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GEOLOGICAL AND GEOPHYSICAL REPORT  
ON THE  
R.W.S. CLAIM GROUP  
INDIAN RIVER AREA

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,142**

GEOLOGICAL AND GEOPHYSICAL REPORT

ON THE

R.W.S. CLAIM GROUP

INDIAN RIVER AREA

VANCOUVER & NEW WESTMINSTER MINING DISTRICTS

BRITISH COLUMBIA

NTS 92G/10W

APPROXIMATE COORDINATES:

49°32' N 122°53' W

FOR

OWNER, OPERATOR - C. ROLSTON

AUTHOR - W.G. TIMMINS

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,142**

January 6, 1983

W.G. Timmins Exploration  
& Development Ltd.

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## SUMMARY

The RWS claim group consists of three claims, RWS 5, RWS 6, and Shear 3, totalling 58 units. These claims are contiguous and occupy both flanks of the Indian River valley, in the area of that river's confluence with Brandt Creek, some 40 km. northeast of Vancouver, B.C. The claim area lies a few km. south and east of the economically important Britannia mining camp.

The claim area is underlain by granodiorite and quartz diorite of the Cretaceous Coast Intrusives, and minor fracture-controlled copper mineralization has been reported within the claim group.

An airborne magnetic and VLF-EM survey was conducted over the area in October, 1982 by Columbia Geophysical Services Ltd. The results of this survey show a magnetic pattern consistent with the known geology, as well as a number of VLF-EM lineations that are interpreted as being due to shear zones. A reconnaissance geological, geochemical and prospecting program is recommended.

## INTRODUCTION

During the month of October, 1982, Columbia Geophysical Services Ltd. conducted an airborne magnetic and two-channel VLF-EM survey over the RWS claim group. This property consists of 58 units and covers both flanks of the valley of Indian River, some 40 km. to the northeast of the city of Vancouver.

The purpose of this report is to discuss results of this survey, analyse them in the light of published geologic data and to recommend a possible program of follow-up ground exploration.

## PROPERTY

The RWS claim group consists of 3 contiguous modified grid claims, RWS 5, RWS 6 and Shear 3. These total 58 units, of which a few units may not be in good standing due to overlap with adjacent older claims. Such overlap is intentional to ensure against possible fractions. These claims are located within the Vancouver and New Westminster Mining Districts of British Columbia in the area covered by claim sheet 92G/10W, and are listed below with their record numbers and anniversary dates:

Name	No. of Units	Record No.	Anniversary Date
RWS 5	20 (4Nx5W)	1367	Nov. 30, 1982
RWS 6	20 (4Nx5W)	1368	Nov. 30, 1982
Shear 3	18 (6Nx3W)	1338	Nov. 2, 1982

#### LOCATION AND ACCESS

The claim area is in southwestern British Columbia, on the mainland, some 40 km. north and slightly east of the city of Vancouver, and occupies both flanks of the Indian River valley in the vicinity of that river's confluences with Brandt Creek and with Forestry Creek. Indian River is the major drainage in the area, and it flows into Indian Arm, the northerly extension of Burrard Inlet. The claim area is approximately centred on a point at  $49^{\circ}32'N$ ,  $122^{\circ}53'W$ .

Road access to the property is available by way of a logging road out of the town of Squamish, B.C., some 50 km. north of Vancouver on Highway 99.

#### TOPOGRAPHY, VEGETATION AND CLIMATE

The property is in the Coast range physiographic region, a mountainous area characterized by uneven craggy ridges interrupted by deep transverse saddles and steep-walled narrow

I.R. 2.

I.R. 3

ALSTER ENERGY

PAN ALASKA RESOURCES SA

ABILENE OIL & GAS

CHEVY OIL CORP.

RWS GROUP

RWS 8 1367(H)

SHEARS 1330(I)

RWS 6 1368(I)

Norton L.

Forestry Cr.

Meallies Cr.

Cr.

Nison Cr.

49° 31'

WATERSHED

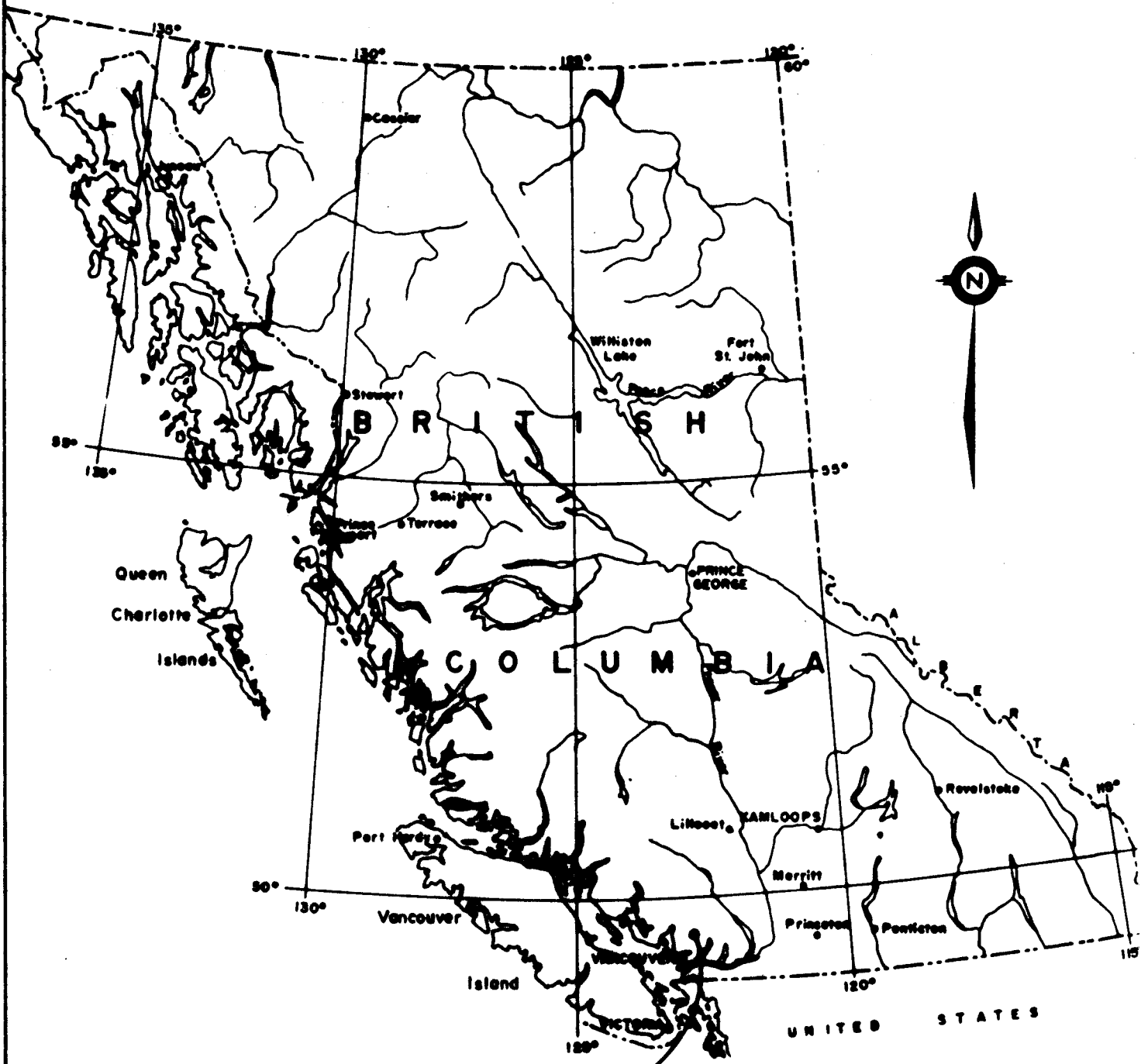
NO

STAKING



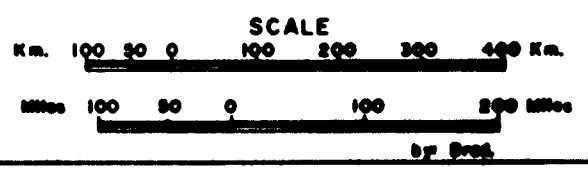
122° 53'

RWS GROUP  
PROPERTY LOCATION MAP  
SQUAMISH AREA-NEW WEST. M.D.  
N.T.S. 92 G/10 W B.D.S.



RWS GROUP

### PROPERTY LOCATION MAP





valleys. The relative relief in the claim area is about 1,000 meters, with an elevation of 30.5 meters on Indian River at the south boundary of RWS 6 and an elevation of 1,067 meters on the northwest corner of RWS 5.

The major valleys and principal tributary valleys are U-shaped in cross section, indicative of their glacial origin. The walls of these major valleys are furrowed by the V-shaped gullies of numerous run-off streams.

Indian River has a gradient of about 9 meters per kilometer. Brandt Creek and Forestry Creek tributaries have an average gradient of 284 meters per kilometer.

The area is heavily forested with Douglas fir, cedar, and spruce, except on the higher peaks where alpine vegetation prevails, or in the lower valleys which have been largely logged off. The logged-off areas soon become densely overgrown with shrubs, alders and young trees.

The climate in the area is moderate, with cool winters and warm summers and generally heavy precipitation. In winter, a heavy snowpack can build up in the higher areas, but the lower boundary of the snowpack can vary greatly from year to year. The major rivers flow all year long.

### POWER, WATER AND SUPPLIES

A major transmission line crosses the property along the Indian River valley, but it may be impossible to tap into it. Power for exploration camps could best be provided by portable generators. The creeks in the area may have potential for small-scale hydro-electric development.

Adequate water for any phase of exploration and development is readily available from any one of a number of creeks within the claim area.

Fuel, groceries and hardware are available in Squamish, some 30 km. from the property by way of a 4 wheel drive logging road. Anything not available in Squamish can be had in Vancouver, which is less than one hour from Squamish on a good highway.

### HISTORY

The history of the area dates back to 1898 when Oliver Furry and associates discovered and staked extensive copper showings which later became the Britannia mining camp. The Britannia camp produced, from 1905 to 1974, 55 million tons of ore grading 1.1% copper, 0.65% zinc, 0.2 oz/ton silver and 0.02

oz/ton gold. This ore came from a large number of separate orebodies within the Britannia shear zone.

The discovery of the Britannia camp sparked a flurry of prospecting both to the east and west. A number of copper showings were discovered between 1908 and 1911 in the Indian River valley, near the Stawamus -- Indian River divide, and also on Mt. Baldwin near the headwaters of Raffuse Creek. The Howe Sound Company, which controlled the Britannia mine, acquired many of the Indian River showings at this time. The showings in the Raffuse Creek area called the McVicar showings, were optioned by various companies including Consolidated Mining and Smelting (Cominco), and are presently held by Kidd Creek Mines Ltd.

Maggie Mines Ltd. holds a large property straddling the Stawamus River -- Indian River divide, which covers copper-lead-zinc showings discovered in 1976 in the pass between Indian and Stawamus rivers. A 1982 discovery by Maggie, about one kilometer southeast of the pass, on the southwest side of the Indian River valley, consists of copper-zinc mineralization with considerable values in gold. This is significant in that gold has not been of major importance in previously known deposits in the area, including the Britannia mine.

Minor, sporadic exploration work has been done on other copper properties near Ray Creek on the lower Stawamus River, near Martin Creek in the middle section of the Mamquam River, and south of Alpen Mountain at the headwaters of the Mamquam River.

The claim area has been previously staked and abandoned, but there is no assessment work on record.

#### REGIONAL GEOLOGY

The area is underlain by rocks of three major units. The oldest of these are metasedimentary and metavolcanic rocks of Jurassic age, designated as the Gambier Group by the G.S.C. The Gambier group exists as a number of roof pendants on the quartz diorites, granodiorites and related rocks of the Cretaceous Coast Range intrusives.

Both these older groups are overlain by lavas of the Garibaldi Group, of late Tertiary to Recent age. Many steeply inclined dykes of Garibaldi Group rocks cut the older rocks over a wide area.

Significant mineralization in the area appears to be confined to Gambier Group metavolcanics of rhyolite to dacite composition.

These are associated with argillites, cherts, and minor anhydrite and barite.

#### GEOLOGY OF THE PROPERTY

Geological Survey of Canada map 1151A, 1964, entitled Geology, Pitt Lake (1 inch to 4 miles), shows the area of the property to be underlain by granodiorite and quartz diorite, and not by rocks of the Gambier Group. However, owing to the small scale of the mapping and the difficulty of access in the terrain, the possibility exists that small bodies of Gambier Group rocks may lie within the claim area.

A mineralized quartz vein in intrusive rocks is reported by E. Dodd, geophysical operator, occurring near Forestry Creek within the claim area. He describes this vein as striking N - S with a 30 degree westerly dip, and that it is 8 - 12" in width and 20 feet in length, open on both ends. A selected grab sample from this vein was assayed with the following results: 1.74% Cu, 0.01% Zn, 0.78 oz/ton Ag, 0.004 oz/ton Au. The area has not yet been visited by a geologist on behalf of the owner.

## GEOPHYSICAL SURVEY

### INTRODUCTION

During the month of October 1982, Columbia Geophysical Services Ltd. conducted a detailed low-level combined airborne magnetic and VLF-EM survey over a number of properties in the Indian River area. The RWS claim group was among those covered by the survey. A total of 58 line kilometers was flown over the claim group.

### Survey Procedures

The survey was contour flown at 75 meter elevation intervals. The mean bird terrain clearance was 50 meters. Navigation was visual, using 1:50,000 scale N.T.S. maps blown up to 1:10,000. For ease of reading, water features on these maps were coloured in blue, and topographic highs were outlined in orange and red. The flying was difficult, due to the rugged and varied terrain, but the chief navigator, Mr. Lloyd Brewer, who had previously done much of the claim staking in the area, was able to draw on his experience to overcome numerous navigational pitfalls. He carried out his duties in a thoroughly diligent and professional manner.

Aerial platforms used to conduct this survey were Bell Jet Ranger III helicopters owned and operated by Quasar Aviation and Corporated Helicopters Ltd. The pilots were Mr. Dave VanPatten and Mr. Jim Logue, who were chosen over other operators in the province because of their rotary-wing experience and their familiarity with the mountainous terrain east and west of Howe Sound.

Mr. Eugene Dodd, President of Columbia Geophysical Services Ltd., was the instrument operator and project supervisor.

A two meter bird, specifically designed for the Squamish airborne project, was fitted with a magnetometer coil and two omnidirectional EM receivers and towed beneath the helicopter on a 10 meter cable.

Airspeed was a constant 60 K.P.H. Creek valleys and canyons were penetrated thoroughly. The slow airspeed provided safety, detailed coverage of boxed-in areas, and consistency of data retrieval, which is critical in rugged terrain. Increased airspeed would increase the inconsistency of the results.

The project supervisor, Mr. Dodd, has over 14 years of experience in conducting aerial magnetic, electromagnetic,

and radiometric surveys from fixed and rotary wing aircraft, under all types of terrain conditions.

### Instrumentation

#### Magnetic Survey

The magnetic data are detected using a nuclear free precession proton magnetometer, manufactured by Sabre Electronic Instruments Ltd., of Burnaby, B.C. The magnetometer measures the total count of the earths' magnetic field intensity with a sensitivity of one gamma. The data are recorded on magnetic tape and a 12 cm. analog strip chart.

#### VLF-EM Survey

A two frequency omnidirectional receiver unit, manufactured by Sabre Electronic Instruments Ltd., of Burnaby, B.C. is used for the VLF-EM survey. The transmitters used are NLK Arlington (Seattle) Washington, operating at 24.8 KHz, and NSS Cutler (Annapolis) Maine, transmitting at 19.0 KHz. These signals are used due to their ideal orientation with respect to north-south and east-west geological structures, and their good signal strengths. The measurement taken during the survey is the variation in the horizontal component of the signal field strength.



Data Reduction and Compilation

The observed magnetic total field was recorded on analogue strip charts. These were played back together with audio recordings containing fiducial markers, and the fiducial markers were transferred to the strip charts. The fiducial markers were identified with topographic features along the flight lines.

Each flightline within each survey map-area was digitized using a Houston Hipad digital digitizer, and the data was stored on 5¼ inch microcomputer diskettes.

The fiducial marker locations, and flightline paths between fiducial markers along non-linear flight lines, were digitized with an accuracy of  $\pm 12.5$  meters.

After merging the flightline information with the flightline location coordinates, an equispaced map grid matrix was computed. The total magnetic field was interpolated at regularly spaced positions every 125 meters from the observed data. The interpolation method consisted of a linear skew norm method based on the potential field equation. All computations were completed on an OTRONA ATTACHE micro-computer.

The contour plans of the total magnetic field were generated using a computer printer plot contouring procedure. The accuracy of contour locations is believed to be  $\pm$  16 meters. The final contour plans were traced from the printer plot contour plans onto draughting film, and VLF-EM field strength peaks and geological information were superimposed.

### Survey Results

The final map derived as explained previously is included as an appendix. The lineations shown are those interpreted by the staff of Columbia Geophysical Services Ltd. Areas of higher magnetic intensity are shaded to help improve the clarity of the map.

Magnetic intensity varies from 1,400 to 2,600 gammas for a magnetic relief of about 1,200 gammas. Magnetic highs are centered on the north central, east central, and southeastern parts of the claim area, where quartz diorite is indicated on the geologic map. Those parts of the claim area which are mapped as underlain by granodiorite have lower magnetic intensities.

There are a large number of one-channel VLF-EM anomalies, and about four two-channel anomalies. Two VLF-EM linears

have been interpreted for NLK (24.8 KHz, Seattle) and one for NSS (19.0 KHz, Annapolis). These linears all have a generally southeasterly trend.

### Interpretation of Survey Results

The most likely explanation of the observed magnetic pattern is simply differentiation within the Coast Intrusive rocks. The magnetic highs correspond quite well with the map pattern of the quartz diorite within the claim area, with the area of lower intensity fitting fairly well with the map pattern of granodiorite. Some of the more intense highs could conceivably be associated with plugs of diorite, or with dykes of Tertiary andesite.

The most likely explanation of the VLF-EM lineations is that they are due to a southeasterly-striking fault or faults related to the Indian River shear zone. E. Dodd of Columbia Geophysical Services Ltd. does report a shear zone coincident with the northerly of the two NLK lineations.

CONCLUSIONS AND RECOMMENDATIONS

The RWS claim group appears to be underlain wholly or nearly so by granodiorite and quartz diorite of the Cretaceous Coast Intrusives. Minor fracture-controlled copper mineralization is reported in the western part of the claim area.

The interpretation of the results of the geophysical survey agrees with the geology of the property so far as it is known, and suggests that the northeasterly part of the claim area may be traversed by one or more shear zones related to the Indian River shear zone.

Rocks of the Jurassic Gambier Group, which are the host rocks to the major mineral occurrences in the district, are not known to exist in the claim area, however, it is possible that small bodies of these rocks may exist in the northeastern part of the claim area, associated with the shear zone.

A logical plan for follow-up work on this property would consist of geologic mapping, prospecting, and a reconnaissance geochemical survey with the objectives of examining reported mineralization and of searching for hitherto unreported bodies of Gambier Group rocks within the claim area. Collection

and analysis of stream sediments would form the largest part of the geochemical work, with lesser amounts of soils and rocks being handled. At the discretion of the geologist in charge of the field program, a grid-controlled soil sampling survey could be carried out over one or more restricted areas within the claim group. The majority of the prospecting work should be concentrated in the northeastern portion of the claim area.

The work program is expected to require about 10 days work on the part of a geologist and two assistants, as detailed in the following cost estimate.

ESTIMATED COST OF PROGRAM

Geologist for 10 days @ 200 per day	\$2000
Two assistants for 10 days @ 100 per man	2000
Groceries and supplies @ 40 per man/day	1200
4x4 rental 10 days @ 50 per day	500
Fuel for 10 days @ 20 per day	200
Miscellaneous camp costs	200
Mobilization and demobilization from Vancouver	300
Analyses 200 samples @ 10 per sample	2000
Geological supervision and report preparation	2500
	<u>10900</u>
Contingency @ 10%	<u>1090</u>
Total	\$11990

Further work, if any, would be contingent upon the results of the above program.

Respectfully submitted,

W.G. Timmins Exp & Dev Ltd

W.G. Timmins, P. Eng., P. Geol.

**W. G. TIMMINS EXPLORATION & DEVELOPMENT LTD.**  
**CONSULTING GEOLOGISTS**

CERTIFICATE

I, WILLIAM G. TIMMINS maintaining offices at #203, #4 Parkdale Crescent N.W., Calgary, Alberta do hereby certify that:

1. I am a geologist having been practising my profession for eighteen years.
2. I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario and have attended Michigan Technological University, Houghton, Michigan.
3. I am a member in good standing of the Association of Professional Engineers of British Columbia and of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I have no interest direct or indirect in the property or securities of the R.W.S. Claim Group, nor do I expect to receive any such interest.
5. This report is based on a study of private, government and published reports and maps, and a low-level combined airborne magnetic and VLF-EM survey done by Columbia Geophysical Services Ltd.

Dated at Calgary, Alberta January 6, 1983:

W.G. Timmins, P.Eng., P.Geol.  
W.G. Timmins Exploration  
& Development Ltd.

REFERENCES

Roddick, J.A.: Pitt Lake Map-Area

Geological Survey of Canada Memoir 335, Map 1151A, 1964

**W. G. TIMMINS EXPLORATION & DEVELOPMENT LTD.**

**CONSULTING GEOLOGISTS**

APPENDIX I



APPENDIX II



Trans Arctic Explorations  
 #1807 - 1450 W. Georgia St.,  
 Vancouver, B.C.  
 V6G 2T8

852 E. Hastings St., Vancouver, B. C. V6A 1R6  
 Telephone: 253 3158

File No. 82-1426  
 Type of Samples Rocks  
 Disposition \_\_\_\_\_

# ASSAY CERTIFICATE

No.	Sample	Cu%	Zn%	Ag oz/ton	Au oz/ton				No.
1									1
2									2
3									3
4									4
5									5
6									6
7									7
8									8
9	FOR-1	1.74	.01	.78	.004				9
10									10
11									11
12									12
13									13
14									14
15									15
16									16
17									17
18									18
19									19
20									20

All reports are the confidential property of clients.

DATE SAMPLES RECEIVED Oct. 26, 1982

DATE REPORTS MAILED Nov. 1, 1982

ASSAYER  
 =====

**DEAN TOYE, B.Sc.**  
 CHIEF CHEMIST  
 CERTIFIED B.C. ASSAYER

APPENDIX III

COST STATEMENT

Cost of the Airborne Survey flown is \$100 per kilometer. A total of 58 kilometers for this project.

\$5,800.00

