: March, 1988
NTS: 105 D/6	DRAWN BY: P. G.	SCALE: 1:1250	FIGURE: 4a



**LEGEND**

- Grid location
- Trench locations
- 1986 & 1987 soil sample location  
gold (ppb), silver (ppm), lead (ppm)
- Au: >100, >300
- Ag: >3, >7
- Pb: >50, >250
- Pb Contour intervals 40, 50 and 100 ppm

<b>Havilah Gold Mines Ltd.</b>			
<b>RED RIDGE PROPERTY</b>			
East Zone Soil Geochemistry Contoured Pb Geochemistry			
<b>092128</b>			
Aurum Geological Consultants Inc.			DATE: March, 1988
NTS: 105 D/6	DRAWN BY: P. G.	SCALE: 1:1250	FIGURE: 4 b



**LEGEND**

**TERTIARY**

2 Rhyolite Dykes

**CRETACEOUS**

1 Granodiorite

Silicified and sericite altered rock

760002/3600, 39, 4200 Rock sample location  
sample# / Au ppb, Ag ppm, Pb ppm  
(unless otherwise indicated)

2000, 26, 2050 Soil sample location  
Au ppb, Ag ppm, Pb ppm

Trench location

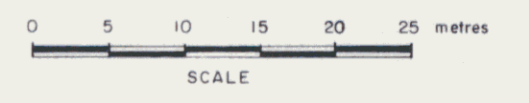
Grid location (Baseline picketed)

Outcrop

Vein (in trench, trend)

Quartz float

Jointing

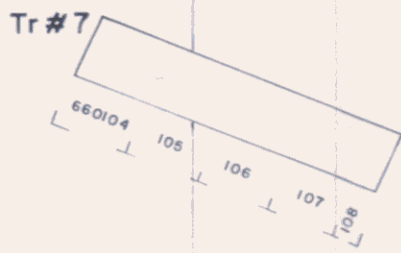


**Nayilah Gold Mines Ltd.** 814

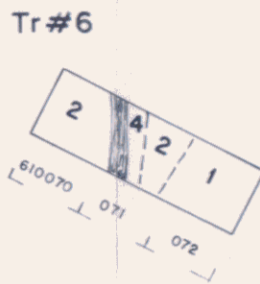
**RED RIDGE PROPERTY**  
**SADDLE ZONE GRID**

**092128**

Aurum Geological Consultants Inc.			DATE: March 1988
NTS: 105 D/6	DRAWN BY: P.G.	SCALE: 1:500	FIGURE: 5

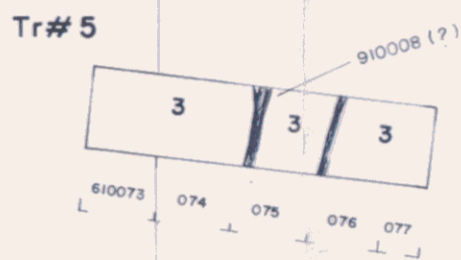


-0+75 N



**GEOCHEM. RESULTS**

Sample#	Au ppb	Ag ppm	Pb ppm	Sample type inter.
7660045	200	5.6	500	SOIL
046	7000	>50.0	>10000	
047	2800	>50.0	>10000	
048	180	5.0	500	
049	100	4.6	410	
050	280	25	720	
051	140	5.0	380	
052	80	2.8	295	
053	15	2.2	200	
104	95	9.7	315	
105	280	6.3	285	
106	190	8.5	650	
107	130	10	280	
108	55	6.3	220	
↓				
<b>ROCKS</b>				
7910007	3600	39.0	4200	grab
008	1550	39.0	690	0.6m chip
020	110	2.4	200	1m chip
021	600	6.0	940	1.3m chip
7620005	>10000 (0.365 opt)	>50.0 (9.65 opt)	>10000 (6.04%)	grab
006	>10000 (1.12 opt)	>50.0 (11.0 opt)	>10000 (6.75%)	grab
7610002	2600	4.6	124	grab
003	150	>50.0 (1.15 opt)	1800	0.5m chip
↓				
033	600	2.5	87	1m chip
034	55	1.4	275	
035	5	1.1	191	
036	4100	>50.0 (1.84 opt)	8800	
↓				
037	45	13.0	560	0.1m chip
038	3400	22.0	1300	0.3m chip
039	6500	>50.0 (9.46 opt)	8600	
↓				
070	170	29	1550	1m chip
071	940	12	945	1m chip
072	25	7.1	475	1m chip
073	520	37	1000	
074	240	29	865	
075	1400	16.0	875	
076	45	1.4	105	
↓				
077	10	2.0	174	0.5m chip



**LEGEND**

**CRETACEOUS**

- 4** Oxidized, silicified, quartz stockwork zone
- 3** Silicified ? granodiorite ?
- 2** Manganese stained clay altered granodiorite
- 1** Granodiorite



Trench location



Quartz veining



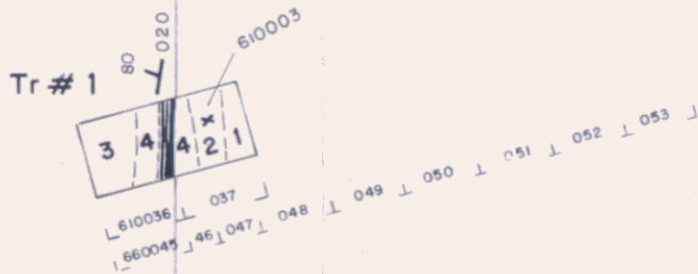
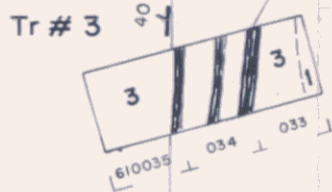
Quartz float



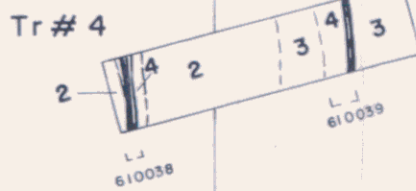
Vein dips

Sample interval

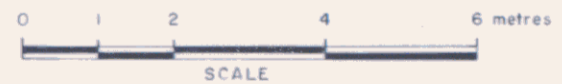
61..... or 62..... or 91..... denotes rock sample  
66..... denotes soil sample



-0+50 N



**092128**



**Havilah Gold Mines Ltd.** 8/6

**RED RIDGE PROPERTY  
SADDLE ZONE**

**TRENCHES: GEOLOGY & GEOCHEMISTRY**

**Aurum Geological Consultants Inc.**

DATE: March, 88

NTS: 105 D/6

DRAWN BY: P.G.

SCALE: 1:100

FIGURE: 6



**APPENDIX A  
ANALYTICAL METHODS AND RESULTS**

## ANALYTICAL METHODS

Soil samples are dried and sieved to -80 mesh and a split is analysed. Rock chip samples are pulverized and a split of the-150 mesh is analysed.

Gold analyses are by fire assay techniques, but, after preparation of the bead, it is dissolved by atomic absorption spectrophotometry.

Silver and lead analyses: The samples are dissolved in hot aqua regia and analysed by atomic absorption spectrophotometry. Silver analyses require a correction for background.

Gold and silver assays are by regular fire assay methods.



*COPY*

7760137-

REPORT: 127-4350

PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
S1 7-760135		25	0.2	<5
S1 7-760137		18	0.4	<5
S1 7-760138		19	1.3	10
S1 7-760139		18	1.0	15
S1 7-760140		24	0.8	10
S1 7-760141		33	0.6	<5
S1 7-760142		32	0.1	5
S1 7-760143		7	<0.1	<5
S1 7-760144		19	2.5	170
K2 7-610033		87	2.5	600
K2 7-610034		275	1.4	55
K2 7-610035		191	1.1	5
K2 7-610036		8800	>50.0	4100
K2 7-610037		560	13.0	45
K2 7-610038		1300	22.0	3400
K2 7-610039		8600	>50.0	6500
K2 7-910020		200	2.4	110
K2 7-910021		940	6.0	600
K2 7-910022		265	1.6	50
K2 7-910023		21	0.5	<5

*location can be confirmed not in notes - probably 50m north of 143 + bank*

*copy*



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PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	AC OPT
------------------	------------------	-----------

R2 7-610036		1.84
R2 7-610039		9.46



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PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB	SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
S1 7-760001		270	1.5	35	S1 0+75S 0+75W		36	1.0	20
S1 7-760002		220	2.2	30	S1 1+00S 0+00E		79	2.6	25
S1 7-760003		200	1.2	10	S1 1+00S 0+25E		53	0.5	5
S1 7-760004		112	1.0	<5	S1 1+00S 0+50E		30	0.6	<5
S1 7-760005		143	1.1	10	S1 1+00S 0+75E		230	12.0	110
S1 7-760006		144	0.7	10	S1 1+00S 0+25W		44	1.1	<5
S1 7-760007		168	1.0	15	S1 1+00S 0+75W		40	0.4	5
S1 7-760008		161	1.4	15	S1 FF 0+00 0+75E		58	2.8	10
S1 7-760009		116	0.8	20	S1 FF 0+00 0+25W		29	0.3	<5
S1 7-760010		127	1.6	30	S1 FF 0+50N 0+25E		1100	>50.0	5
S1 7-760011		126	2.2	1200	S1 FF 0+50N 0+50E		166	1.6	<5
S1 7-760012		118	1.5	25	S1 FF 0+50N 0+75E		89	0.6	<5
S1 7-760013		126	1.2	15	S1 FF 0+50N 0+100E		39	1.5	10
S1 7-760014		95	0.9	5	S1 FF 0+75N 0+75E		58	0.8	<5
S1 7-760015		75	1.1	5	S1 FF 0+75N 1+00E		24	2.3	<5
S1 7-760016		84	0.8	10	S1 FF 1+00N 1+00E		23	0.3	<5
S1 7-760017		95	1.6	15	S1 FF 1+00N 0+75E		29	1.3	<5
S1 7-760018		102	2.6	15	S1 FF 1+00N 0+50E		44	1.0	<5
S1 7-760019		99	1.3	5	S1 FF 1+00N 0+25E		129	5.6	10
S1 7-760020		225	4.3	50	S1 FF 0+25S 0+25W		39	0.3	5
S1 7-760021		855	30.0	75	S1 FF 0+50S 0+00E		3	0.1	<5
S1 7-760022		110	2.5	45	S1 FF 0+50S 0+25E		49	1.9	5
S1 7-760023		85	1.4	15	S1 FF 0+50S 0+50E		53	2.1	<5
S1 7-960022		42	0.5	<5	S1 FF 0+50S 0+75E		105	1.2	<5
S1 7-960023		40	1.3	35	S1 FF 0+50S 0+50W		30	0.4	<5
S1 7-960024		23	0.8	90	S1 FF 0+50S 0+75W		26	1.0	<5
S1 7-960025		25	1.2	20	S1 FF 1+00S 0+50W		54	0.5	10
S1 7-960026		21	0.7	5	R2 7-610001		104	11.0	220
S1 0+75N 0+25E		13	0.6	25	R2 7-610002		124	4.6	2600
S1 0+00 0+75W		305	3.7	<5	R2 7-620005		>10000	>50.0	>10000
S1 0+75N 0+50E		103	1.4	60	R2 7-620006		>10000	>50.0	>10000
S1 0+25S 0+50E		48	2.7	<5	R2 7-910005		595	5.8	150
S1 0+25S 0+75E		44	1.9	<5	R2 7-910006		175	0.7	80
S1 0+25S 0+75W		215	1.0	70	R2 7-920006		590	3.0	130
S1 0+75S 0+20E		96	3.0	45					
S1 0+75S 0+50E		63	0.4	10					
S1 0+75S 0+75E		57	2.1	5					
S1 0+75S 0+00W		34	0.4	<5					
S1 0+75S 0+25W		46	0.4	5					
S1 0+75S 0+50W		44	0.2	<5					

pl

pl

pl

ass





REPORT: 127-4323

PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB	SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
S1 7-660045		500	5.6	200	S1 7-760080		165	2.6	30
S1 7-660046		>10000	>50.0	7000	S1 7-760081		185	1.1	15
S1 7-660047		>10000	>50.0	2800	S1 7-760082		49	0.3	<5
S1 7-660048		500	5.0	180	S1 7-760083		39	0.3	15
S1 7-660049		410	4.6	100	S1 7-760084		40	0.5	<5
S1 7-660050		720	25.0	280	S1 7-760085		17	0.3	<5
S1 7-660051		380	5.0	140	S1 7-760086		40	0.4	<5
S1 7-660052		295	2.8	80	S1 7-760087		32	0.4	<5
S1 7-660053		200	2.2	15	S1 7-760088		19	0.6	10
S1 7-760024		138	1.4	<5	S1 7-760089		40	0.5	25
S1 7-760025		120	1.4	<5	S1 7-760090		56	0.1	<5
S1 7-760026		76	1.0	<5	S1 7-760091		41	<0.1	<5
S1 7-760027		158	1.5	5	S1 7-760092		48	0.1	<5
S1 7-760028		177	0.5	<5	S1 7-760093		25	1.0	5
S1 7-760029		176	1.2	<5	S1 7-760094		16	0.2	<5
S1 7-760030		600	2.6	55	S1 7-760095		18	0.7	5
S1 7-760031		320	4.0	50	S1 7-760096		21	0.2	<5
S1 7-760032		245	2.4	<5	S1 7-760097		18	0.3	5
S1 7-760033		235	2.6	35	S1 LI+505 1+00W		40	0.2	<5
S1 7-760034		285	1.3	10	S1 LI+505 1+25W		42	0.7	<5
S1 7-760035		820	7.0	65	S1 LI+505 1+50W		27	0.2	<5
S1 7-760036		1850	21.0	160	S1 LI+255 0+75E		29	0.6	<5
S1 7-760037		540	3.3	55	S1 LI+255 0+50E		35	0.4	<5
S1 7-760038		2200	8.5	540	S1 LI+255 0+25E		35	0.4	<5
S1 7-760040		136	1.1	<5	S1 LI+255 0+00		23	1.1	<5
S1 7-760041		139	1.0	10	S1 LI+255 0+25W		23	1.4	<5
S1 7-760042		136	1.4	<5	S1 LI+255 0+50W		35	0.2	<5
S1 7-760043		134	2.0	15	S1 LI+255 0+75W		38	0.2	<5
S1 7-760044		138	1.8	15	S1 LI+255 1+00W		42	<0.1	<5
S1 7-760045		114	0.8	<5	S1 LI+255 1+25W		26	0.2	<5
S1 7-760047		4400	>50.0	960	S1 LI+255 1+50W		18	<0.1	<5
S1 7-760048		8000	>50.0	2600	S1 LI+005 1+00W		33	0.2	<5
S1 7-760049		225	3.7	85	S1 LI+005 1+25W		25	0.8	<5
S1 7-760050		330	2.7	35	S1 LI+005 1+50W		20	0.2	<5
S1 7-760074		1150	9.2	160	S1 LO+755 1+00W		28	0.2	<5
S1 7-760075		225	2.8	30	S1 LO+755 1+25W		19	0.2	<5
S1 7-760076		400	2.6	70	S1 LO+755 1+50W		25	0.2	<5
S1 7-760077		104	3.0	75	S1 LO+505 0+25W		56	0.4	<5
S1 7-760078		90	4.9	40	S1 LO+505 1+00W		23	0.4	<5
S1 7-760079		370	3.8	85	S1 LO+505 1+25W		25	0.3	<5

PI

↑ 2

Pb 760

PI

Plotted



REPORT: 627-4305

PROJECT: RED RIDGE PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	AU OPT	AG OPT	FB PCT
R2 7-620005		0.365	9.65	6.04
R2 7-620006		1.120	11.00	6.75



REPORT: 127-4981

PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AC PPM	AI PPB
S1 7860092		102	3.0	120
S1 7860093		>10000	>50.0	2400
S1 7860020		400	5.3	5
S1 7860021		600	17.0	170
S1 7860022		153	5.5	5
S1 7860023		190	5.7	10
S1 7860024		89	1.4	CS
S1 7860025		92	1.5	CS
S1 7860026		142	1.9	20
S1 7860027		189	3.1	35
S1 7860028		197	3.1	35
S1 7860029		300	12.0	35
S1 7860030		660	18.0	100
S1 7860031		375	14.0	75
S1 7860032		340	7.6	50
S1 7860033		194	4.1	25
S1 7860034		176	2.0	10
S1 7860035		340	19.0	150
S1 7860036		540	32.0	140
R2 7610040		22	0.3	CS
R2 7610041		131	1.8	CS
R2 7610042		2700	4.5	CS
R2 7610043		1950	2.2	CS
R2 7610044		64	0.5	CS
R2 7610045		7000	>50.0	1100



REPORT: 127-4323

PROJECT: RED RIDGE PAGE 2

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB	SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
S1 LD+50S 1+50W		28	0.3	<5	S1 LI+50N 0+75E		28	0.8	<5
S1 LD+25S 1+00W		33	0.5	<5	S1 LI+50N 0+50E		42	1.0	<5
S1 LD+25S 1+25W		26	0.6	<5	S1 LI+50N 0+25E		44	2.1	<5
S1 LD+25S 1+50W		20	0.2	<5	S1 LI+50N 0+00		74	1.2	<5
S1 LD+00 1+00W		18	0.5	<5	S1 LI+50N 0+25W		105	3.9	10
S1 LD+00 1+25W		128	1.9	<5	S1 LI+50N 0+50W		46	1.4	5
S1 LD+00 1+50W		22	0.5	<5	S1 LI+50N 0+75W		26	0.9	<5
S1 LD+25N 0+00		26	0.8	<5	S1 LI+50N 1+00W		24	1.4	10
S1 LD+25N 0+25W		18	0.4	<5	S1 LI+50N 1+25W		49	1.4	<5
S1 LD+25N 0+75W		20	1.0	<5	S1 LI+50N 1+50W		33	0.4	<5
S1 LD+25N 1+00W		20	0.5	<5	S1 LI+75N 1+00E		30	0.6	<5
S1 LD+25N 1+25W		85	6.3	<5	S1 LI+75N 0+75E		25	0.3	<5
S1 LD+25N 1+50W		28	1.0	<5	S1 LI+75N 0+50E		54	1.1	<5
S1 LD+50N 0+75E		34	1.1	<5	S1 LI+75N 0+26E		73	0.9	<5
S1 LD+50N 0+00		30	1.6	<5	S1 LI+75N 0+00		84	0.3	<5
S1 LD+50N 0+25W		35	2.4	<5	R2 7-610003		1800	>50.0	150
S1 LD+50N 0+75W		28	0.8	<5	R2 7-610021	<i>grid map</i>	37	0.5	<5
S1 LD+50N 1+00W		20	0.4	<5	R2 7-620008		24	0.9	<5
S1 LD+50N 1+25W		21	1.0	<5	R2 7-910007		4200	39.0	3600
S1 LD+50N 1+50W		14	0.6	<5	R2 7-910008		690	39.0	1550
S1 LD+75N 0+25W		75	1.2	<5	S1 LI+75N 0+25W		34	0.6	15
S1 LD+75N 0+50W		18	0.1	<5	S1 LI+75N 0+50W		165	2.8	10
S1 LD+75N 0+75W		25	0.6	<5	S1 LI+75N 0+75W		290	5.0	10
S1 LD+75N 1+00W		22	0.4	<5	S1 LI+75N 1+00W		68	1.3	<5
S1 LD+75N 1+25W		20	0.4	<5	S1 LI+75N 1+25W		35	1.6	<5
S1 LD+75N 1+50W		28	0.8	<5	S1 LI+75N 1+50W		26	1.6	5
S1 LI+00N 0+25W		110	3.8	<5	S1 LI+00N 0+75E		20	0.2	25
S1 LI+00N 0+50W		27	0.9	<5	S1 LI+00N 1+00E		18	0.4	<5
S1 LI+00N 0+75W		19	0.2	5	S1 LI+00N 0+75W		470	16.0	10
S1 LI+00N 1+00W		19	0.4	<5	S1 LI+00N 1+05W		8	0.5	<5
S1 LI+00N 1+25W		30	4.8	<5	S1 LI+00N 1+25W		22	1.0	10
S1 LI+00N 1+50W		28	0.5	<5	S1 LI+00N 1+50W		25	1.0	<5
S1 LI+25N 1+00E		22	0.5	10	S1 LI+25N 0+00		42	7.4	15
S1 LI+25N 0+75E		25	0.4	<5	S1 LI+25N 0+25E		26	0.6	<5
S1 LI+25N 0+50E		29	2.3	<5	S1 LI+25N 0+50E		24	0.4	<5
S1 LI+25N 0+75W		36	0.9	<5	S1 LI+25N 0+75E		24	0.2	<5
S1 LI+25N 1+00W		17	0.8	<5	S1 LI+25N 1+00E		13	0.1	15
S1 LI+25N 1+25W		18	0.4	<5	S1 LI+25N 0+25W		90	4.2	30
S1 LI+25N 1+50W		25	0.7	<5	S1 LI+25N 0+50W		70	1.2	<5
S1 LI+50N 1+00E		17	0.3	<5	S1 LI+25N 0+75W		180	2.5	<5

*Plotted*

*plots*

*Plot (See) trench map*

*plots*



REPORT: 127-4323

PROJECT: RED RIDGE

PAGE 3

SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB	SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB
S1 L2+25N 1+25W		38	1.0	<5					
S1 L2+25N 1+50W		90	3.0	<5					





REPORT: 627-4981

PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	AC OPT
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R2 7&10045		4.12
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REPORT: 627-4981

PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Ag OPT
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R2 7610045		4.12
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REPORT: 127-6729

PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB
R2 7610070		1550	29.0	170
R2 7610071		945	12.0	940
R2 7610072		475	7.1	25
R2 7610073		1000	37.0	520
R2 7610074		865	29.0	240
R2 7610075		875	16.0	1400
R2 7610076		105	1.4	45
R2 7610077		174	2.0	10



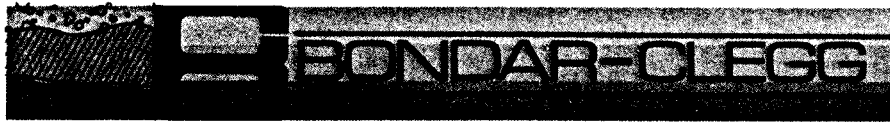
REPORT: 127-6739

PROJECT: RED RIDGE PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB	SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
S1 0+00 0+00E/W		695	6.6	50	S1 1+50N 0+50W		173	3.5	35
S1 0+00 0+25E					S1 7260068				
S1 0+00 0+50E					S1 7260069		59	0.5	20
S1 0+00 0+25W		230	1.6	55	S1 7260070		94	1.3	25
S1 0+00 0+50W		122	1.4	15	S1 7260071		99	0.5	<5
S1 0+25N 0+00B/L					S1 7260072		193	1.8	20
S1 0+25N 0+25E					S1 7260073		49	0.2	<5
S1 0+25N 0+50E					S1 7260074		50	0.3	55
S1 0+25N 0+25W		96	1.1	25	S1 7260075		40	0.3	<5
S1 0+25N 0+50W		118	1.1	20	S1 7260076		41	0.1	25
S1 0+50N 0+00					S1 7260077		65	0.5	15
S1 0+50N 0+25E					S1 7260078		106	3.3	30
S1 0+50N 0+50E		158	0.8	5	S1 7260079		79	0.3	40
S1 0+50N 0+25W		136	1.4	15	S1 7260080		69	0.4	<5
S1 0+50N 0+50W		85	2.4	<5	S1 7260081		95	0.8	20
S1 0+75N 0+00B/L		205	5.3	30	S1 7260082		47	0.7	25
S1 0+75N 0+05E		113	1.2	<5	S1 7260083		97	0.3	20
S1 0+75N 0+10E		130	1.7	<5	S1 7260084		81	0.7	25
S1 0+75N 0+25E		86	3.0	10	S1 7260085		61	0.4	<5
S1 0+75N 0+50E					S1 7260086		98	0.5	15
S1 0+75N 0+25W		110	2.1	15	S1 7260087				
S1 0+75N 0+50W		240	1.8	10	S1 7260088		87	0.6	15
S1 1+00N BL+05E		133	1.4	10	S1 7260090		53	0.3	80
S1 1+00N BL+10E		131	1.3	10	S1 7260091		32	0.2	<5
S1 1+00N BL+15E		126	1.3	15	S1 7260092				
S1 1+00N BL+20E		385	9.6	40	S1 7260093		28	0.2	<5
S1 1+00N 0+00BL		138	2.7	55	S1 7260094		50	0.7	5
S1 1+00N 0+25E		60	0.5	60	S1 7260095		44	0.9	5
S1 1+00N 0+50E		140	0.7	60	S1 7260096		22	0.2	<5
S1 1+00N 0+25W		125	2.6	<5	S1 7260097		20	0.2	<5
S1 1+00N 0+50W		174	2.1	85	S1 7260098		25	0.2	<5
S1 1+25N 0+00BL		185	3.2	15	S1 7260099		30	0.2	<5
S1 1+25N 0+25E		200	3.1	10	S1 7260100		38	0.3	10
S1 1+25N 0+50E		200	3.4	10	S1 7260101		13	0.2	<5
S1 1+25N 0+25W		260	3.7	75	S1 7260102		36	0.5	<5
S1 1+25N 0+50W		240	4.7	35	S1 7260103		39	0.6	20
S1 1+50N 0+00BL		97	1.5	20	S1 7260104		38	0.2	10
S1 1+50N 0+25E		136	3.5	50	S1 7660104		115	9.7	95
S1 1+50N 0+50E					S1 7660105		25	6.3	200
S1 1+50N 0+25W		280	5.3	90	S1 7660106				

*plotted*

*plotted*

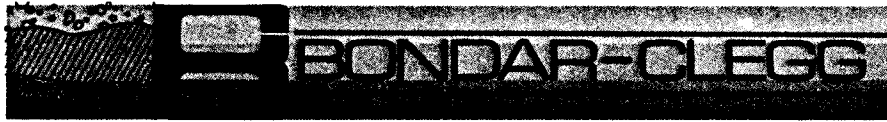


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PROJECT: RED RIDGE PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB	SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
SI 7260001		18	0.1	5	SI 7960135		128	0.6	5
SI 7260002		16	0.2	5	SI 7960136		74	0.9	5
SI 7260003		14	0.4	5	SI 7960137		79	0.8	5
SI 7260004		9	0.1	5	SI 7960138		320	2.3	15
SI 7260005		15	0.2	5	SI 7960139		162	0.7	5
SI 7260006		16	0.3	5	SI 7960140		88	0.5	5
SI 7260007		17	0.2	5	SI 7960141		420	1.9	25
SI 7260008		18	0.1	5	SI 7960142		470	4.4	25
SI 7260009		71	1.2	5	SI 7960143		<del>230</del>	<del>11.0</del>	<del>110</del>
SI 7260010		19	0.3	5	SI 7960144		210	1.4	20
SI 7260011		23	0.4	5	SI 7960145		170	1.7	15
SI 7260012		43	0.4	5	SI 7960146		119	1.0	5
SI 7260013		27	0.3	5	SI 7960147		118	1.2	10
SI 7260014		40	0.5	5	SI 7960148		61	0.3	5
SI 7260015		93	0.5	5	SI 7960149		76	0.5	5
SI 7260016		22	0.1	5	SI 7960150		83	1.8	40
SI 7260017		29	0.6	5	SI 7960152		85	0.7	5
SI 7260018		25	0.1	5	SI 7960153		44	0.2	5
SI 7260051		41	0.3	5	SI 7960157		53	0.8	5
SI 7260052		15	0.3	5					
SI 7260053		37	0.6	5					
SI 7260054		32	0.4	5					
SI 7260055		24	0.4	5					
SI 7260056		22	0.2	5					
SI 7260057		14	0.2	5					
SI 7260058		17	0.2	5					
SI 7260059		23	0.5	5					
SI 7260060		20	0.1	5					
SI 7260061		27	0.4	5					
SI 7260062		72	0.7	5					
SI 7260063		46	0.5	5					
SI 7260064		41	0.6	5					
SI 7260065		35	0.4	5					
SI 7260066		14	0.2	5					
SI 7260067		18	0.3	5					
SI 7960130		37	0.4	5					
SI 7960131		121	0.8	5					
SI 7960132		143	1.4	5					
SI 7960133		121	0.5	5					
SI 7960134		205	0.8	5					

*Plotted*



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PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	PB PPM	AG PPM	AU PPB
R2 7610070		27.0	170	
R2 7610071		12.0	910	
R2 7610072		475	7.1	25
R2 7610073		37.0	520	
R2 7610074		29.0	240	
R2 7610075		16.0	100	
R2 7610076		105	1.4	45
R2 7610077		174	2.0	10

*Plotted*  
*Trenches #5,6*





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PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB	SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB
S1 7260001		18	0.1	<5	S1 7960135		128	0.6	<5
S1 7260002		16	0.2	<5	S1 7960136		74	0.9	<5
S1 7260003		14	0.4	<5	S1 7960137		79	0.8	<5
S1 7260004		9	0.1	<5	S1 7960138		320	2.3	15
S1 7260005		15	0.2	<5	S1 7960139		162	0.7	<5
S1 7260006		16	0.3	<5	S1 7960140		88	0.5	<5
S1 7260007		17	0.2	<5	S1 7960141		420	1.9	25
S1 7260008		18	0.1	<5	S1 7960142		470	4.4	25
S1 7260009		71	1.2	<5	S1 7960143		1150	11.0	110
S1 7260010		19	0.3	<5	S1 7960144		210	1.4	20
S1 7260011		23	0.4	<5	S1 7960145		170	1.7	15
S1 7260012		43	0.4	<5	S1 7960146		119	1.0	<5
S1 7260013		27	0.3	<5	S1 7960147		118	1.2	10
S1 7260014		40	0.5	<5	S1 7960148		61	0.3	<5
S1 7260015		93	0.5	<5	S1 7960149		76	0.5	<5
S1 7260016		22	0.1	5	S1 7960150		83	1.8	40
S1 7260017		29	0.6	<5	S1 7960152		85	0.7	<5
S1 7260018		25	0.1	<5	S1 7960153		44	0.2	<5
S1 7260051		41	0.3	<5	S1 7960157		53	0.8	5
S1 7260052		15	0.3	<5					
S1 7260053		37	0.6	<5					
S1 7260054		32	0.4	<5					
S1 7260055		24	0.4	<5					
S1 7260056		22	0.2	5					
S1 7260057		14	0.2	<5					
S1 7260058		17	0.2	<5					
S1 7260059		23	0.5	<5					
S1 7260060		20	0.1	<5					
S1 7260061		27	0.4	<5					
S1 7260062		72	0.7	<5					
S1 7260063		46	0.5	5					
S1 7260064		41	0.6	<5					
S1 7260065		35	0.4	<5					
S1 7260066		14	0.2	<5					
S1 7260067		18	0.3	<5					
S1 7960130		37	0.4	<5					
S1 7960131		121	0.8	<5					
S1 7960132		143	1.4	5					
S1 7960133		121	0.5	<5					
S1 7960134		205	0.8	<5					



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PROJECT: RED RIDGE

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB	SAMPLE NUMBER	ELEMENT UNITS	Pb PPM	Ag PPM	Au PPB
S1 0+00 0+00E/W		695	6.6	50	S1 1+50N 0+50W		173	3.5	35
S1 0+00 0+25E		450	12.0	180	S1 7260068		133	0.9	100
S1 0+00 0+50E		395	4.9	120	S1 7260069		59	0.5	20
S1 0+00 0+25W		230	1.6	55	S1 7260070		94	1.3	25
S1 0+00 0+50W		122	1.4	15	S1 7260071		99	0.5	<5
S1 0+25N 0+00B/L		2050	26.0	2000	S1 7260072		193	1.8	20
S1 0+25N 0+25E		575	19.0	400	S1 7260073		49	0.2	<5
S1 0+25N 0+50E		410	5.5	120	S1 7260074		50	0.3	55
S1 0+25N 0+25W		96	1.1	25	S1 7260075		40	0.3	<5
S1 0+25N 0+50W		118	1.1	20	S1 7260076		41	0.1	25
S1 0+50N 0+00		>10000	>50.0	7700	S1 7260077		65	0.5	15
S1 0+50N 0+25E		295	3.8	240	S1 7260078		106	3.3	30
S1 0+50N 0+50E		158	0.8	5	S1 7260079		79	0.3	40
S1 0+50N 0+25W		136	1.4	15	S1 7260080		69	0.4	<5
S1 0+50N 0+50W		85	2.4	<5	S1 7260081		95	0.8	20
S1 0+75N 0+00B/L		205	5.3	30	S1 7260082		47	0.7	25
S1 0+75N 0+05E		113	1.2	<5	S1 7260083		97	0.3	20
S1 0+75N 0+10E		130	1.7	<5	S1 7260084		81	0.7	25
S1 0+75N 0+25E		86	3.0	10	S1 7260085		61	0.4	<5
S1 0+75N 0+50E		230	>50.0	440	S1 7260086		98	0.5	15
S1 0+75N 0+25W		110	2.1	15	S1 7260087		128	6.6	150
S1 0+75N 0+50W		240	1.8	10	S1 7260088		87	0.6	15
S1 1+00N BL+05E		133	1.4	10	S1 7260090		53	0.3	80
S1 1+00N BL+10E		131	1.3	10	S1 7260091		32	0.2	<5
S1 1+00N BL+15E		126	1.3	15	S1 7260092		38	0.5	160
S1 1+00N BL+20E		385	9.6	40	S1 7260093		28	0.2	<5
S1 1+00N 0+00BL		138	2.7	55	S1 7260094		50	0.7	5
S1 1+00N 0+25E		60	0.5	60	S1 7260095		44	0.9	5
S1 1+00N 0+50E		140	0.7	60	S1 7260096		22	0.2	<5
S1 1+00N 0+25W		125	2.6	<5	S1 7260097		20	0.2	<5
S1 1+00N 0+50W		174	2.1	85	S1 7260098		25	0.2	<5
S1 1+25N 0+0BL		185	3.2	15	S1 7260099		30	0.2	<5
S1 1+25N 0+25E		200	3.1	10	S1 7260100		38	0.3	10
S1 1+25N 0+50E		200	3.4	10	S1 7260101		13	0.2	<5
S1 1+25N 0+25W		260	3.7	75	S1 7260102		36	0.5	<5
S1 1+25N 0+50W		240	4.7	35	S1 7260103		39	0.6	20
S1 1+50N 0+00BL		97	1.5	20	S1 7260104		38	0.2	10
S1 1+50N 0+25E		136	3.5	50	S1 7660104		315	9.7	95
S1 1+50N 0+50E		270	3.2	200	S1 7660105		285	6.3	280
S1 1+50N 0+25W		280	5.3	90	S1 7660106		650	8.5	190



**APPENDIX B  
ROCK SAMPLE DESCRIPTIONS**

Date: June-August, 1987Project: Red RidgeArea: Wheaton River, YukonPage 1 of 3

Sample No.	Location	Description	Attitude	Width	Analytical Results		
					Au ppb	Ag ppm	Pb ppm
7-610001	S.E. corner of claims	5cm qtz vein, tr galena, chalcopyrite, pyrite, malachite & rusty stained	070/10N	comp grab	220	11.0	104
7-610002	S. side above ffs-080	white bull qtz, tr pyrite, manganese stained		10 cm	2600	4.6	124
7-610003	Saddle Zone	highly altered, manganese stained adjacent to vein		comp grab 0.5m	150	>50.0 *1.15	1800
7-610021	0+00/1+25W East Zone	very silicified ?rhyolite, tr pyrite	155/55W	1m chip	<5	0.5	37
7-610033	Saddle Zone Tr #3 0-1m	silicified granodiorite, 10-30cm qtz vein, tr galena, manganese stained	020/45W	1m chip	600	2.5	87
7-610034	as above 1-2m	thin qtz stockwork, disseminated galena, manganese stain, silicified granodiorite	as above	1m chip	55	1.4	275
7-610035	as above 2-3m	silicified & fractured granodiorite		1m ship	5	1.1	191
7-610036	Saddle Zone Tr #1 0-1m	oxidized zone, qtz veining & stockwork, tr galena, vein 10-30cm wide, vuggy	020/85W	1m chip	4100	>50.0 *1.84	8800
7-610037	as above 1-2m	0.5m intense manganese stain, 0.5m clay altered, pale green		1m chip	45	13.0	560
7-610038	Saddle Zone Tr #4 0m	10cm wide zone oxidized with qtz stockwork	020/80W	10cm comp grab	3400	22.0	1300
7-610039	as above 3m	30cm wide zone intense oxidation qtz stockwork, tr galena, vuggy	010/80W	30cm comp grab	6500	>50.0 *9.46	8500
7-610040	above 7-760007	qtz vein, 10-30cm wide white qtz vein with no visible sulphides	140/80W	comp grab	<5	0.3	22
7-610041	on strike up slope of above	intensely silicified, clay altered ?rhyolite		comp grab	<5	1.8	131
7-610042	3m from 7-76001	qtz vein oxidized locally vuggy	120/70W	0.75m chip	<5	4.5	2700

\* sample assayed opt

Date: June-August, 1987Project: Red RidgeArea: Wheaton River, YukonPage 2 of 3

Sample No.	Location	Description	Attitude	Width	Analytical Results		
					Au ppb	Ag ppm	Pb ppm
7-610043	down slope extension of 7-610042	as above	as above	1m chip	<5	2.2	1950
7-610044	resample 863106	bull qtz, no visible sulphides		0.75m chip	<5	0.5	64
7-610045	100m above 7-760021	granodiorite outcrop intensely carbonate altered, qtz stockwork, sheared	095/90	comp grab	1100	>50.00 *4.12	7000
7-610070	Tr #6	sericitized ?granodiorite, with Manganese staining,		1m chip	170	29	1550
7-610071	Tr #6	30cm wide qtz veining silicified zone. Qtz vein, tr pyrite with hematite altered zone on hanging wall.		1m chip	940	12	945
7-610072	Tr #6	as in #070		1m chip	25	71	475
7-610073	Tr #5	silicified granodiorite		1m chip	520	37	1000
7-610074	Tr #5	silicified granodiorite		1m chip	240	29	865
7-610075	Tr #5	90cm of qtz veining with 5cm of silicified granodiorite on foot & hanging wall	035/30W	1m chip	1400	16	875
7-610076	Tr #5	silicified granodiorite		1m chip	45	1.4	105
7-610077	Tr #5	silicified granodiorite		0.5m chip	10	2.0	74
7-620005	above FFSS080	highly altered granodiorite with qtz stockwork		grab	>10000 *0.365	>50.0 *9.65	>10000
7-620006	as above	qtz stockwork as above 1% galena, carbonate altered		grab	>10000 *1.12	>50.0 *11.0	>10000
7-620008	1+26W/0+78S	qtz float		grab	<5	0.9	24
7-910005	East of FF claims	porphyry copper mineralization & veining with potassic alteration		comp grab	150	5.8	595
7-910006	NE corner of FF claims	silicified brecciated & veined volcanics with qtz, chalcedony & cockscomb qtz		1.5m chip	80	0.7	175

\* sampled assayed opt

Date: June-August, 1987Project: Red RidgeArea: Wheaton River, YukonPage 3 of 3

Sample No.	Location	Description	Attitude	Width	Analytical Results		
					Au ppb	Ag ppm	Pb ppm
7-910007	Saddle Zone 1480m	silicified & limonite stained with 15% qtz veining, 1-5% Manganese, 2-3% galena		comp grab	3600	39.0	4200
7-910008	as above	as above, across subcrop		0.4m chip	1550	39.0	690
7-910020	Tr#3	silicified granodiorite		1m chip	110	2.4	200
7-910021	as above	as above with tr qtz veins		1.3m chip	600	6.0	940
7-910022	south slope	bull qtz with tr galena		comp grab 2m	50	1.6	265
7-910023	as above	bull qtz with chalcopyrite		comp grab	<5	0.5	21
7-920006	east of FF claims	very fine grained, grey white, partially oxidized sugary qtz vein		comp grab	130	3.0	590

\* sample assayed opt

**APPENDIX C  
STATEMENT OF COSTS**

## STATEMENT OF COSTS

### 1. Analytical Costs

Analyses by Bondar-Clegg and Company Ltd. of Whitehorse and Vancouver.

394 soil samples (Au,Ag,Pb) @\$10.65/sample	\$ 4196.10	
37 rock samples (Au,Ag,Pb) @\$13.00/sample	\$ 481.00	
1 Ag assay @\$7.50/sample	\$ 7.50	
2 Au+Ag assays @\$11.50/sample	\$ <u>23.00</u>	
Total Geochem costs:	\$ 4707.60	\$ 4707.60

### 2. Helicopter Costs

August 25-26, 1987: Bell 206 on casual charter from Crowsnest Helicopters based in Whitehorse.

0.9 hours @\$500/hour	\$ 450.00	
0.9 hours oil @260/hour	\$ 2.34	
0.9 hours fuel @ .650/ltr	\$ <u>66.69</u>	
Total Helicopter costs:	\$ 519.03	\$ 519.03

### 3. Labour Costs (Aurum Geological Consultants Inc.)

T.Garagan: geological mapping, geochemical sampling, data compilation.

4 days @\$225/day: \$ 900.00

P.Garagan: geological mapping, geochemical sampling, grid establishment, trenching.

9 days @\$175/day \$ 1575.00

G.Nicholson: geochemical sampling  
1/2 day @\$150/day \$ 75.00

T.Ballantyne: geochemical sampling  
8 days @\$110/day \$ 880.00

J.O'Rourke: geochemical sampling, trenching 4 days @\$150/day	\$ 600.00	
D.Bergvinson: geochemical sampling 1 day @\$120/day	\$ 120.00	
S.Dudka: geochemical sampling, trenching 4 days @\$150/day	\$ 600.00	
G.Smith: geochemical sampling, trenching 4 days @\$150/day	\$ <u>600.00</u>	
Total Labour costs:	\$ 5350.00	\$ 5350.00

#### 4. Camp Costs

Aurum charge to Havilah at \$50.00/manday 34.5 field days @\$50.00/manday 1725.00		\$
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#### 5. Truck Rental

4 by 4 from Aurum at a rate of \$50/day 9 @ \$50/days		\$ 450.00
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#### 6. Expenses

Gas, sample bags and flagging tape (Aurum invoice 87213,215,218)		\$ <u>161.00</u>
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Total Cost:		\$12,913.50
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**APPENDIX D  
STATEMENT OF QUALIFICATIONS**

## STATEMENT OF QUALIFICATIONS

I, THOMAS GARAGAN, hereby certify that:

1. I am a geologist with Aurum Geological Consultants Inc. of 604 675 West Hastings Street, Vancouver, B.C. and I caused to be performed the work described in this report.
2. I obtained a Bachelor of Science degree with Honours in Geology from the University of Ottawa, Ontario, in 1980.
3. I am a fellow of the Geological Association of Canada (F3819) and a member of the Mineralogical Association of Canada and the Yukon Professional Geoscientists Society.
4. I have been engaged in mineral exploration and geological survey mapping on a full and part time basis for 9 years, of which 6 have been spent on mineral exploration programs in the Yukon Territory.
5. I have no interest in the claims or securities of Havilah Gold Mines Ltd. nor do I expect to gain any.
6. I consent to the use of this report in a company report or statement, provided that no portion is used out of context in such a manner as to convey a meaning differing materially from that set out in the whole.

DATED at Calgary, Alta., this 28<sup>th</sup> day of March 1988.

  
Thomas Garagan, B.Sc., FGAC