



PLACER DEVELOPMENT LIMITED

GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL  
REPORT ON THE GOSPEL GOLD MINERAL CLAIMS

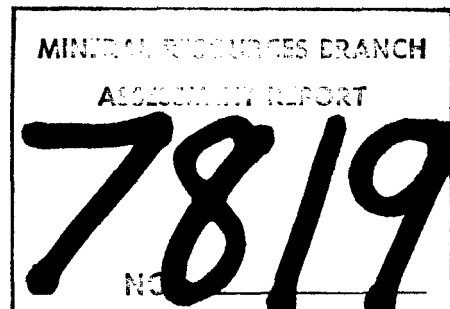
53°24'N., 132°31'W

N.T.S. 103-F-7/8

SKEENA MINING DIVISION

OPERATED BY: Placer Development Limited  
BY: W.S. Pentland

January, 1980



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STATEMENT OF EXPENDITURES

The following expenditures were incurred for geological mapping, soil sampling and geophysical surveying on the Gospel Gold mineral claims during the periods August 4-7 and November 22-27, 1979.

SALARIES

M. BOYD	11 Days @ \$40.00/day	\$440.
B. QUENVILLE	5 Days @ \$40.00/day	200.
J. THORNTON	6 Days @ \$125.00/day	750.
C. HARIVEL	5 Days @ \$165.00/day	825.
W. PENTLAND	10 Days @ \$175.00/day	1750.

TRANSPORTATION

PWA BETWEEN VANCOUVER-SANDSPIT	845.
TRANS-PROVINCIAL AIRLINES	91.
BUDGET VAN RENTAL	184.
TILDEN TRUCK RENTAL	213.
TAXIS	27.

FREIGHT ON EQUIPMENT AND SAMPLES - PWA	59.
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HOTEL, MOTELS AND FOOD	870.
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ASSAY CHARGES - Au - 179 SAMPLES @ \$3.50	626.
Hg - 176 SAMPLES @ \$3.50	616.
As - 67 SAMPLES @ \$3.00	201.

MAP PREPARATION - DRAFTING - 4 DAYS @ \$65.00/DAY	260.
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REPORT PREPARATION - 5 DAYS @ \$150.00/DAY	<u>750.</u>
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TOTAL	\$8707.
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INTRODUCTION

This report covers a reconnaissance geological, geochemical and geophysical program for gold mineralization on the Gospel Gold #1 and #2 mineral claims located in the Queen Charlotte Islands. The claims are on Rennell Sound on the west coast of Graham Island. They are in the Skeena Mining Division.

The area is accessible by logging road from Sandspit which lies 30 miles to the southeast.

The Gospel Gold #1 and #2 claims consist of 16 and 12 units respectively and are owned by J.M.T. Services Corp. They are held under an option agreement by Placer Development Limited. The claims were located in 1979 on the basis of geology and stream silt sampling.

Information on known gold deposits in the Queen Charlottes indicate a hydrothermal origin, a structural association with major faults and a geochemical association with mercury and arsenic.

The work on the property was done during two time periods. It was initially thought that a major fault following the trend of Riley Creek struck northwesterly across the property. A later study of air photos indicated that lineaments in the area of the claims had swung to an east-west strike and the zone of prime interest could be to the south of the earlier work. A second grid was therefore established.

The two chain and compass grids total approximately 8000 meters. These lines were used for mapping, soil sampling and an electro-magnetic survey.

GEOLOGY

Examination of the property was based in part on the premise that a major fault, favorable for mineralization and following the trend of Riley Creek struck northwestward across the Gospel Gold claims. The Courte antimony property for example, is located in a crushed zone on Riley Creek four (4) miles southeast of the Gospel Gold claims. However, a study of the air photos indicates that in the area of the Gospel claims, the lineaments have swung to an east-west strike and the Riley Creek fault could lie to the south on the Gospel Gold #2 claim.

Mapping was done along the grid lines and logging roads although few outcrops were found on the lines. Rock specimens were collected and where sulphides were present samples were taken for assay.

The claims are underlain by the Paleocene-Eocene? Masset Formation volcanics and a syntectonic pluton of dioritic rock possibly Jurassic in age. The pluton, as mapped by the B.C. Dept. of Mines, is centered to the southwest under and south of Rennell Sound.

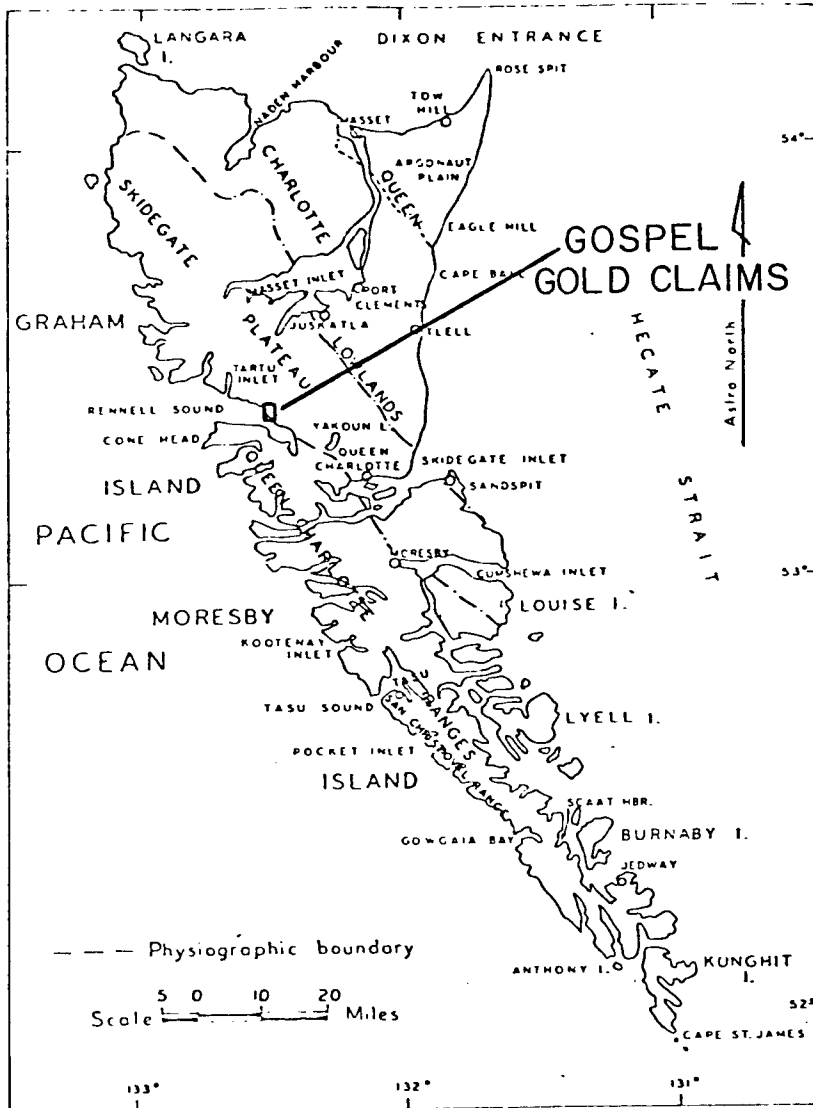
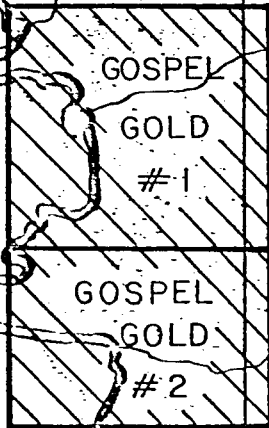


Fig. 1. Index map of the Queen Charlotte Islands.

# GRAHAM

RENNELL  
SOUND

GAZ: 29-1-42



GOSPEL (G)  
GOSPEL I

GOSPEL PT.

A-00892

(6)

Riley

Creek

Trail

A-00892

## Shields Bay

KNEEDEEP

(6)

RICHARDSON HEAD

Clonard Bay

DAWSON HD.

SHIELDS I.  
A-00892

Ellis Bay

CLAPP

Givenchy Anch.

D  
E  
E

FIGURE 2

PLACER DEVELOPMENT LIMITED

## CLAIMS MAP

SCALE 1" = 1 MI.



NOV. 1979.

W.S.P.

N

The Masset Formation is believed represented by the Tartu Facies which is a mixture of basalt-andesite flows and rhyolite ash flows and tuffs.

Most of the outcrops occur on the Gospel Gold #1 claim. In the area north of the road and extending northwest beyond Gregory Creek the rocks are mainly rhyolite tuffs. To the northwest of this area the outcrops are mostly basalt and andesite flows.

A zone of hydrothermally altered pyritic rhyolite tuffs extends from 200 meters southeast of the mouth of Gregory Creek to 500 meters northwest of the creek. Within this zone the tuffs are soft, bleached white and, in the area immediately northwest of Gregory Creek, intensely brecciated. Pyritic content is variable with patches in the breccia containing up to 25 percent. Trace amounts of stibnite has been noted in this area.

Shears, contacts and dikes in the area have a general northeasterly strike. To the west the altered tuff zone is in contact with the dioritic pluton. The contact appears in part to be a strong northeasterly striking fault. A few small quartz veins containing erratically distributed pyrite were noted in the intrusive to the west of the altered rhyolite tuff.

A further point of interest is a small coarse grained diorite plug located to the south of Gregory Creek and the altered tuff zone.

Three pyritic rock samples collected from the altered tuff zone were found to be weakly anomalous in gold, mercury and arsenic.

#### GEOCHEMICAL SURVEY (see appendix for analytical procedures)

A total of 179 soil and 10 rock samples were collected and geochemically assayed in the Placer Development Laboratory in Vancouver for gold and mercury. Some of the samples were also checked for arsenic content by Chemex Labs Ltd.

Soil samples from the north grid centered on the logging road were taken at 50 meter intervals while those from the southern grid were at 30 meter intervals. All samples were taken from the "B" horizon using an auger.

The terrain ranges from swamp and old beaches to tree covered ridges up to 100 meters in elevation. The latter are almost totally overburden covered although the layer is often quite thin.

The samples collected came from depths of 12 to 95 cms with a rough average of 40 cms. In the laboratory the soils were sieved to -80 mesh and the rocks were pulverized to -100 mesh or finer.

In assessing the results gold can be considered weakly anomalous at 0.03 ppm, arsenic at 100 ppm and mercury at 500 ppb. On this basis the area of the soil grids is completely negative for gold.



GEOPHYSICAL SURVEY

VLF-EM Surveys were undertaken on the property at two different times over the two areas. Earlier in 1979, the Crone Radem unit (see Appendix for instrument specifications) was used on lines 100 meters apart on the northern grid at a station spacing of 50 meters. The later survey over the southern part used a 10 meter station spacing on lines 250 meters apart.

Relative horizontal field strength, tilt angle and residual field strength measurements were recorded at each station using the primary field generated at the Seattle communications facility (NCK-18.6kHz). The first two measurements are complementing, the third gives a measure of the conductivity of the surface layer and is generally not interpreted except when the surface layer is quite conductive. A good conductor will provide a strong HFS anomaly at the point of maximum slope on the tilt angle profiles.

The data was subject to "Fraser" filtering in order to remove the strong topographic contribution to the raw VCF data.

Raw data (as profiles) and the filtered data (in contour form) were plotted and line-to-line correlations were attempted. \*(Several trends were observed to be reasonably consistent on the south half of the area). A line spacing of 250 meters is too far for definitive line to line continuity, so signal strength, position and shape were used to make the observations.

Three of these linears appear to have a surface expression as well and are interpreted as normal faults. They all trend approximately E.W. on the east side of the property and curve to WNW on the west side of the area. Each lines up with projections or continuations of the linear edges of Gospel point and the bays in the area. The strongest goes through the south side of the small bay, a weaker trend is heading for the north side of the same bay.

Reading everything possible in the 50 meter data and merging the two surveys provides the suggestion that a strong feature lies on the boundary of the surveys and that it trends toward the scarp on the north side of Gospel point.

There may be cross cutting features but the wide line spacing precludes any interpretation. Faults orthogonal to the trends shown are transparent to the Seattle signal and therefore not seen by the VLF surveys.

Conclusions

1. The zone of hydrothermally altered volcanics in the west central sector of the Gospel Gold #1 claim carries very low and sporadic values in gold.
2. The results of the soil sampling on the line grids has been completely negative for gold.

3. <sup>P.7</sup> Air photos show a weak east-west lineation on the Gospel Gold #2 claim indicating a change in strike of the lineaments. To the east of the property the strike is northwesterly.
4. The electro-magnetic VLF survey indicates several linears trending east-west across the Gospel Gold #2 claim.

*W. Pentland*

W. Pentland


WSP/cs

STATEMENT OF QUALIFICATIONS

I, W.S. Pentland, with a business address in Vancouver, British Columbia, and a residential address in Delta, British Columbia, hereby certify that:

1. I am a geologist graduating from the University of British Columbia, Vancouver, British Columbia, with a B.A. in 1951.
2. From 1951 to 1979, I have worked in mineral exploration in various parts of Canada.
3. I personally examined the area and have assessed the results of the work.

Respectfully submitted,



W.S. Pentland

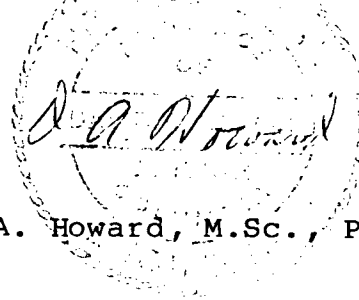
Dated this 5 day of February  
1980, Vancouver, British Columbia

CERTIFICATION

I, D.A. Howard, with a business address at 700-1030 West Georgia Street, Vancouver, British Columbia, do hereby certify that:

1. I am a professional engineer registered in the Province of British Columbia.
2. I have examined the report by W.S. Pentland, on work done in 1978, on the Gospel Gold Claims,  $53^{\circ}24'N.$ ,  $132^{\circ}31'W.$ , in the Mining District.
3. To the best of my knowledge the acquisition of the data and expenditure claimed for the performance of work is correct.

Respectfully submitted,



D.A. Howard, M.Sc., P. Eng.

Dated this *8* day of February  
1980, Vancouver, British Columbia

APPENDIX

Geochem Method for Au

1. Weight 3 g sample into porcelain crucible and heat at  $600^{\circ}$  for 1-1/2 hrs.
2. Cool and transfer to a 16x125 mm test tube.
3. Add 3 ml HBr solution (1/2%  $\text{Br}_2$  in conc HBr 48%) and allow to stand overnight.
4. Add 3 ml  $\text{H}_2\text{O}$  and 3 ml MIBK (methylisobutylketone) and shake in shaker for 10 min.
5. Centifuge and transfer only the top organic layer to a clean 16x125 mm test tube.
6. Add 5 ml 1% HBr in  $\text{H}_2\text{O}$  and shake by hand for 20 to 30 sec.
7. Read top layer on A.A. (detection limit 0.02 ppm)  
Standards for Au are made by adding 30 ml HBr solution, 30 ml  $\text{H}_2\text{O}$  0.3 ml of 100 Ng Au sol. and 30 ml MIBK in sep. funnel and shaking by hand for 4 min. (= 1 ppm standard).

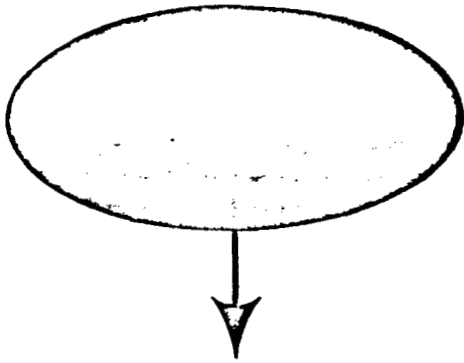
APPENDIX

Chemex Method for As Geochem

1. 1 g of sample is weighed into test tube and digested with perchloric and nitric acid for 3 hrs. Solution is diluted to 10 ml.
2. An aliquot of this solution is taken and to that aliquot is added a solution of KI (potassium iodide) to reduce the arsenic to  $As^{3+}$ .
3. This solution is put into the reaction vessel of a hydride generation system for Atomic Absorption analysis. This procedure involves adding a measured amount of  $NaBH_4$  (sodium borohydride) solution containing a small amount NaOH (sodium hydroxide) to the reaction vessel. This liberates the arsenic gas and it is swept into a quartz absorption cell which is electrically heated. Maximum absorption is obtained for each sample. Results are standardized against known amounts of arsenic.

This method briefly described is done by A.A. analysis using a hydride generation system.

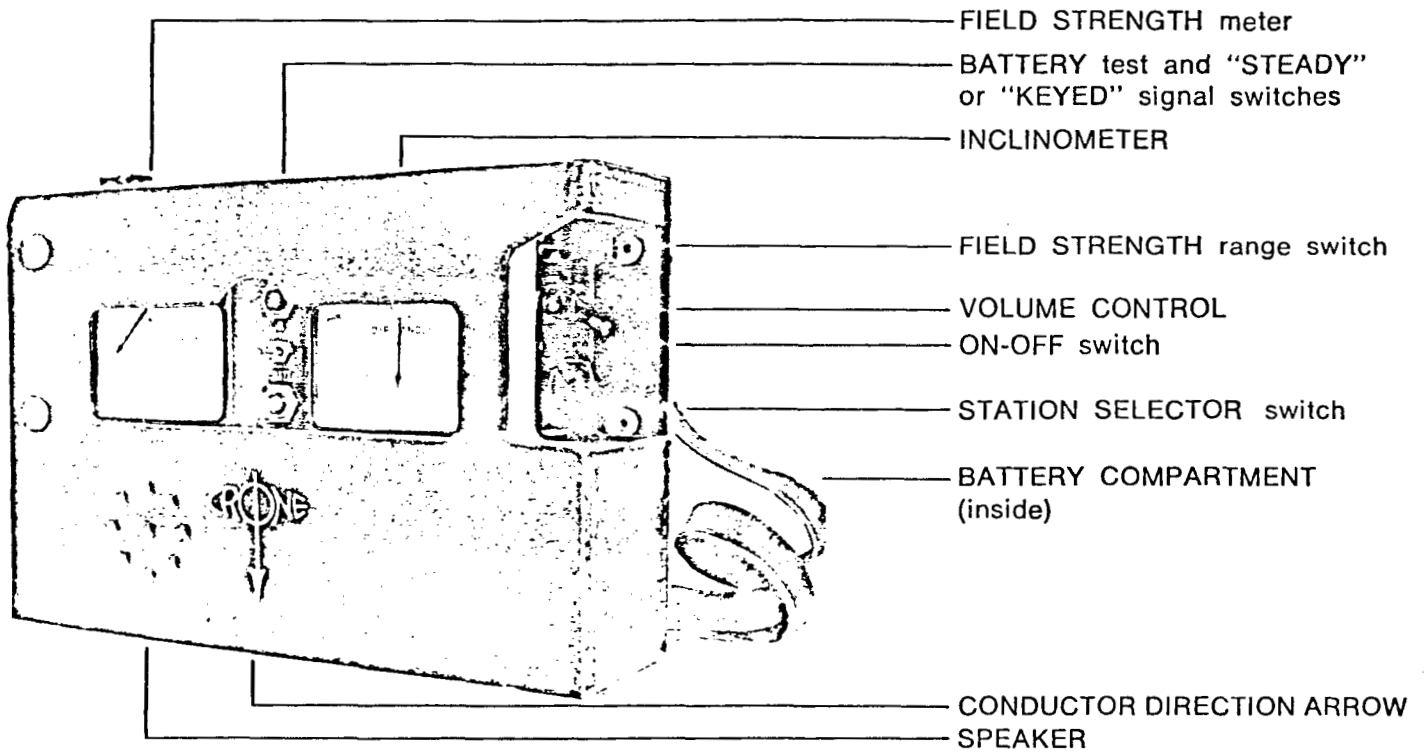
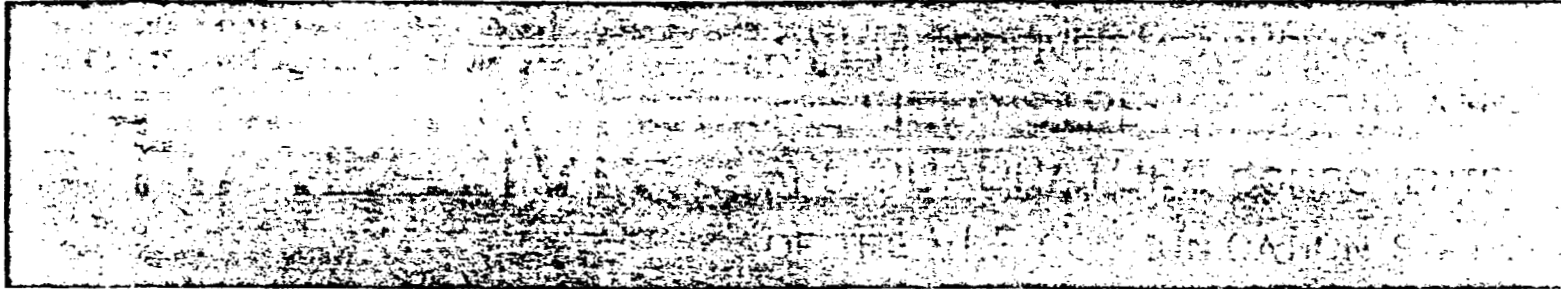




# CRONE GEOPHYSICS LIMITED

3607 WOLFEDALE ROAD,  
MISSISSAUGA, ONTARIO,  
CANADA.

Phone: (416) 270-0096



This is a rugged, simple to operate, ONE MAN EM unit. It can be used without line cutting and is thus ideally suited for GROUND LOCATION OF AIRBORNE CONDUCTORS and the CHECKING OUT OF MINERAL SHOWINGS. This instrument utilizes higher than normal EM frequencies and is capable of detecting DISSEMINATED SULPHIDE DEPOSITS and SMALL SULPHIDE BODIES. It accurately isolates BANDED CONDUCTORS and operates through areas of HIGH HYDRO NOISE. The method is capable of deep penetration but due to the high frequency used its penetration is limited in areas of clay and conductive overburden.

The DIP ANGLE measurement detects a conductor from a considerable distance and is used primarily for locating conductors. The FIELD STRENGTH measurement is used to define the shape and attitude of the conductor.



## SPECIFICATIONS

**Source of Primary Field:** VLF Communication Stations 12 to 24 KHz

**Number of Stations:** 7 switch selectable

**Stations Available:** The seven standard stations are Cutler, Maine, 17.8; Seattle, Washington, 18.6; Collins, Colorado, 20.0; Annapolis, Md., 21.4; Panama, 24.0; Hawaii, 23.4; England, 16.0. Alternative stations which may be substituted are: Gorki, Russia, 17.1; Japan, 17.4; England, 19.6; Australia, NWC, 22.3 KHz.

**Check that Station is Transmitting:** Audible signal from speaker.

### Parameters Measured and Means:

- (1) DIP ANGLE in degrees, from the horizontal of the magnetic component of the VLF field. Detected by minimum on the field strength meter and read from an inclinometer with a range of  $\pm 80^\circ$  and an accuracy of  $\pm \frac{1}{2}^\circ$ .
- (2) Field Strength (total or horizontal component) of the magnetic component of the VLF field. Measured as a per cent of normal field strength established at a base station. Accuracy  $\pm 2\%$  dependent on signal. Meter has two ranges: 0 — 300% and 0 — 600%. Switch for "keyed" or "F.S." (steady) signal.
- (3) Out of Phase component of the magnetic field, perpendicular in direction to the resultant field, measured without sign, as a per cent of normal field strength. This is the minimum reading of the Field Strength meter obtained when measuring the dip angle. Accuracy  $\pm 2\%$ .

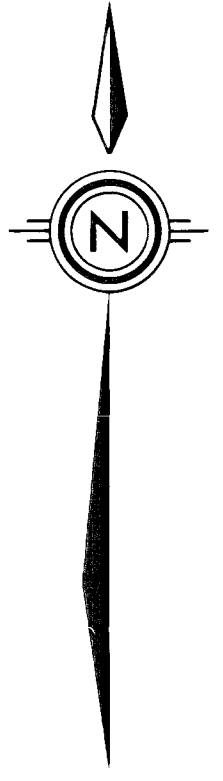
**Operating Temperature Range:**  $-20^\circ$  to  $+110^\circ$  F.

**Dimensions and Weight:** 3.5"  $\times$  7.5"  $\times$  10.5" — 6 lb.

**Shipping:** Foam lined wooden case — shipping wt. — 15 lb.

**Batteries:** 2 of 9 volt: Eveready 216, Burgess 2U6, Mallory M-1604  
Average life expectancy — 3 weeks to 3 months dependent on amount of usage.

*Units Available on a Rental or Purchase Basis.  
Contract Services Available for Field Surveys.*



RENNELL SOUND

53° 24'

53° 24'

GOSPEL GOLD # 1 M.C.

GOSPEL GOLD # 2 M.C.

GOSPEL POINT

53° 23'

53° 23'

LINE F

LINE E

LINE D

LINE C

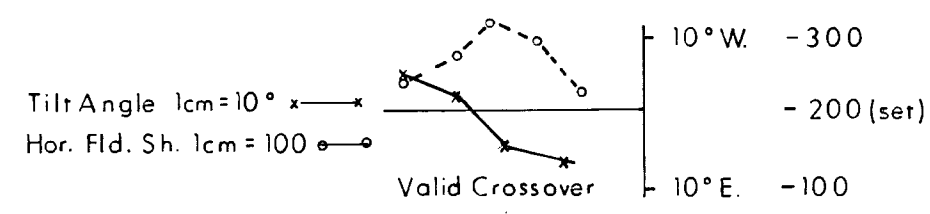
LINE B

LINE A

RILEY CREEK

GREGORY C.K.

7819



Δ CROSS OVER

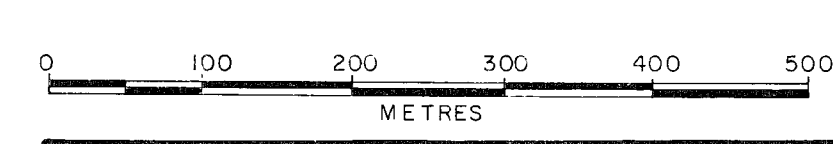
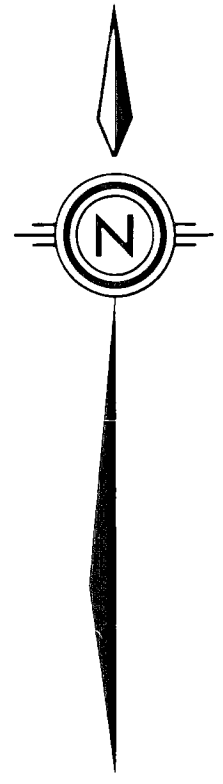


FIGURE 5.

DRAWN W.S.P.	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	CRONE VLF RESULTS (RADEM)
TRACED J.L.A.K.	DATE DEC., 1979.	QUEEN CHARLOTTE ISLANDS GOSPEL PROPERTY	
			FILE NO. 79-08-V-168-38-0010



RENELL SOUND

53° 24'

53° 24'

GOSPEL GOLD # 1M.C.

GOSPEL GOLD # 2M.C.

GOSPEL POINT

53° 23'

53° 23'

LINE F

LINE E

LINE D

LINE C

LINE B

LINE A

RILEY CRK.

GREGORY CK.

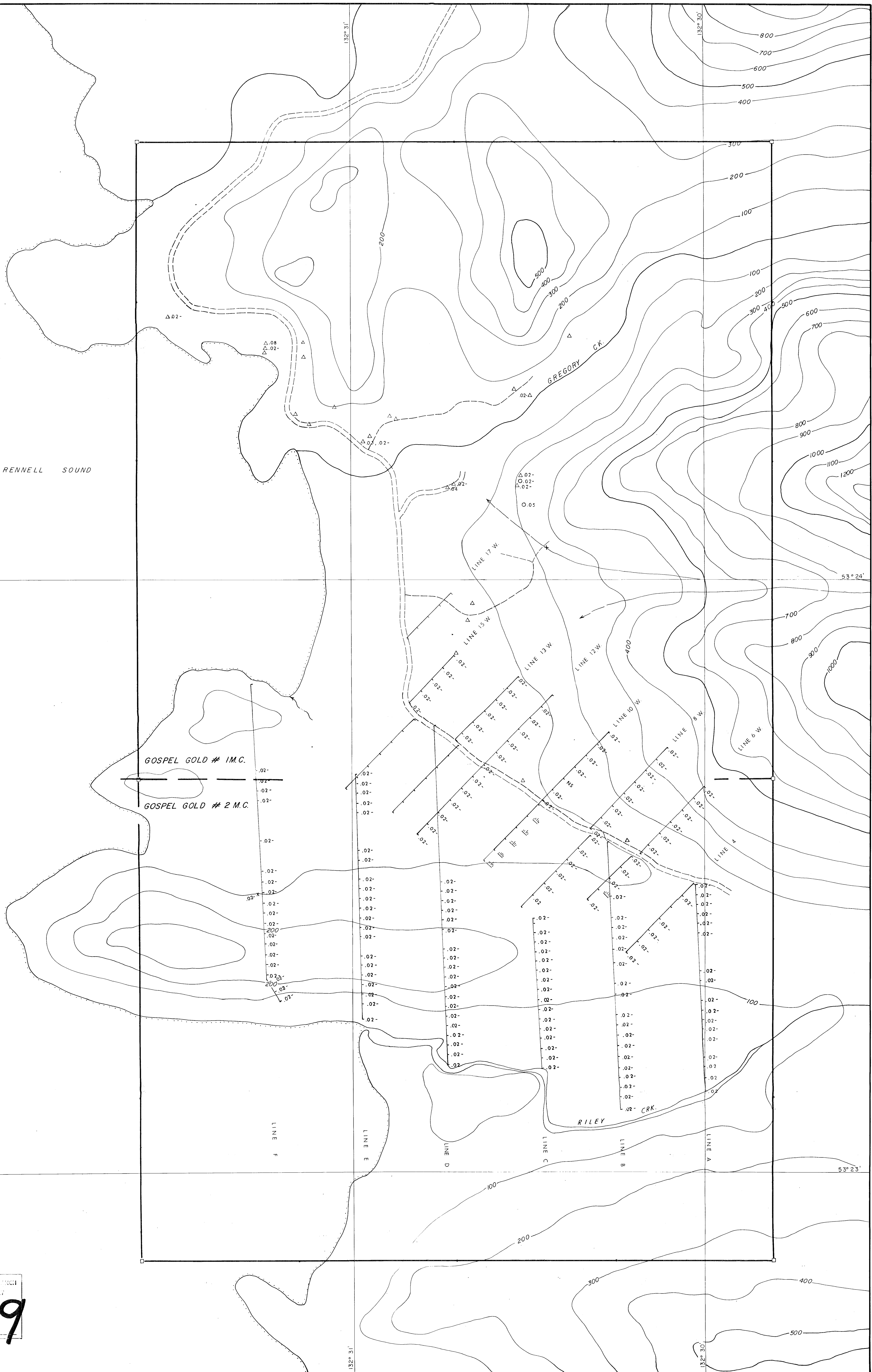
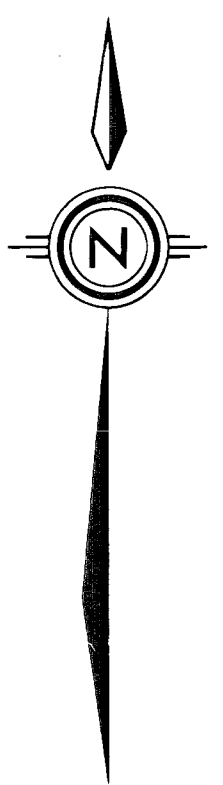
7819

- LEGEND
- SOIL SAMPLE
  - × STREAM SAMPLE
  - △ ROCK SAMPLE



FIGURE 4-1

DRAWN W.S.P.	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	SAMPLE LOCATIONS AND NUMBERS
TRACED J.L.A.K.	DATE DEC., 1979.	QUEEN CHARLOTTE ISLANDS	
		GOSPEL PROPERTY	
			FILE NO. 79-08-V-168-4B-0006



53° 24'

53° 24'

53° 23'

53° 23'

MINERAL RESOURCES DIVISION  
**7819**

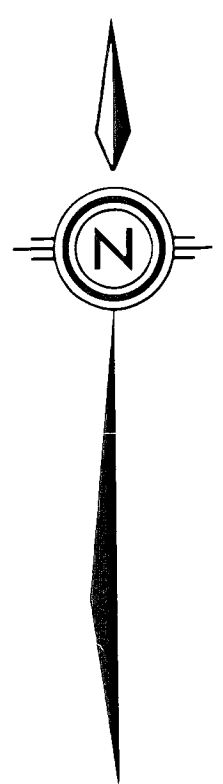
- LEGEND**
- SOIL SAMPLE
  - × STREAM SAMPLE
  - △ ROCK SAMPLE



FIGURE 4-2

DRAWN W.S.P.	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	<b>GOLD - PPM</b>
TRACED J.L.A.K.	DATE DEC. 1979.	QUEEN CHARLOTTE ISLANDS GOSPEL PROPERTY	
			FILE NO. 79-08-V-168-4B-0007





RENNELL SOUND

GOSPEL POINT

GOSPEL GOLD # 1M.C.

GOSPEL GOLD # 2M.C.

LINE F

LINE E

LINE D

LINE C

LINE B

LINE A

GREGORY CK.

RILEY CRK.

LINE 17 W

LINE 15 W

LINE 13 W

LINE 12 W

LINE 10 W

LINE 8 W

LINE 6 W

LINE 4

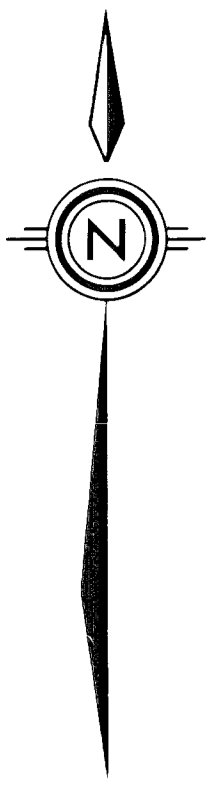
MINERAL DEVELOPMENT  
**7819**

- LEGEND**
- SOIL SAMPLE
  - x STREAM SAMPLE
  - △ ROCK SAMPLE



DRAWN W.S.P.	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	<b>MERCURY — PPB</b>
TRACED J.L.A.K.	DATE DEC, 1979.	QUEEN CHARLOTTE ISLANDS GOSPEL PROPERTY	
			FILE NO. 79-08-V-168-4B-0008

FIGURE 4-3



**618L**  
PLACER DEVELOPMENT LIMITED  
QUEEN CHARLOTTE ISLANDS

RENNELL SOUND

53° 24'

53° 24'

GOSPEL GOLD # 1M.C.

GOSPEL GOLD # 2M.C.

GOSPEL POINT

53° 23'

53° 23'

**LEGEND**

- o SOIL SAMPLE
- x STREAM SAMPLE
- Δ ROCK SAMPLE

0 100 200 300 400 500  
METRES

DRAWN W.S.P.  
TRACED J.L.A.K.

SCALE 1:5000  
DATE DEC. 1979.

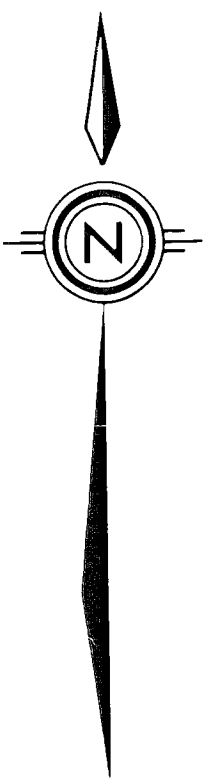
PLACER DEVELOPMENT LIMITED  
QUEEN CHARLOTTE ISLANDS  
GOSPEL PROPERTY

FIGURE 4-4

**ARSENIC - PPM**

FILE NO. 79-08-V-168-4B-0014





RENNELL SOUND

53° 24'

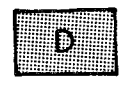

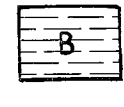

53° 24'

GOSPEL POINT

GOSPEL GOLD # 1 M.C.

GOSPEL GOLD # 2 M.C.

**MAP UNITS**

-  Andesite Dykes.
-  Diorite: plug in center of map-area. Probably hypabyssal equivalent of undifferentiated volcanics.
-  Undifferentiated Volcanics: includes basalt & andesite flows agglomerates, rhyolite tuffs & andesitic volcaniclastic rocks.
-  Plutonic-Volcanic Melange: includes monzonite dykes, diorite & mixed-texture rocks of intermediate composition.

**LEGEND**



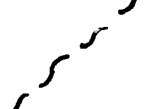
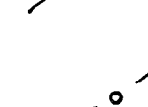

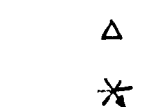


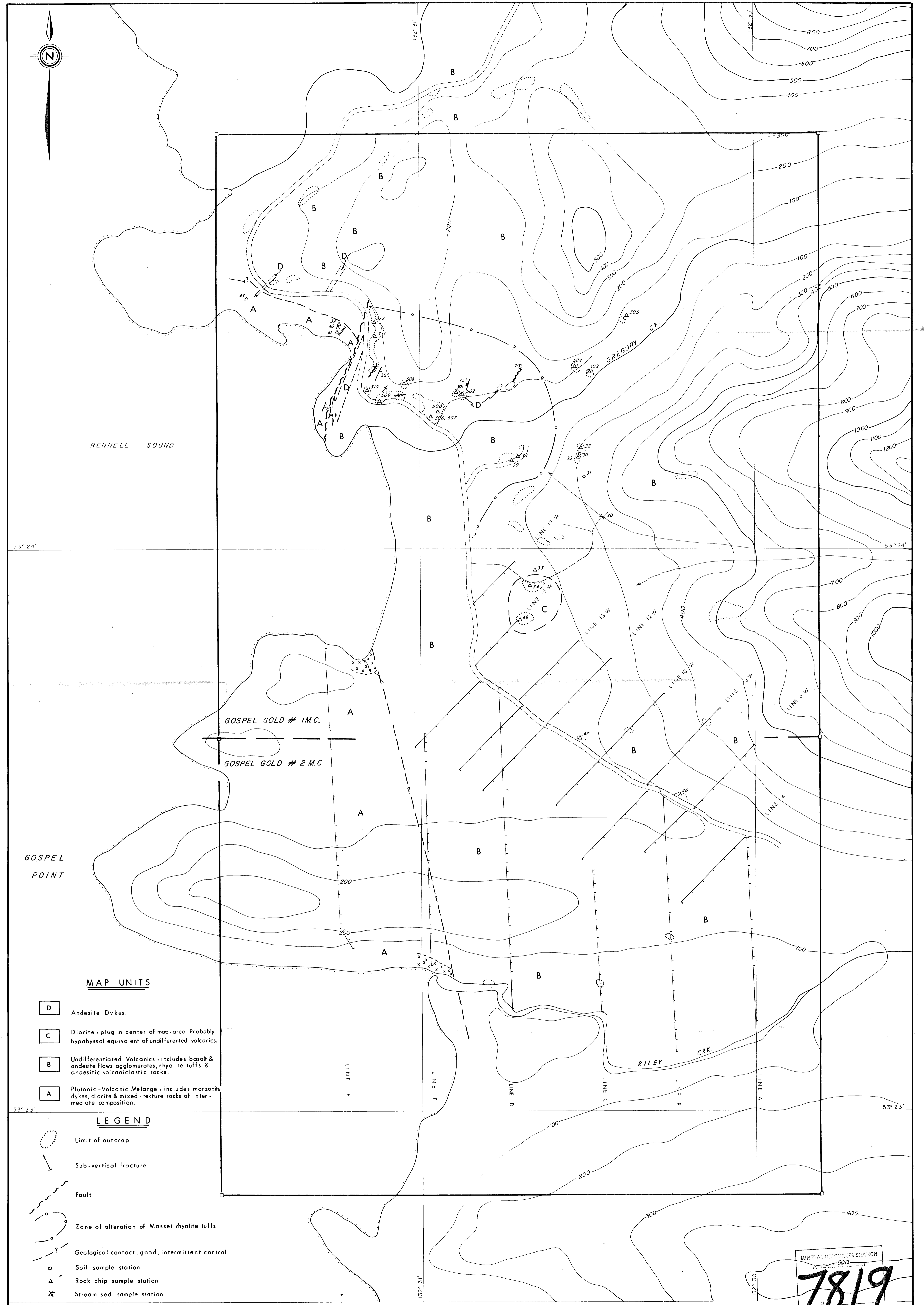
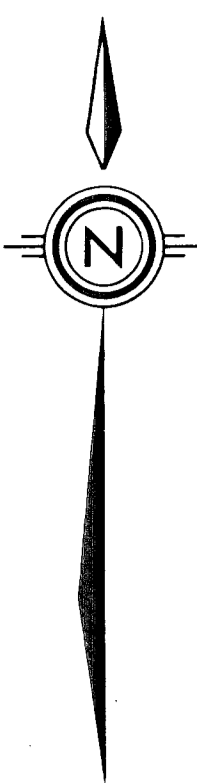
-  Limit of outcrop
-  Sub-vertical fracture
-  Fault
-  Zone of alteration of Masset rhyolite tuffs
-  Geological contact, good, intermittent control
-  Soil sample station
-  Rock chip sample station
-  Stream sed. sample station



FIGURE 3-1

DRAWN W.S.P.	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	<b>GEOLOGY</b>
TRACED J.L.A.K.	DATE DEC. 1979	QUEEN CHARLOTTE ISLANDS	
GOSPEL PROPERTY			
			FILE NO. 79-08-V-168-B-000

7819

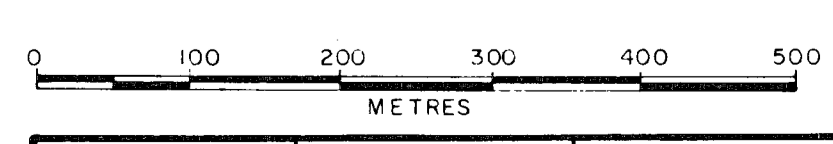


**MAP UNITS**

- D Andesite Dykes.
- C Diorite: plug in center of map-area. Probably hypabyssal equivalent of undifferentiated volcanics.
- B Undifferentiated Volcanics: includes basalt & andesite flows agglomerates, rhyolite tuffs & andesitic volcaniclastic rocks.
- A Plutonic-Volcanic Melange: includes monzonite dykes, diorite & mixed-texture rocks of intermediate composition.

**LEGEND**

- Limit of outcrop
- Sub-vertical fracture
- Fault
- Zone of alteration of Masset rhyolite tuffs
- Geological contact; good, intermittent control
- Soil sample station
- Rock chip sample station
- Stream sed. sample station



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FIGURE 3.

DRAWN W.S.P.	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	GEOLOGIC OUTCROP MAP
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