RILEY 1 AND 2 MINERAL CLAIMS

SOUTHWESTERN GRAHAM ISLAND

QUEEN CHARLOTTE ISLANDS, B.C.

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N.T.S. 103 F/8W

Lat. 53 22' Long. 132 25'

REPORT ON GEOLOGY-GEOCHEMISTRY AND TRENCHING

by: J.S. Christie, Ph.D.

Owner of Record: J.S. Christie

Dates of work: March 16, 1983-April 9, 1983

July 6, 1983

GEOLOGICAL BRANCH ASSESSMENT REPORT

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TABLE OF CONTENTS

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	Page
LIST OF ILLUSTRATIONS	111
INTRODUCTION	1
MINERAL CLAIMS	4
LOCATION AND ACCESS	4
TOPOGRAPHY AND VEGETATION	6
GEOLOGY	6
LITHOLOGY	6
STRUCTURE	8
ALTERATION AND MINERALIZATION	8
a) REGIONAL	8
b) RILEY	13
GEOCHEMISTRY AND ASSAYS	14
DIAMOND DRILL HOLE R-80-1	16
1. GENERAL	16
2. DESCRIPTION	16
CONCLUSIONS	18
RECOMMENDATIONS	18
CERTIFICATE OF QUALIFICATIONS	20
STATEMENT OF COSTS	21

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ii

LIST OF ILLUSTRATIONS

FIGURE	3-1:	LOCATION MAP	2
FIGURE	4-1:	CLAIM MAP	5
FIGURE	6-1:	RENNELL-LOUSCOONE FAULT SYSTEM WITH	
		MINERALIZED ZONES	3
FIGURE	7-1:	GEOLOGY-GEOCHEMISTRY - ASSAY PLANS Scale 1:100	Pocket

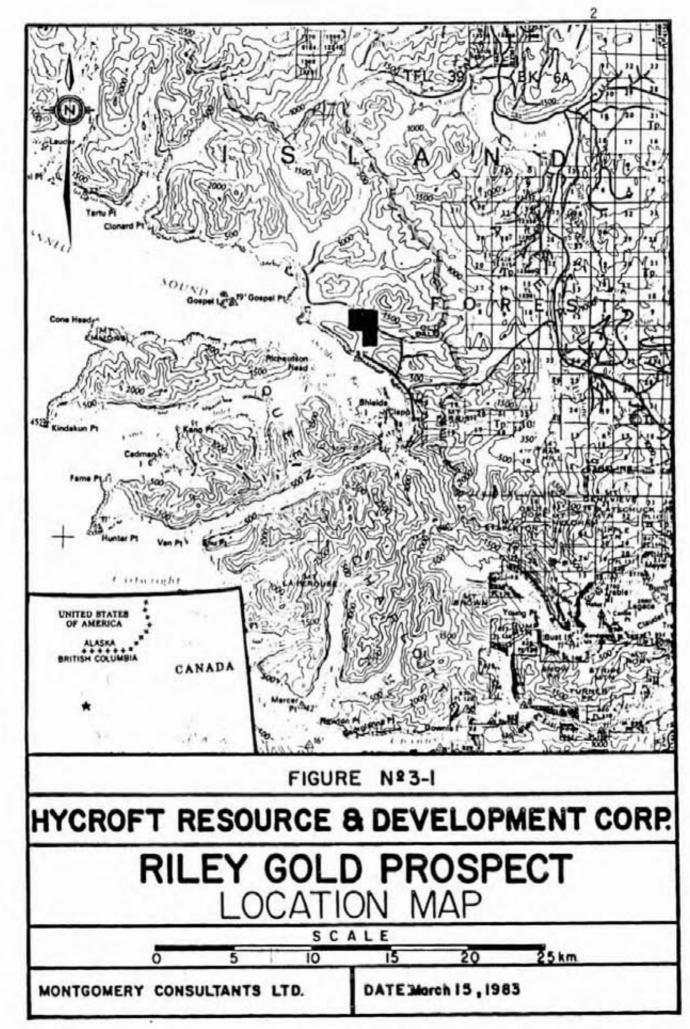
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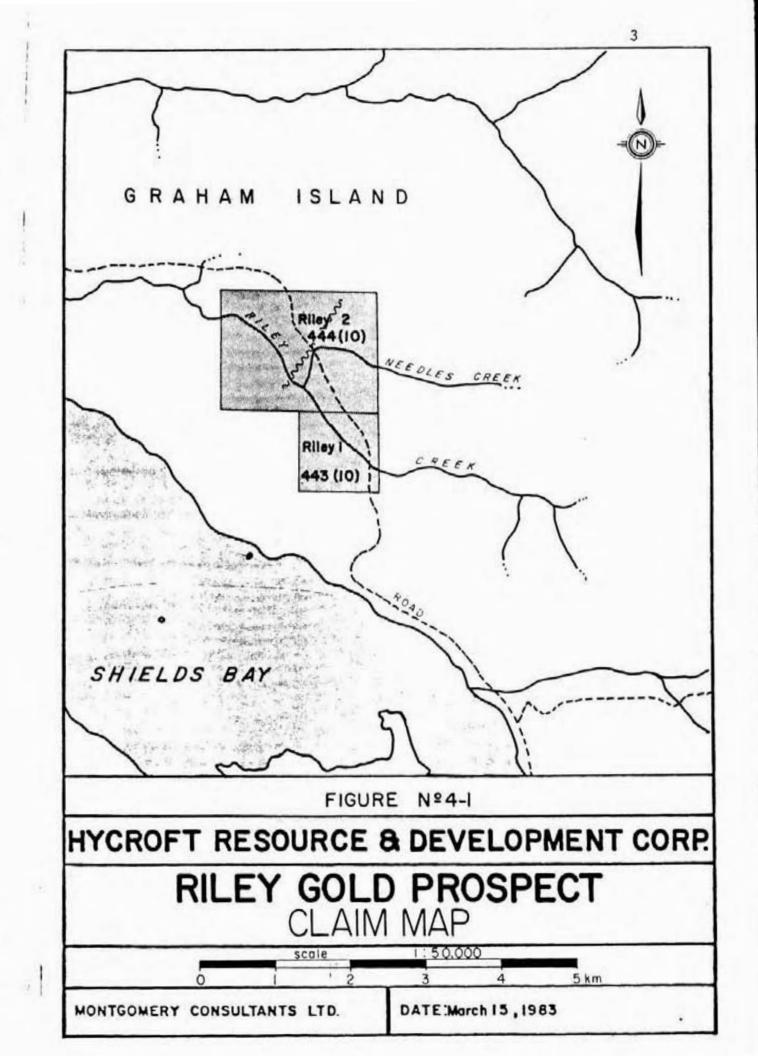
INTRODUCTION

The RILEY 1 and 2 mineral claims were staked in September 1977, after a number of anomalous silt samples were obtained from reconnaissance traverses in the area. Chevron Canada Limited acquired rights to the property through an option agreement and undertook a programme of reconnaissance geological mapping and soil sampling, in late fall 1977. A showing was discovered during this programme which returned a geochem gold value of 7500 ppb, from within a large gold-arsenic soil anomaly. The showing is located about 200 metres north of the bridge on Needles Creek at the edge of an area of clear-cut logging. It was re-sampled in 1978 and a 2.5 metric chip sample assayed 0.40 oz/ton Au.

In February of 1980 Chevron drilled one -45° diamond drill hole in the vicinity of the showing. The hole encountered fault zones at 80 and 110 metres followed by a pyritic mineralized section from 110-146 metres. These pyritic rocks returned low geochem gold values with moderately anomalous arsenic. The geologist at the drill site reported that the hole may have intersected a post-mineral fault before reaching the target zone. A post mineral fault has been mapped (Figure 6-1) in a creek above the Riley showing with an apparent left lateral offset. The projection of this fault passes just west of the showing and may offset the gold bearing zone as much as 500 metres southwest. This offset segment of the gold bearing zone is one of the primary exploration targets on the property but the possibility of direct extensions of the gold mineralization to the southeast should be evaluated first.

In March of 1983 a five man crew conducted a programme of trenching and sampling of the Riley showing, outcrop mapping and detailed soil sampling in the showing area and an orientation proton





magnetometer survey (see separate report by Montgomery Consultants Ltd., March 29, 1983). Fire assays for gold were completed on 12 samples from the trenches. A total of 27 rock chip samples and 63 soil samples were analyzed geochemically for gold and arsenic. Results are plotted on Figure 7-1 (pocket).

MINERAL CLAIMS

The property consists of the mineral claims listed below and shown on the accompanying maps (Figures 4-1, 6-1).

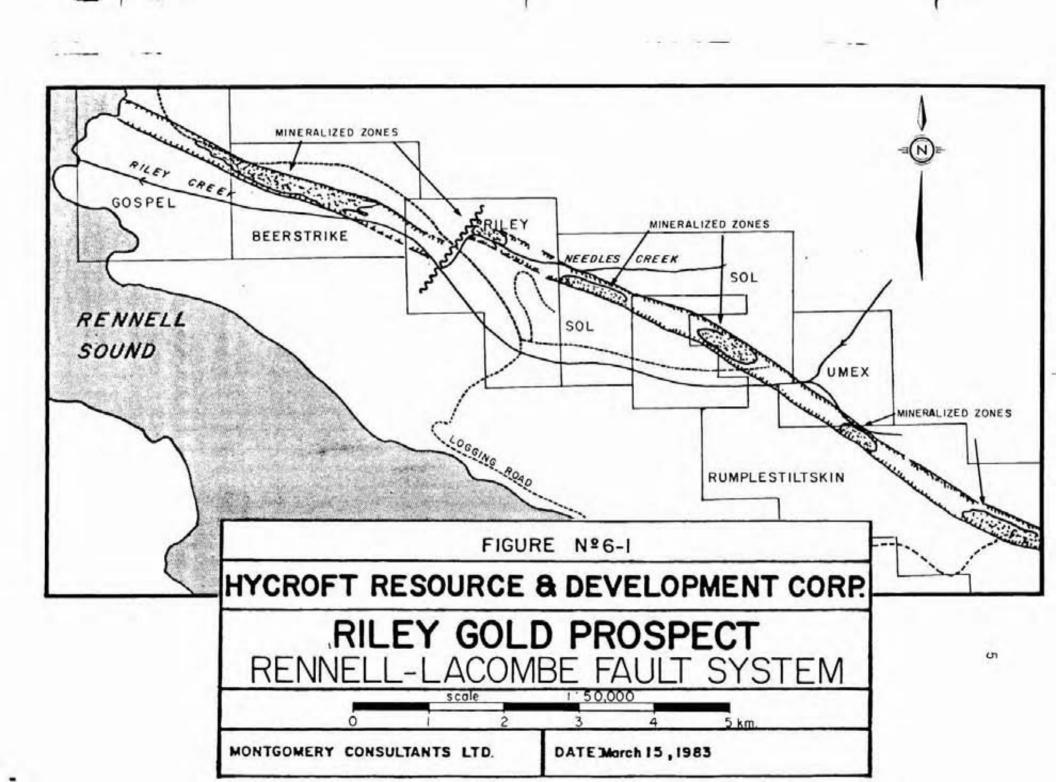
Name	Units	Record No.	Record Date	Expiry Date	Owner of Record
Riley 1	4	443	Oct 3, 1977	Oct 3, 1992	J.S. Christie
Riley 2	12	444	Oct 3, 1977	Oct 3, 1992	J.S. Christie

LOCATION AND ACCESS

The property is located north of the head of Rennell Sound on the southwest coast of Graham Island, Queen Charlotte Islands. It includes the middle part of Riley Creek and the lower part of Needles Creek drainages west of Old Baldy Mountain at elevations ranging from 30 to 500 m.

The property is readily accessible by private logging roads connecting with Queen Charlotte City and Port Clements. These roads are open to the general public after working hours and on weekends or by special arrangement.

Clear-cut logging has already been completed in two large areas on the property. Branch roads built in connection with this logging



provide good access although additional short roads would be necessary for drill sites.

TOPOGRAPHY AND VEGETATION

Riley and Needles Creeks are separated by a steep, heavily forested ridge reaching elevation of 400 m at the eastern property boundary. Outcrop is relatively abundant especially in tributary creeks draining the ridge and in Needles Creek. Needles Creek enters the broad valley floor of lower Riley Creek about 4000 m above its mouth. Sparse outcrops occur along Riley Creek and away from the creek the valley floor is mantled by alluvium and till which may be relatively thin. The floor and lower slopes of Riley Creek have been extensively logged but the ridges and Needles Creek Valley are covered with a fairly dense hemlock-spruce-cedar forest. Tree size is small by Queen Charlotte Islands standards and the forest is open with some windfall but relatively little underbrush.

GEOLOGY

Lithology

Regional mapping by Sutherland Brown 1968, B.C. Dept. of Mines Bull. #54, indicated the Needles Creek area to be underlain by Yakoun Formation of Jurassic age with Masset Formation of Tertiary age to the north. Riley Creek is underlain by Quaternary overburden with quartz diorite of Cretaceous age projecting under the overburden into lower Riley Creek Valley. The Masset Formation does not extend south to Needles Creek as indicated in Bull. #54. With the possible exception of

some dykes, no Masset rocks have been identified anywhere on the property. Limy argillites of the Kunga Formation of Upper Triassic age occur along the shore of Shields Bay and up along mountain slopes towards Riley Creek, but no Kunga outcrops have been seen in the Riley Creek drainage. The Kunga probably underlies parts of the Riley claims at a relatively shallow depth.

The Yakoun Formation is described (Bull. #54) as primarily a volcanic unit dominated by pyroclastic rocks but also including much volcanic sandstone, some conglomerate, shale, siltstone, and minor coal. Pyroclastic andesites are the most abundant rock type noted on the claims, with some massive andesite along the lower half of Needles Creek and some conglomerates and volcanic sediments occurring throughout the mapped area.

The lowermost outcrops mapped in Riley Creek and on the road to the south are uniform medium to coarse grained quartz diorites. These rocks are probably an extension of the pluton mapped south of this area by Sutherland Brown.

Numerous small weakly porphyritic felsite dykes occur within the Needles and Riley areas. Small, <2 mm, phenocrysts of quartz make up less than 2% of these rocks and all of these dykes contained disseminated pyrite up to 5%. It is probably significant that these pyritized dykes have not been observed outside areas of anomalous gold-arsenic-mercury geochemical response.

Reconnaissance mapping on a scale of 1:5000 is the most detailed geology done to date except for the current detailed work in the mineralized area.

12

Structure

The dominant structure on the property is a WNW trending fault system that appears to have strongly controlled alteration and mineralization. Other post-mineral faults of varying strikes have been observed within the Riley area.

The major fault system is not well exposed, but appears to be comprised of fault strands that trend from 110° to 160° with the most significant strands trending $130^{\circ} \pm 10^{\circ}$, such as along lower Needles Creek above the main road. Splays off these faults and subparallel faults make up the fault system.

Post-mineral faults have north to northeasterly strikes and are marked by narrow gouge and crush zones with carbonate veinlets, some bleaching, and some disseminated pyrite. Northeasterly faults appear to control most of the minor drainages on the north side of Needles Creek. The most significant of these appears to offset the geochem soil pattern about 500 metres in a left lateral sense. It passes just west of the Riley gold showing and is believed to offset the gold mineralization as well.

Alteration and Mineralization

a) <u>Regional</u>: Numerous zones of strong hydrothermal alteration with sulfide mineralization and related gold-arsenic geochem anomalies, and a few gold showings have been mapped within a 15 km segment of the Rennell-Louscoone fault system (Figure 6-1). This work has all been

done since 1977 and is available in assessment reports on filed with the Ministry of Mines. Two of the most interesting zones occur at the east and west boundaries of the Riley #2 claim on the Sol and Beerstrike claims respectively. On the Sol claims in upper Needles Creek, a strong zone known as the "gumbo zone" was identified and drilled by Chevron in 1980. A zone of heavy pyrite-arsenopyrite mineralization, in a clay-like gumbo zone with breccia textures has given rise to a strong gold geochemical anomaly in soils and silts about 1300 m x 300 m in size.

The gumbo appears to be derived from pyroclastics but also related to the faulting in a general way. Mineralization related to the faults may have interacted with specific pyroclastic units thereby producing the gumbo or alternatively may have reacted with ground prepared by brecciation associated with the faulting or a combination of both. This gumbo zone was intersected in drill holes C-80-2 and C-80-3, which are 350 metres apart and summarized as follows by Chevron Minerals:

Hole C-80-2

Hole C-80-2 was collared in gumbo and the first 30 m included numerous runs with very poor recovery. Accordingly, at the completion of the hole the first section was redrilled at a flatter angle. The recovery in this latter hole was close to 90%. The gumbo section consists of slightly altered pyroclastics with a variety of textures. These pyroclastics are followed by a section of more and less altered andesitic flows which include some strongly mineralized sections.

Geochem results for the first 32 m are anomalous in hole C-80-2 but for hole C-80-2A anomalous values for Au end at 24 m with a severe drop after 12 m. The range is 10-240 ppb. Many anomalous and highly anomalous results were returned from the section 130 m to 184 m and particularly from 142 to 178 m. High samples include 2650 ppb (142-144 m), 2000 ppb (150-152 m), 1400 and 1560 ppb (166-170 m). Towards the bottom of the hole the interval 210-216 m is anomalous for Au (105, 110, 30 ppb). Anomalous As is highly correlative with Au values with 10 samples being returned at 1000 ppm As, (the upper limit of detection).

Ag values show little variation from 0.2 oz/ton. Values higher than this were reported from sections which returned anomalous Au results. The highest value reported was 1.4 oz/ton (142-144 m).

Hg results show greater distribution of anomalous results over intervals which include significant values for Au and range up to 285 ppb Hg.

The interval 136-176 m averages 455 ppb or 0.014 oz/ton and the included intervals 136-154 m and 166-176 m average 619 ppb or 0.018 oz/ton and 690 ppb or 0.02 oz/ton respectively.

Hole C-80-3

This hole was collared in gumbo some 350 m east southeast of the previous set-up. To 128 m a vari-textured section of pyritic pyroclastic was cored followed by a section of more and less altered, mineralized andesitic flows to the bottom of the hole at 218 m.

A grey, soft, high-lustre mineral, logged as stibuite, was cored at 91.14 m. It is associated with calcite and quartz within coarse pyroclastics which are locally well mineralized with disseminated pyrite.

The stibuite and arsenopyrite are epigenetic. Mineralization is very similar in both style and content to that in hole C-80-2.

Anomalous geochemical values for Au occur principally in the intervals from 54-94 m and 182-216 m, with one very high result (72-74 m) being 3300 ppb. The range is from 5 to 3300 ppb. Anomalous As is again highly correlative with high Au; seven samples were returned at 1000 ppm As. The low As result returned was 2 ppm. Hg results show a similar distribution about high Au results as previous holes and virtually the entire length of C-80-3 is anomalous for Hg. The range is 20-590 ppb.

The interval 54-92 m averages 336 ppb, or 0.01 oz/ton and the included interval 54-74 averages 536 ppb or 0.016 oz/ton.

All geochemical work was done by Bondar-Clegg Ltd., North Vancouver, B.C.

On the Sol claims about 1.5 km further southeast along the same structure are the Courte antimony-gold showings. These showings have been known since the 1930s and were originally discovered by following a quartz-stibnite boulder train upstream to the mineralized area. Quintana Minerals Corp. mapped, trenched and sampled the main zone in 1974 and indicated a strongly mineralized zone some 70 m x 300 m in which the surface grade was estimated to be 0.04 oz/ton Au and 0.4% Sb. Subsequent drilling by Chevron in 1980 and 1981 indicated lower grades at depth.

On the Beerstrike claim to the northwest, a strong sulfide system some 400 m x 3000 m has been interpreted along a major west northwest trending shear structure. Although outcrop is sparse, widespread but discontinuous arsenic, mercury and spotty gold geochem response across the claim substantiates the interpretation. Mapped exposures of the sulfide system display striking carbonate-clay alteration with pyrite mineralization. Gold mineralization could well occur within this large sulfide system. In view of 95% overburden cover on the zone, it will be necessary to move to trenching, drilling, and geophysics to further explore the system.

Further northwest the Gospel property is situated on a probable extension of the alteration zone mapped on the Beerstrike claim. The Gospel property is a raw prospect with very minor outcrop in the area of interest. The occurrence of strong alteration in association with rhyolitic dykes, strong pyrite, scattered stibnite mineralization, and anomalous gold at Gospel Point just north of the projected Rennell fault system are encouraging geological features of the Gaspel claims.

On the Rumplestiltskin property southeast of the Courte showings, a strong alteration zone approximately 600 m x 125 m has been

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identified with coincident anomalous arsenic-mercury and weakly anomalous gold geochemistry. The alteration zone occurs on strike with the major zone of regional faulting and alteration, but the alteration is not continuous to the Courte showings. A separate zone occurs between the Courte and Rumplestiltskin mineralization and this was drilled by UMEX in 1981. Assay results are unknown.

b) Riley: The best known zone of mineralization occurs along the north side of lower Needles Creek where slopes are moderately steep and bedrock exposure is fair. This zone contains strongly bleached, highly altered rocks including pyroclastics and gumbo breccias similar to those at upper Needles. Strong pyrite mineralization arsenopyrite, and local hard silicification are associated. The Riley showing is strongly altered to sericite-clay-sulfide assemblages and prior to trenching sulfide was estimated to be 95% oxidized. Trenching to a depth of 1-1.5 metres produced samples of fresh unoxidized sulfide mineralization across the entire zone. Veinlets containing strong pyrite arsenopyrite occur parallel to the northwest trending fracture system. The projections of this structure east and west have not yet been determined exactly, but current mapping and geochemistry indicate that the zone of alteration expands uphill to the east. Anomalous gold values appear to be confined to smaller areas within the alteration system. To the west a fault is believed to offset the mineralized zone into a drift covered area along Riley Creek. Three small outcrops of volcanics have been located in that area and these display fringe type chlorite grade

alteration with weak patchy carbonate-clay-pyrite bleached zones. Existence of a major zone of alteration cannot be inferred from these exposures alone. The interpretation is based in part on the geochemical patterns, and strongly on altered outcrops which occur on strike to the west on the adjoining Beerstrike claim.

GEOCHEMISTRY AND ASSAYS

<u>General</u>: The current programme resulted in collection of 12 samples from the trenches which were analyzed for arsenic by atomic absorption and fire assayed for gold. Additionally 27 rock chip samples and 63 soil samples were obtained from the showing area and these were analyzed for arsenic by atomic absorption and for gold by neutron activation analysis. All assays and geochemical work was done by Chemex Labs Ltd., 217 Brookbank Ave., North Vancouver, B.C..

<u>Results</u>: Assay results from the Riley showing ranged from .003 to .036 oz/ton gold. Sample C51 the unoxidized equivalent of the original .4 oz/ton sample assayed .012 oz/ton gold. Some enrichment of gold is therefore suspected within the oxidized zone, although erratic distribution of gold within the system is also possible.

Geochem results show a fairly strong correlation of anomalous arsenic (+ 20 ppm) in soils with mapped alteration, but the higher gold values are restricted to areas with considerably higher arsenic values in soil. Soil sample results suggest that the gold mineralization is

restricted to relatively narrow zones within the system. Sample density is at present inadequate to indicate the degree of continuity of the gold mineralization within the system.

To the east, anomalous gold values in previous soil and silt indicate that the zone may persist for 500 m or more but the geochemical pattern is difficult to interpret as the alteration zone expands to the north and anomalous rock samples have been obtained higher on the hill. To the west, the zone is believed to be offset on one or more northeasterly trending left lateral faults such that it lies somewhere beneath the overburden on the flat valley floor of lower Riley Creek. The weakly anomalous gold in soils along the lower valley may possibly be an expression of this mineralized zone. Soils obtained in this area however are clearly not residual and include sandy fluviatile deposits and wet clays and till. Geochemical mobility of gold in such an environment would likely be minimal.

Arsenic appears to be an excellent indicator of mineralization in the area and in all cases the areas of strongest arsenic coincidence well with and contain all of the gold anomalies. The soil and silt arsenic anomaly along lower Riley is much stronger than the gold, probably due to the greater mobility of arsenic. It seems to enhance the lower Riley anomaly where gold alone might be suspect.

DIAMOND DRILL HOLE R-80-1 (by Chevron Canada Limited)

1. General

Drilling DatesAzimuthDipDepthLithologhyFeb 15-Feb 19045°-45°159.7 mAltered pyroclastics to 1101980m.Argillaceous units andpyroclastics to bottom.

The core drilled was BQ size (36.5 mm). After logging the core was split and sampled at 2 m intervals. All samples were analyzed geochemically for Au, Ag, Hg, As by Bondar-Clegg and Company Ltd. in North Vancouver.

Geochem results were derived using the following summarized procedures:

Arsenic: Perchloric, Nitric - Colourmetric Mercury: Controlled Aqua Regia - Closed cell atomic absorption Gold & Silver: Fire assay and Hot Aqua Regia - Atomic absorption

2. Description

This hole was collared southwest of the 0.40 oz/ton Au surface sample taken during early 1978. From the collar to 105 m agglomeratic flows were intersected followed by a section of pyroclastics with intercalated argillaceous units to 147 m followed by a second unit of agglomeratic flows to 160 m. Faults were penetrated at 80 and 110 metres. Mineralization of this hole is sparse to 110 m. From 110 m to 146 m pyrite as disseminated blebs and massive veins is a common feature. Very fine disseminated pyrite occurs in the porphyritic unit at the bottom of the hole.

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Pyroclastics and argillites within the second division were strongly mineralized with massive disseminated and fracture controlled pyrite.

Gold values returned were low with only 102-104 m (15 ppb), 110-112 m (30 ppb), 134-140 m (15, 35, 15 ppb) having values significantly above background (<5 ppb). As values were significantly above background (2-5 ppm) from 102-104 m (120 ppm), 110-116 m (17, 30, 11 ppm), 120-122 m (17 ppm) and from a section from 124-140 m (range 10-80 ppm).

Hg values begin high (130 ppb) and diminish gradually to 15 ppb at 60-62 m. An interval from 80-86 m has slightly anomalous values and from 100 m to the bottom of the hole at 159 m (range 15-125 ppb) is anomalous as well.

Hole R-80-1 was drilled to test a possible down-dip extension of the Riley showing mineralization. Unfortunately, the hole penetrated strong faults at 80 and 110 metres prior to reaching the projected mineralization and therefore, may have missed the intended target.

CONCLUSIONS

An interesting gold showing was discovered on the Riley #2 mineral claim in 1977. Subsequent work in 1979-80 including a single diamond drill hole have been inadequate to evaluate the showing or test for possible extensions of the gold mineralization.

Samples of fresh sulfide mineralization from the trenches yielded lower gold values than the discovery samples but strongly anomalous gold values were obtained throughout the trench. More detailed soil sampling is needed to determine the extent of the gold mineralization.

Geology on the Riley property and adjacent claims is of definite interest. The showing occurs in a zone of strong hydrothermal alteration in faulted sediments and pyroclastics with associated strong sulfide mineralization and co-incident gold-arsenic anomalies in soils and silts. Several other gold showings occur along this same structural zone and three of these have been drilled in recent years by Chevron and Umex. Economic gold deposits have not yet been identified but the Riley gold showing remains an attractive exploration target. It is a distinct possibility that the Riley showing represents a very high level in a gold system and that deeper drilling may be warranted.

RECOMMENDATIONS

Exploration of the Riley prospect should proceed in an orderly manner commencing with detailed geological and geochemical mapping and sampling, and hand trenching centred on the showing area, north of Needles Creek. A sample grid covering an area 700 m x 350 m would cover the soil anomaly and alteration system outlined by previous reconnaissance work and the orientation survey. Grid lines would be run at 50 metre intervals with stations and soil sample sites at 10 m intervals along the lines. A proton magnetometer survey would then be run on the same grid with more detailed readings in the showing area. A number of hand trenches would be made and sampled in the showing area and in other areas indicated by the mapping and sampling.

A review and compilation of all geological, geochemical, magnetometer and assay data would be made prior to specific recommendation of drill sites. It is anticipated that at least 2000 feet of drilling will be required to evaluate the direct projections of the showing. Additional footage would be required for a deeper test.

13

Respectfully submitted,

J.S. Christie, Ph.D.

STATEMENT OF QUALIFICATIONS

I, James S. Christie of Vancouver, British Columbia, do hereby certify that:

- I am a Professional Geologist residing at 3921 West 31st Avenue, Vancouver, B.C. V6S 1Y4.
- I am a graduate of the University of British Columbia, B.Sc., Honours Geology - 1965; Ph.D. Geology - 1973.
- I have practised my profession as a mining exploration geologist, continuously since 1965.
- I am a Fellow of the Geological Association of Canada.
- 5. I am a Member of the Geological Society of America.
- This report is based on my personal knowledge of the district, and mapping of the geology at the property.

James S. Christie, Ph.D.

STATEMENT OF COSTS

Geologists							
J.S. Christie	March 20-22, 1983	3	days	0	\$250	\$	750.00
W.A. Howell	March 19-22, 1983		days				1,000.00
M. Carr	March 20-22, 1983		days				600.00
S. Courte - Tr	enching March 19-22	, 1983 4	days	0	\$150		600.00
Meals and Acco	mmodation	14 wor	kdays	0	\$ 50		700.00
Truck Rental -		4	days	0	\$ 70		280.00
Plugger Rental	-				\$ 50		100.00
Chainsaw renta	1 -				\$ 15		30.00
Continental Ex	plosives						324.83
PWA - Airfares	- 4 men One way Sa	ndspit-Van.	+ fr	ei	ght		
	4764F, 4602F						718.60
	310787, 8310837, 83	10789, 8310	788				1,106.70
Fineline Draft		TOMO SA SAND					185.00
	sultants - re map s	urvey and r	eport	(attached)	1	3,558.10
Report - Geolo	gy and Geochemistry	- J.S. Chr	istie				1,000.00
						\$	10,953.23

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Hycroft Res. & Development Corp. c/o JMT Services Corp. 8827 Hudson Street Vancouver, BC

Invoice 83gC2 - #1

PROJECT: 830C2

PERIOD: March 16 - April 15, 1983

DATE: April 25, 1983

WORK DONE: Magnetic orientation survey and report.

PROFESSION	AL FEES: D.F. Symonds	1,561.00
	J.H. Montgomery	200.00
EXPENSES:	Airfare DFS-Exptransportation -miscellaneous Maps Report supplies Magnetometer rental Drafting Typing Geochem Photocopies/map repro. Courier	331.14
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