

#493

092H/11W

92H

REPORT

on the

HILLS BAR #1, 2, and 3, ME #1 to #14,

and

MI #1 to #4

MINERAL CLAIMS

situated on

HILLSBAR (QUALARK) CREEK

11 air miles north of HOPE

New Westminster N.D.

British Columbia

N.T.S. 92 H/11W

on behalf of

CAROLIN MINES LTD.

of

VANCOUVER, B.C.

By:

D. R. Cochrane, P. Eng.

July 11, 1975

DELTA, B.C.



**Cochrane Consultants Limited**  
4882 Delta Street, Delta, B.C. (604) 946-9221  
Geotechnical Consulting / Exploration Services

geology  
geophysics  
geochemistry

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## PART A:

### A-1 PREAMBLE

The author was recently engaged by Carolin Mines Ltd., to inspect portions of the Hillsbar gold prospect situate in Qualark (formerly Hillsbar) Creek, just north of Hope, British Columbia. The field work was completed on July 3, 1975 in the company of Mr. C. Graham and this report describes the results of the examination and contains recommendations for further exploration work and a cost estimate of this work.

The information contained herein has been obtained from a personal investigation of portions of the claims, in addition to available data contained in previous reports (tabulated in bibliography appendix II) and from the authors personal knowledge of the Coquihalla Gold Belt.

### A-2 SUMMARY AND CONCLUSIONS

1. The Hillsbar gold occurrence is situated on Qualark (Hillsbar) Creek, a westerly flowing tributary on the Fraser River which is located eleven (11) air miles due north of the town of Hope, New Westminster M.D. in southern British Columbia. The claims area is accessible by 4 x 4 truck via logging roads proceeding northerly from Hope.

2. The Hillsbar lode gold occurrence was discovered in 1921, following extensive placer work along the Fraser River and tributaries close to Yale, while searching for the source of gold in Hill's Bar -the most productive placer deposit on the Fraser River. Prospecting culminated in the discovery of the Hillsbar "lode" deposit and the property was developed by adits, pits and trenches early in the 1920s.

3. An agreement has been made between the owners of the Hills Bar #1, #2 and #3 claims (covering the old workings) and Mr. C. Graham who owns the adjoining NE and HI claims; whereby the total claims area may be treated as a single property for development and



exploration purposes. Carolin Mines Ltd. is in the process of optioning the entire group of twenty-one (21) claims from Mr. Graham.

4. The discovery of the Hillsbar lode was greeted with considerable enthusiasm since it was believed that this deposit was the motherlode of the extremely rich Hill's and Emory Bars on the Fraser River below Qualark Creek. Work however became less intense as costs increased and gold still remained at the fixed \$20.67 per ounce (until 1933). Very little modern exploration work has been conducted on the property since the thirties.

5. The gold occurrence consists of several quartz veins and pods within slates believed to belong to the late Paleozoic Hozameen Series. This series is bounded on the east by the Coquihalla serpentine band, and on the west by a granodiorite/quartz diorite body which may be part of the Spuzzum Pluton.

6. Mineralization in several of the veins exposed in old workings consists of arsenopyrite, pyrite, pyrrhotite, chalcopyrite and free gold. The #3 vein is reported to average \$20.00 per ton (gold at \$20.67) across 3 feet, or close to one ounce per ton (report of the Minister of Mines, 1927) and the author's two samples from #3 ran 0.42 and 0.26 ounces of gold per ton.

7. The 1929 Minister of Mines Report describes the Hillsbar occurrence as follows: "Although no single vein might be depended upon to persist for any distance either laterally or in depth, there might be probably a zone of slaty rock enclosing a succession of quartz bearing stringers in sufficient amount to provide a basis for economic mining and treatment of low grade operations".

8. The #3 vein is quite lensey and ranges from 0 to 75 centimeters in width and is exposed in a drift approximately 90 feet long. Pan concentrates from the stream, and geochemical stream silt samples indicated that placer gold is present in the creek "above" the old Hillsbar showing and therefore additional lode gold occurrences upstream are indicated.

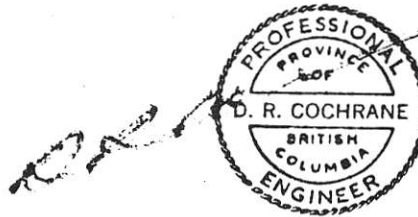


9. In view of the rise in the price of gold these last few years, and the fact that modern exploration methods have not been utilized in this area, the author recommends an exploration program designed to:

- (a) re-evaluate the old workings with a view to developing open pitable grade ore and,
- (b) explore the area around the old workings for additional auriferous zones. (especially upstream)

10. The author has recommended a program estimated at seventy thousand dollars (\$70,000.00) in order to re-examine the Mills Bar, HE and HI claims and the surrounding area. This figure does not include monies for the intensive detailed investigation of geochemical, geological or geophysical targets that may develop as a result of the recommended program. The estimated cost however includes a \$4,000.00 reclamation item and a 15% rather than a 10% contingency item in the event that exploration costs continue to escalate as they have done in the recent past.

Respectfully submitted,



D. R. Cochrane, P. Eng.,  
July 11, 1975,  
Delta, B.C.



PART 3: SETTING

B-1 LOCATION AND ACCESS

The Hills Bar, ME and MI claims are located along Hillsbar (or Qualark) Creek, a westerly flowing tributary of the Fraser River situated eleven (11) air miles due north of the town of Hope and 3 miles south of the town of Yale in southern British Columbia. Access to the claims is via a logging road which proceeds north from Hope on the east side of the Fraser. (See location Map)

Access to the headwaters of the creek can also be made by charter helicopter and such a base is located in Hope.

The latitude is 49°30'N, and longitude 121°20'W and NTS code 92 H/11 (c and d).

B-2 PROPERTY

The claims under consideration are the Hills Bar, owned by Rachel Kent of Hope, B.C., and the ME and MI claims owned by Mr. C. Graham of Merritt, B.C. The Hills Bar claims were staked on the 12th day of October, 1959, and recorded in New Westminster on the 13th day of October. The ME claims were located by Mr. C. Graham on the 20th and 21st day of September, 1973 and recorded in Vancouver on October 2nd. The MI claims were located recently under the new staking regulations (modified grid system).

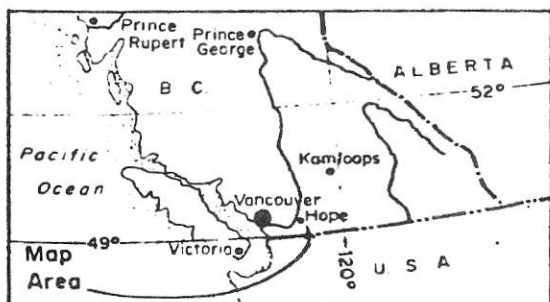
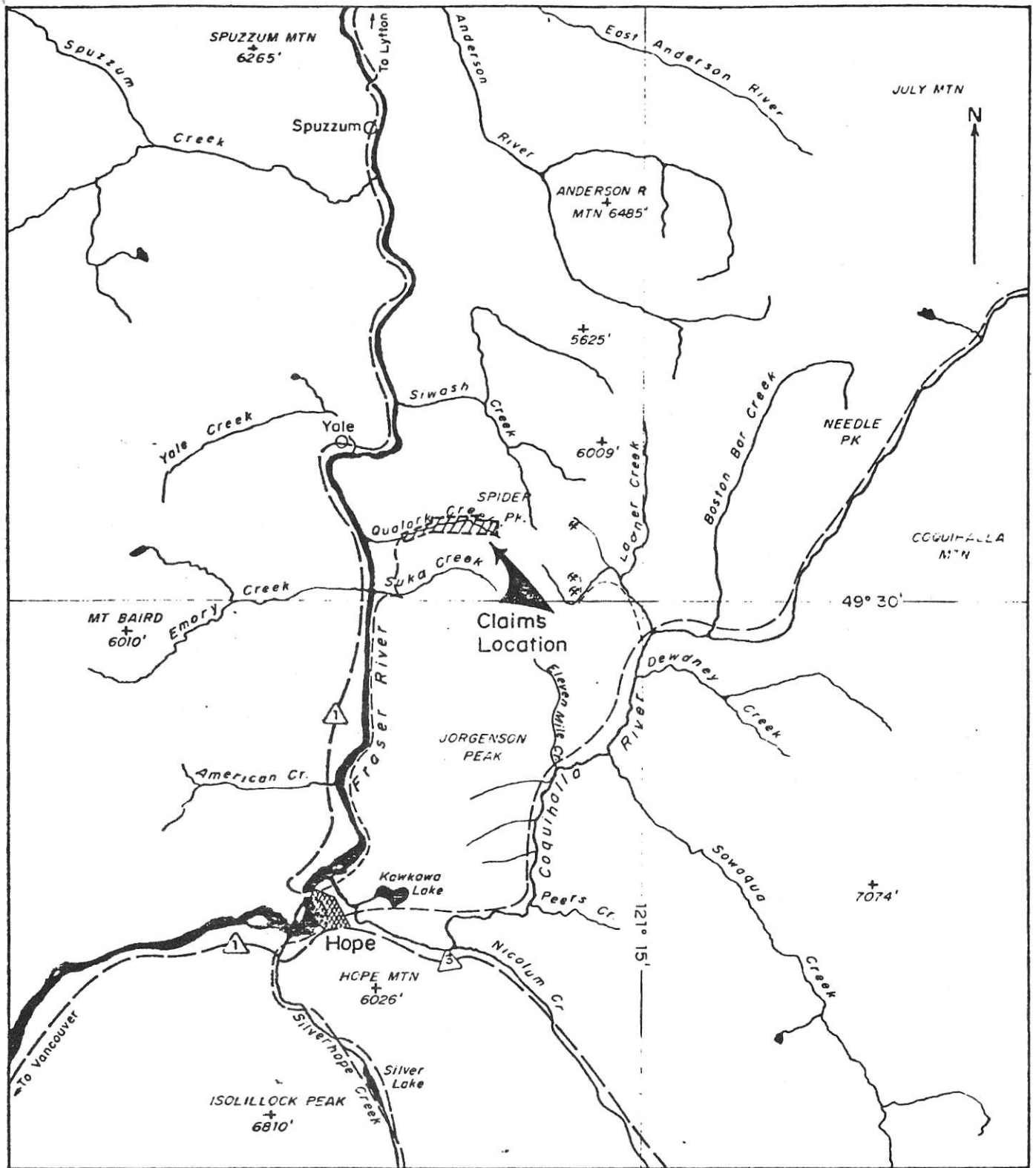
The following table lists pertinent claims data:

<u>Claim Name(s)</u>	<u>Record No.(s)</u>	<u>Expiry Date (s)</u>
Hills Bar #1 to #3	10556 to 10558	Oct. 13, 1974
ME #1 to #14	28940 to 28953	Oct. 2, 1974
MI #1 to #4	pending	

The above described located mineral claims are registered in the New Westminster Mining Division and are shown on Mineral Claims Map 92H/11 W(n). (See Sketch)

The author inspected 3 claim posts of the ME group and claims appear to be staked in accordance with the 1973 regulations.





LOCATION MAP

Fig. 1

CAROLIN MINES LIMITED  
Hillsbar Project

FRASER RIVER / QUALARK CREEK AREA, B.C.



Coxburn Consultants Limited  
1975

N.T.S 92 H/11W

Scale 1:250,000  
July/75

### B-3 GENERAL SETTING

The claims are located at the northerly end of the Cascade Mountains which extend from Washington State into southern British Columbia. The area is quite rugged and mountainous with local peaks rising to between 5,000 and 6,000 feet above sea level. This section of B.C. is a moderately wet climate area and in general, below the 5,000 foot level a dense thick coniferous forest covers the hillsides. Normally outcrops are restricted to creek bottoms and steep slope cliff areas and a glacial mantle of drift covers the vast majority of bedrock.

The uppermost ME claims lie at elevations close to 3,500 feet above sea level, and the old Hillsbar workings are at an elevation of 2,700 feet. Spider Peak which is located just over 2 miles east of the Hillsbar workings rises to just over 5,000 feet above sea level.

### B-4 HISTORY

Placer gold was first discovered in quantity on the Fraser River near Yale in 1858. Prior to this date the crown colony was sparsely settled and largely ignored by the remainder of Canada, and the great Fraser Rush did much to settle and develop southern British Columbia. Emory Bar and Hill's Bar on the Fraser were important producers of placer gold for several decades and production although continuous at first became more and more intermittent until commencement of the first world war, at which time placering ceased. The mother lode of these bars was not actively sought until the late teens. The 1912 Report of the Minister of Mines (p. 186) describes "considerable placer prospecting on Hills Bar Creek", however, according to Cairnes (1923) it was not until the summer of 1921 that lode gold was found in place on Hillsbar (or Qualark) Creek. Cairnes describes the principal showings in the creek valley as "a series of quartz veins" in slates occurring "100 to 200 feet distant from a granodiorite contact". The veins were reported to pinch and swell from a few inches to up to three feet wide. Cairnes continues





"Ore mineralization is, on the whole, very scanty in these quartz veins and is represented chiefly by free gold and arsenopyrite." Cairnes describes a sample containing no visible gold and assayed by the Mines Branch in Ottawa running 0.13 oz. Au/ton. Apparently a 27 foot adit had been driven on the Hills Bar showing at this time. References to the Hills Bar occurrence and "Gold" Mineral Claims Group continues in the Minister of Mines Reports until 1927. The 1927 report describes three adits, the largest of which was 197 feet long. Apparently the underground work had uncovered six well defined veins as opposed to seven located in the Creek bottom. The #3 vein is reported as averaging \$20.00 per ton (1927 prices - \$20.67) across 3 feet. Reference is also made to a sample collected across 3 feet running 0.82 oz. Au per ton and 0.10 oz. Ag per ton.

The discovery of the Hillsbar (or Gold Group) lode occurrence caused considerable excitement in 1921 and in following years. It was suspected then that the mother lode of the rich Fraser bars had at last been found. Work on the property and adjacent area however continued sporadically during the late 20s and early 30s but there is no further reference to the Hills Bar or Gold Group in subsequent Minister of Mines Reports.

It can be assumed that the area had a short lived revival during the re-adjustment in gold price in 1933 but since then probably very little work has been conducted in the area. The situation has changed somewhat of course commencing in 1972 and again in 1973 as the gold price has continued to rise from the pegged \$35.00 per ounce standard. This price rise has precipitated another gold exploration flurry, however, B.C. gold exploration has been slow to develop due to Provincial Mining legislation.



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PART C: GEOLOGY AND MINERALIZATION

C-1 GENERAL GEOLOGY

The Hills Bar, ME and MI claims extend across a north-northwest trending band of late Paleozoic Mozameen Group rocks including slates, chert, basic volcanic rocks and minor limestone. This series is bounded on the east by the Coquihalla serpentine band, and on the west by a Cretaceous/Tertiary granodiorite to quartz diorite body which is often strongly sheared parallel to the Fraser lineaments direction (northerly).

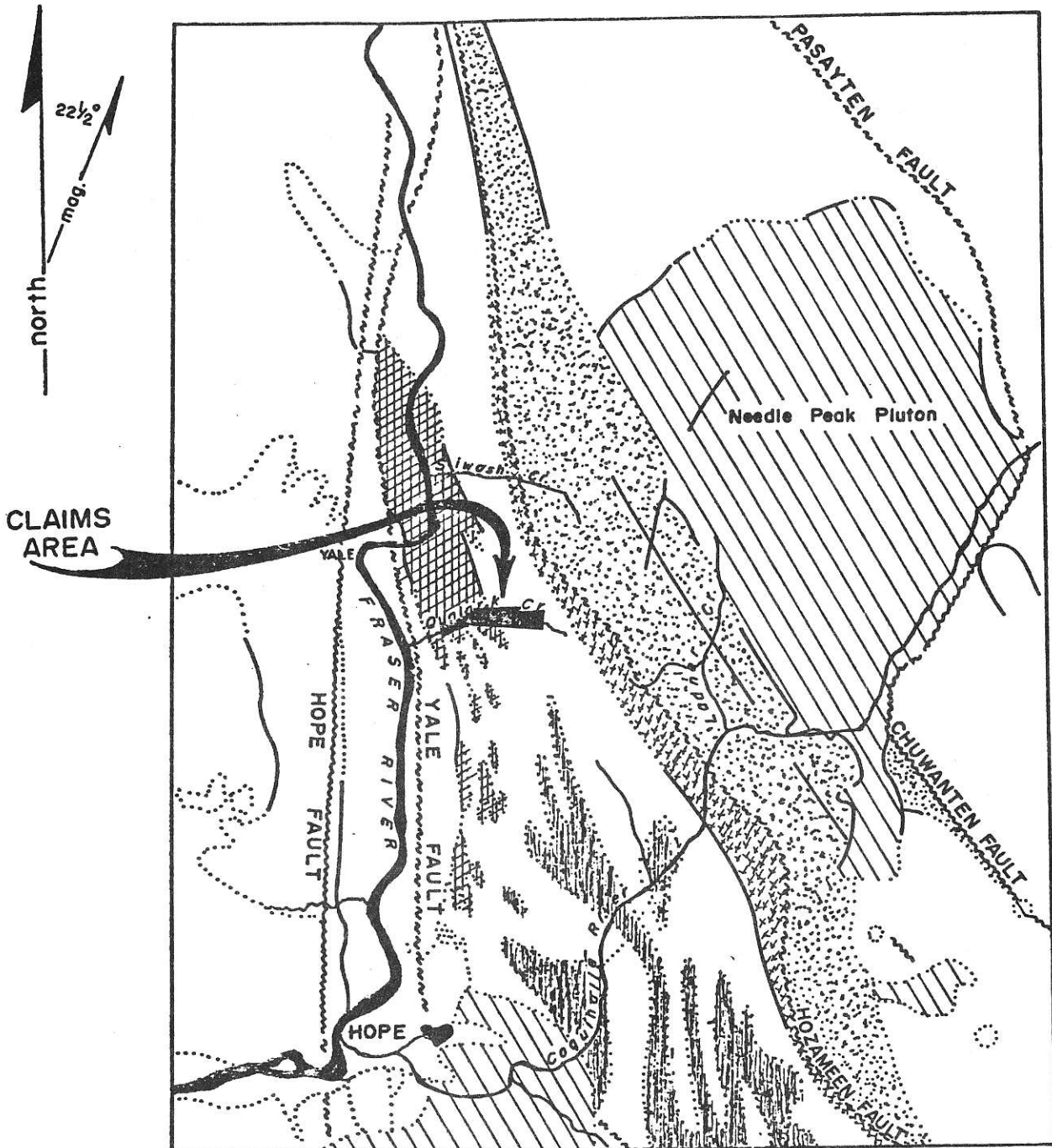
The Coquihalla serpentine band is the central axis along which a large number of gold and silver deposits occur, many of which were former gold and silver producers. Several are now being re-evaluated in the light of increased metal prices. The serpentine belt still remains a serious geological problem and its origin is as yet not completely solved. Theories of emplacement range from a late cold intrusion theory to downward faulting hypotheses associated with the Fraser River Lineaments.

A series of strong north-northwest trending faults cut the Hills Bar Creek area including the Mozameen Fault along the serpentine band, and the Yale Fault situated immediately east of the Fraser River.







Gairnes (1923) describes the Hills Bar occurrence rocks as "slate, granodiorite and occasional porphyritic dyke." He continues, "the slatey structure of the member...coincides with the general direction of deformation of the series as a whole and in this section, is, approximately parallel with the bedding planes which dip to the northeast at an angle of about 60 degrees. The granodiorite intrudes these slates and it is likely that their mineralization is associated with the intrusion." (from p. 81a)

The above description is also applicable to the Idaho Zone which is presently being developed by Carolin Mines Ltd. This zone is situated a few miles south of the Hillsbar and it is presently being developed by Precambrian Shield Resources and Nummac Oil and Gas on option from Carolin Mines Ltd.





GEOLOGY AFTER J.W.H. MONGER, 1969.

-  FOLIATED GRANODIORITE, QUARTZ DIORITE
-  PELITE, CHERT, BASIC VOLCANIC ROCK, MINOR LIMESTONE.
-  BASIC VOLCANIC ROCK
-  GRANODIORITE, QUARTZ DIORITE
-  SERPENTINITE  
SERPENTINIZED PERIDOTITE
-  PELITE  
VOLCANIC SANDSTONE

**CAROLIN MINES LIMITED**  
Hillsbar Project

**GEOLOGY** Fig. 3

FRASER RIVER / QUALARK CR. AREA, B.C.  
SCALE: 1:250,000 or 1" equals 4 miles approx.



### C-2 MINERALIZATION

Mineralization on the original Hills Bar is described as "spectacular showings of visible gold found in the bed of Hills Bar Creek" (Minister of Mines, 1926). The previous 1923 report states "some high grade free gold was found in the vein near the mouth of the tunnel; but the face last summer when visited last summer was barren. Recent reports would indicate that more high grade ore has since been found". Thus the distribution of the "free" gold in the quartz vein is erratic, and this situation of course is far from being unique.

The free gold was contained in pinching and swelling pods of quartz which according to Cairnes are commonly banded in appearance due to the inclusions of thin laminae of slate. Arsenopyrite, pyrite and an iron sulphide resembling pyrrhotite was reported especially within dark bands and lenses of slatey material in the veins. The veins are apparently similar to the Pipestem deposit situated east of the Hills Bar. The Pipestem produced just over 1,700 tons of ore grading 0.17 oz. Au per ton.

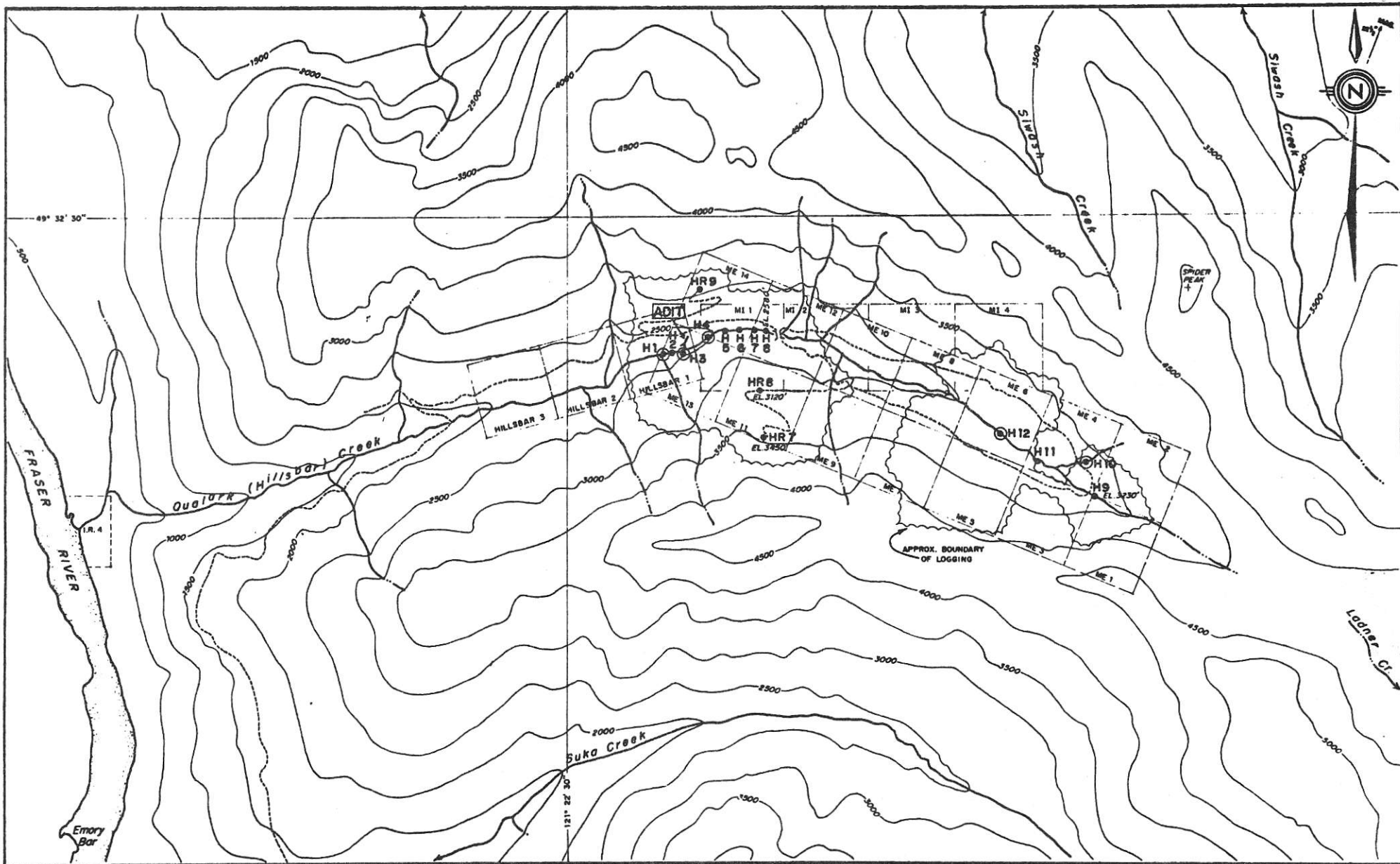
The author observed pyrite, pyrrhotite, arsenopyrite, chalcopyrite and free gold in the #3 vein. Care was taken however not to include specimens with free gold in the samples sent to assay.

### C-3 SAMPLING

On July 3, 1975 the author collected rock samples and geo-chemical stream sediment samples from the Hillsbar occurrence. The rock samples were analyzed for their gold and silver content by Bondar Clegg and Company of Vancouver. The results along with details of the sample are tabulated below:

<u>Sample No.</u>	<u>Location</u>	<u>Au(oz/ton)</u>	<u>Ag(oz/ton)</u>
10328	Main adit, chips from vein in second drift	0.025	0.02
10329	Main adit, grabs from east drift, #3 vein	0.42	0.05
10330	Main adit, grabs from west drift, #3 vein	0.26	0.04
10331	Main adit, representative grabs from dump	0.085	0.02





# CAROLIN MINES LIMITED

Hillsbar Project  
 Qualark Creek / Fraser River Area  
 New Westminster Mining Division  
 British Columbia

DRAINAGE FROM FORESTRY MAPS 92H-11-c&d.  
 CONTOURS FROM TOPO SERIES 92H 11W  
 CONTOUR INTERVAL 500 FEET

- GEOCHEMICAL SAMPLE
- ⊙ SAMPLE ANOMALOUS WITH RESPECT TO As & Au

SCALE 0 1320 2640 3960 5280 FEET.

DRAWN JULY/78.

COMPOSITE MAP FIG. 2



Samples 10329 and 10330 are chip samples from along the #3 vein in the east and west drifts respectively, and represent values of \$67.20 and \$41.60 per ton based on gold at \$160/ounce. The vein is quite lensey in the east drift varying from 0 to 50 centimeters (20") wide.

In the west drift the vein is banded and ranges from just over 75 to 20 centimeters wide (30" to 8"). The vein strikes  $300^{\circ}$  (true) and dips north at  $75^{\circ}$ .

In addition to hand panning the stream a series of geochemical stream sediment samples (silts) were collected along Qualark Creek, both down stream and up stream from the main Hillsbar adit. Immediately below the adit (and mineralized veins in the creek bottom) the silt samples were anomalous with respect to gold but not with respect to arsenic, copper or silver. There are four additional anomalous samples collected and these are shown diagrammatically on the accompanying sketch. Therefore additional and as yet undiscovered gold occurrences are inferred. High values of gold in the silt samples is not surprising since "colors" of angular gold were observed in the majority of "pans" taken along the creek. This is especially true upstream from the old adit.

#### C-4 DISCUSSION

Visible gold was observed in the vein material from the main adit in the old Hillsbar gold showing, and the author's samples ran 0.42 and 0.26 ounces of gold per ton from the #3 vein. Values of over an ounce have been reported and the original discovery was described as "spectacular showings of visible gold". (Minister of Mines, 1926). In addition to this obvious target, angular gold was panned in the creek above the old showings, and several silt samples collected by the author are anomalous with respect to gold and/or arsenic. The inference is then that additional, as yet undiscovered, gold



occurrences are present within the Qualarik (Hillsbar) drainage system upstream from the old Hillsbar adit.

Since 1973, Carolin Mines Ltd. has been working on the Idaho Zone, an extensive gold bearing replacement deposit situated some six(6) kilometers west of the Hillsbar. Just over 20,000 lineal feet of diamond drilling has been completed in thirty-nine (39) drill holes on the Idaho Zone, and this has indicated the presence of just over 3 million tons of material grading in excess of 0.10 oz. gold per ton. The Idaho Zone lies close to the Aurum mine in which "spectacular" specimens of free gold were mined in the twenties.

The Hillsbar deposit has obvious similarities to the Idaho/Aurum situation even to the point that in 1927 the Minister of Mines Report stated about the Hillsbar:

"although no single vein might be depended upon to persist for any distance either laterally or in depth, there might be probably a zone of slaty rocks enclosing a succession of gold bearing quartz stringers in sufficient amount to provide a basis for economic mining and treatment of low grade operations."

The writer of the 1927 report envisaged possibilities for open pit operations at 1927 gold prices.

It is the author's opinion that the Hills Bar and ME claims should be economically reevaluated in the light of the recent and dramatic rise in the price of gold. The 1920 exploration approach was necessarily direct and dependent on the availability of outcrop within an area where outcrop exposure is restricted. To the author's knowledge, no modern exploration technique or program has been conducted in the area, and certainly if modern techniques are applied, the probability of discovery of additional auriferous zones will be greatly increased.

#### PART D RECOMMENDATIONS AND COST ESTIMATE

In view of the foregoing, the author recommends an exploration program on the Hills Bar, ME and III claims with details as follows:





1. Establish camp.	\$ 4,500
2. Cut base line along Hozomeen-Intrusive contact for control and tie in claim posts, old workings and prominent physical features.	3,000
3. Geologically map and sample claims area, including mapping and sampling of the old workings.	5,000
4. Magnetometer survey in areas of deep overburden in order to aid geological interpretation.	3,300
5. Silt sample streams and tributaries in the Qualark Valley, and collect soil samples where soil geochemistry appears applicable. Analyze silt and soil samples for their content in gold.	6,500
6. Pan and collect pan concentrates in areas of gravel and deep overburden and microscopically examine concentrates.	2,500
7. Bulldozer trench target areas, geologically map and sample same.	7,500
8. Diamond drill prime area of interest. 1000' @ \$18/ft.	18,000
9. Engineering and supervision.	6,500
10. Reclamation.	<u>4,000</u>
	Sub total
	\$60,800
11. Contingencies @ 15%	<u>9,120</u>
	Total
	\$69,920
	SAY
	<u>\$70,000</u>

If the target areas as defined in steps 2 through 8 above prove sufficiently interesting, additional expenditures would be required for further exploration and development.

Respectfully submitted,



D. R. Cochrane, P. Eng.,  
July 11, 1975,  
Delta, B.C.

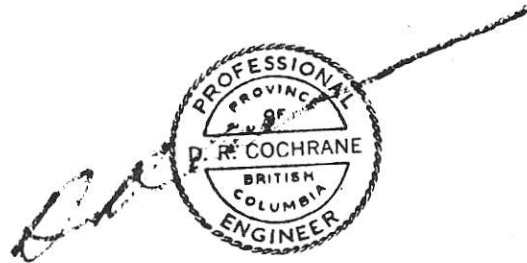


APPENDIX I

**Certificate:**

I, Donald Robert Cochrane, of the Municipality of Delta, British Columbia, do hereby certify that:

1. I am a consulting geological engineer with an office at 4882 Delta Street, Delta, British Columbia.
2. I am a graduate of the University of Toronto (1962) with a degree in Applied Geology (B.A.Sc.) and a graduate of Queen's University (1964) with a degree in Economic Geology (M.Sc. Eng.).
3. I have practiced my profession continuously since graduation and while being employed by such companies as Noranda Exploration Co. Ltd., Quebec Cartier Mines, and Meridian Exploration Syndicate.
4. I have no interest, either direct or indirect in the properties or securities of Carolin Mines Ltd., nor do I expect to acquire any such interest.
5. This report, in its entirety may be used by Carolin Mines Ltd. in any official or unofficial communications they may have, but excerpts from this report to be used for any communications whatsoever must be reviewed by the author.
6. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia, and also a member of the A.P.E. in the Provinces of Ontario, Saskatchewan and the Yukon Territories.



July 11, 1975  
Delta, B.C.

(signed) D. R. Cochrane, P. Eng.



APPENDIX II

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2. 1899, p 195 " " " " " " " "
3. 1902, p 195 " " " " " " " "
4. 1904, placer reference
5. 1907, " "
6. 1912, p. 136, 137, considerable placer work on Hillsbar Creek
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8. 1923, p. 143
9. 1924, p. 137
10. 1925, p. 182
11. 1926, p. 193
12. 1927, p. 209

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