

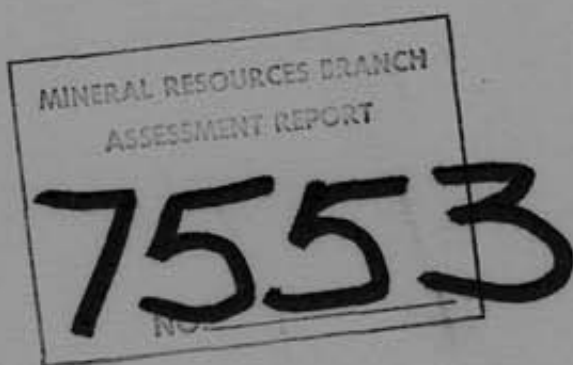
Assessment Report
on an
Brief Sampling Program
on
Otter Creek
Placer Mining Leases

Atlin Mining Division
British Columbia

Latitude 55°35'N; Longitude 133°22'W

N.T.S. 104N/11W

Field work between July 9 and 15, 1979



Report by

D. R. Cochrane, P. Eng.
August 28, 1979,
Delta, B. C.



Cochrane Consultants Limited
4882 Delta St., Delta, B.C. V4K 2T8 946-9221
Geotechnical Consulting / Exploration Services

geology
geophysics
geochemistry

TABLE OF CONTENTS

	Page
Introduction	1
Summary and Conclusions	2
Location and Access	5
Placer Mining Lease Information	6
General Setting	7
History	9
Field Procedures	12
Sampling Procedure	13
Results and Calculations	14
Discussion	23

FIGURES

1.	Location Map	Report body
2	Claim Map	" "
3.	Sample Locations	Map Pocket

TABLE

A.	Description of Samples
B.	Sample Results

APPENDICES

I	Assessment Work Details
II	Bibliography
III	Certificate



INTRODUCTION

During the period July 9 to 15, 1979, the author and Mr. W. (Bill) Chase investigated portions of placer leases lying along Otter Creek in the Atlin Mining Division of Northern British Columbia. The leases are owned by Mrs. Shirley J. Connolly of Atlin. Work consisted of establishing a ground control line, tying in physical features and claim posts, sampling and assaying. The purpose of the work was to estimate the tenor of placer gold aluvial material along the lower portions of the creek in view of the current price of gold.

This report has been prepared for assessment work submission and costs and assessment work details are set out in an appendix at the back of this report.



SUMMARY AND CONCLUSIONS

1. The Otter Creek placer leases are owned by Mrs. Shirley Connally of Atlin, B. C., and the fifteen (15) contiguous leases cover the lower (north) 5 1/2 kilometre section of Otter Creek. Otter Creek drains into Surprise Lake, and the the leases are easily reached by a gravel road and are situated some 19 kilometres east of the settlement of Atlin.

2. The Atlin region is an historic and picturesque section of British Columbia located immediately south of the Yukon Territory and east of the Alaska Panhandle. The unincorporated settlement of Atlin provides the area with all essential services (government offices, food, lodging, supplies, medical clinic, etc.) and lies on the east shore of Atlin Lake at an elevation of 670 metres above sea level. Mountain peaks in the vicinity rise to elevations in excess of 2000 metres.



3. The Atlin Gold Camp was first settled the year after the famous Klondike Gold Rush of 1897, and placer activity has continued intermittently to the present. Total placer gold production (until 1936) is estimated at 1/2 million troy ounces for the camp and Otter Creek has been worked periodically especially in the early 1900's and the thirty's.

4. Field work completed by the author and Mr. Chase included tie line establishment for ground control, sampling, panning and the assaying of pan concentrates at Min-En Labs of North Vancouver.

5. Twenty eight (28) samples were collected, described, concentrated and analyzed. The assay results of the pan concentrates ranged from a low of trace, to a high of just over 62 troy ounces per ton. The latter result (sample 28) is roughly equivalent to 0.057 ounces per cubic yard or 2.3 grams of gold per cubic metre. (\$17.10 per yard at a gold price of \$300.00 per ounce).



6. Three types of native gold were identified in six types of alluvial material. The author believes the most economically important sections are those in which boulder clays and hybrid deposits have been reworked, thereby reconcentrating gold.

7. Several limitations to the field process are described, however the work may be considered a rough guide to the amount of placer gold present in currently exposed sections of the most northerly leases.

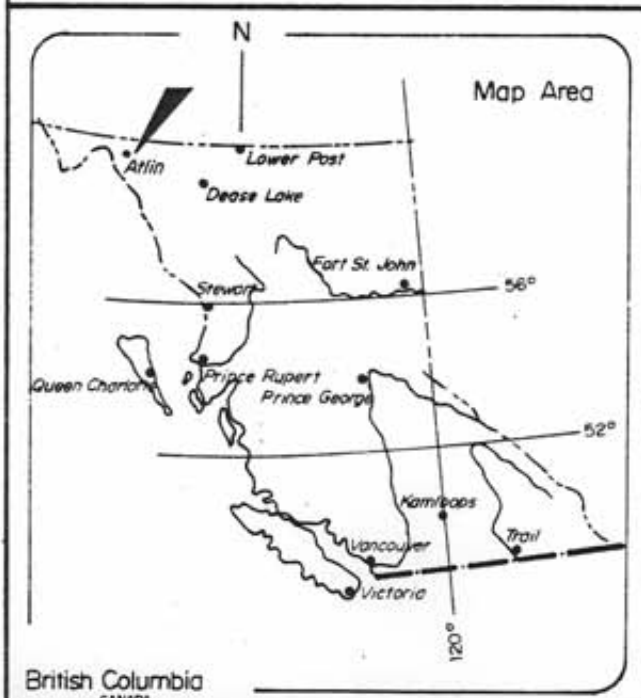
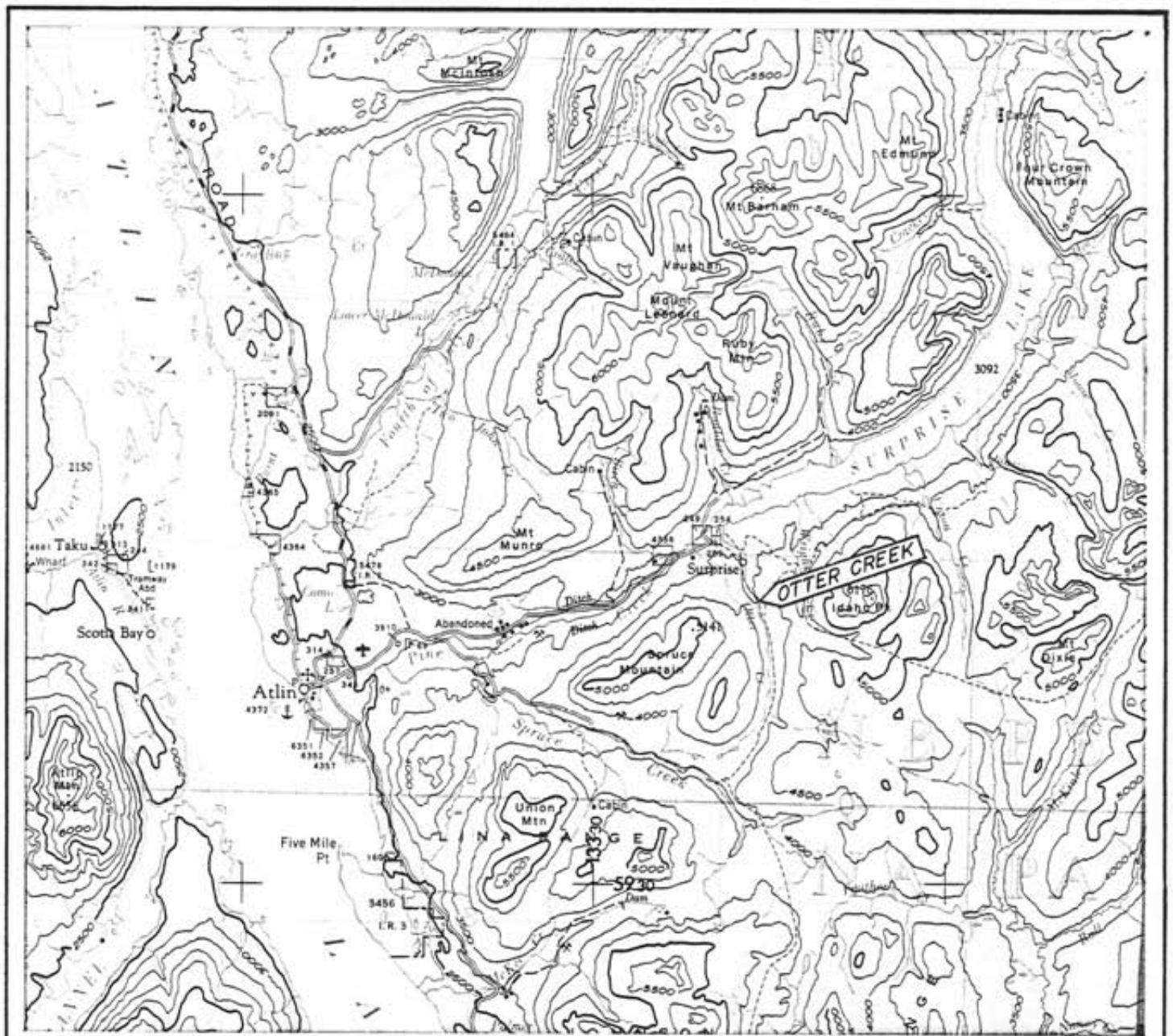
8. Additional, more mechanized sampling and testing of the Otter Creek gravels is herein recommended. The most expedient method is with a front end loader back hoe unit and portable washing plant.

Respectfully submitted,

A circular stamp with a dashed border. The text inside the stamp reads "PROFESSIONAL OF BRITISH COLUMBIA ENGINEER". A handwritten signature in black ink is written across the stamp.

D. R. Cochrane, P. Eng.



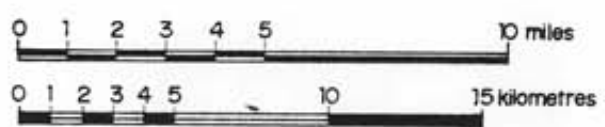


Otter Creek Placer Gold Property

Otter Creek Area Atlin, British Columbia
 Atlin Mining Division N.T.S. 104 N/11 W.

Figure 1.
Location Map

Scale : 1 to 250,000 or 1 inch equals approx. 4 miles.

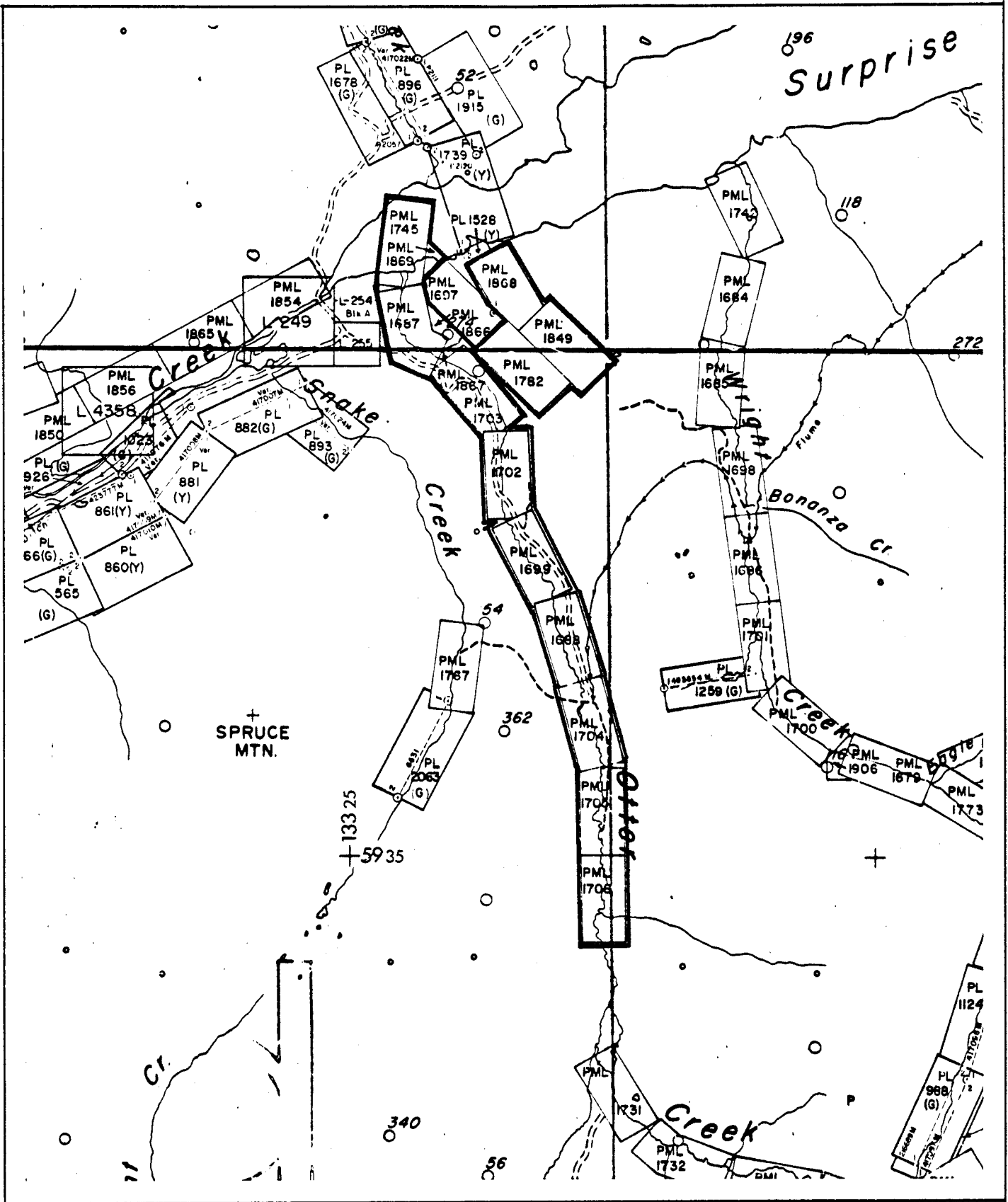


LOCATION AND ACCESS

The placer leases lie along Otter Creek, a southerly flowing stream which drains into Surprise Lake. There is facile and good gravel road access to the leases which are situated 19 road kilometres (12 miles) east of the settlement of Atlin. Various 4 x 4 roads provide good access to the leases.

Normal access to Atlin is southerly from Jakes Corner on the Alaska Highway (85 kilometres southeast of Whitehorse) via a good gravel road (Highway 7) a distance of 98 kilometres. There is a daily bus service to Atlin from Whitehorse, and Atlin has a landing strip and a float plane base. (see location map).



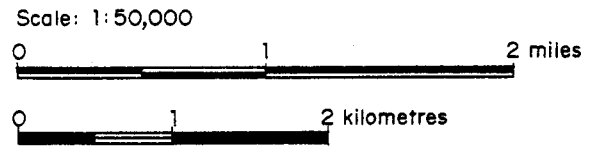


Otter Creek Placer Gold Property

Otter Creek Area Atlin, British Columbia
 Atlin Mining Division N.T.S. 104 N/11W.

Figure 2.

Claims Map



B.A.C. / Aug 79

Cochrane Consultants Limited
 4882 Duna St., Doha, B.C. V4K 2T8 666-0221

PLACER MINING LEASE INFORMATION

The placer leases under consideration cover the Otter Creek Valley, Atlin Mining Division and are shown on B. C. Dept. of Mines placer lease map 104N/11W. The following table lists claims information:

Lease No.	Tag No.	Name	Owner	Expiry Date
1687	17384M	Snoopy	S. Connally	Sept. 30/79
1688	17392M	McGinty	"	" "
1699	17387M	Tina	"	" "
1702	17386M	Rose	"	" "
1703	17385	Joy	"	" "
1704	17393M	Doris	"	" "
1705	17394M	Betty	"	" "
1706	17395M	Suzie	"	" "
1745	17306M	Lake	"	Oct. 12/79
1782	80661M	Dan	"	" "
1849	337747M	Randy	"	" "
1866	337745M	Lucy	"	" "
1867	337744M	Pauline	"	" "
1868	337746M	Ford	"	" "
1869	337778M	Surprise	"	" "



GENERAL SETTING

The Atlin area is an historic mining and picturesque region in the northwest corner of British Columbia. The unincorporated settlement of Atlin is located on the east shore of Atlin Lake, (elevation 670 metres above sea level) and local mountains rise to in excess of 2000 metres above sea level. There is alpine and sub-alpine vegetation at higher elevations and a scattered open forest in the low lands.

Both bedrock and Pleistocene geology are complex and the area is regionally described in G.S.C. Memoir 307 by Mr. J.D. Aitken. He shows the Otter Creek - Surprise area as lying on the southwest flank of an extensive alaskite plug intruding Cache Creek Group (Pennsylvanian - Permian) metasediments and volcanics. Cache Creek rocks are in turn intruded by small ultrabasic bodies of peridotite many of which are now highly altered (serpentine, carbonatized serpentine, talc etc.).



The climate of the area is rigorous but not severe at lower elevations. Winter is the dominant season and normally extends from the first frosts in September to breakup in May or early June. The annual precipitation is 28 cm. The average temperature in January is -15°C and the average temperature in July is 12°C .



HISTORY

The settlement and development of the Atlin area is intimately tied to various gold rushes and mining activities. The most spectacular event was the famous Klondike gold rush of 1897, which brought thousands of miners into the area. Early in 1898 prospectors had fanned out and claims were located on the east side of Atlin Lake in that year by Fritz Miller and Keneth McLaren. Apparently, by the end of 1899, there were 10,000 people in the area and Atlin became a busy and important boom town. Otter Creek is first mentioned in the Minister of Mines Report for 1898 (page 988), and the report for 1899 states:

"Otter Creek empties into the south side of Surprise Lake. No work, to speak of, has been done below the Upper Canyon, as the bed-rock is too deep. Above the Upper Canyon, fairly good pay dirt has been obtained and plenty of work done. Several leases, both bench and creek, have been granted on this creek."

Placer production from the Atlin Camp has come from Spruce, Pine, Boulder, Ruby, McKee, Otter, Wright, Birch Creeks and the O'Donnel River and



tributaries. (Reference 3).

Total placer production is estimated at over \$15,000,000 (gold at \$20.67 and \$35/oz.) and totaled just over 1/2 million ounces to 1936. (Minister of Mines, 1936, pg B40.)

Mr. J.D. Mason wrote an excellent report on the Placer Gold Potential of Otter Creek, Atlin, B.C. and the following is reproduced from that report:

"The first mining on Otter Creek, some five miles above it's outlet, commenced in 1901. Operations were on a small scale although some hydraulic mining was done around 1905."

"Some time prior to World War One, a French group acquired the claims on Otter Creek. They worked intermittently until 1939. No really systematic exploration was undertaken. Some hydraulic mining was done at the lower end of the creek. Shafts were sunk and underground drift mining undertaken, largely by leasing the ground to "laymen"."

" In 1939, Walter Johnson, an experienced placer operator from San Francisco, acquired the property from the French interest and continued with intermittent development until his death about 1960. During this period a number of lines of drill holes were completed, two shafts sunk, and surface and underground sampling undertaken. This was the only period in the long history of the creek that an effort was made to ascertain its overall potential."



In the spring of 1972, several of the leases along Otter Creek were transferred to Mr. T. O. Connally. Mr. Connally worked portions of the creek until his death in 1975 at which time the leases under discussion were transferred to Mrs. S. L. Connally.



FIELD PROCEDURES

A cut and surveyed line was located immediately north of the access road to Otter Creek, and this line forms the south boundary of surface lot 255 at the abandoned site of "Surprise." From the southeast corner of this lot a control line was blazed, cut, flagged and chained for a distance of 1025 metres and at an azimuth of 135° (true), then the line swings due east for a distance of 450 metres to the Creek. Stations were established every 50 metres along this control line and various physical and cultural features tied into the line. A 1"=1000' scale (1:1200) base map of the north part of the property was kindly supplied by Mr. Pete Christopher of the B.C. Dept. of Mines, and the accompanying sample locations map is based in part on this Water Resource Map, a 1:50000 blow up, the control line positions and an air photo of the area. Sample locations and claim posts were tied into the tie line where possible.



SAMPLING PROCEDURE

At each sample position, two (2) standard Tyler screens full of gravel were screened and the minus 1/4 inch size hand panned to a concentrate with a standard gold pan. The concentrates were examined with a hand lens and then washed into a filter paper, which was tagged and placed into a sealed kraft paper envelope. The concentrates from the 28 samples were delivered to Min-En Labs of North Vancouver, B. C. where they were weighed, the entire content of each concentrate sample was completely acid digested and then assayed for their gold content by chemical analysis. (see accompanying certificate of assay).



RESULTS AND CALCULATIONS

The gold pan concentrates ranged from a low of .004 ounces per ton to a high of 62.93 ounces of gold per ton. These results are, of course, on concentrates and therefore must be adjusted for the amount of concentration and then converted into standard placer units of ounces per cubic yard (or grams per cubic metre).

The following lists conversion factors used and a sample calculation of the results.

Conversion Factors:

1. estimated weight of gravels:
100 lbs per cubic foot or
1.35 short tons per cubic yard.

2. a standard tyler screen is 2" deep and
4" radius or approximately 100 cubic
inches. Two (2) screen fulls, 200 cubic
inches or
 $\frac{1}{233}$ of a cubic yard.



3. One gram is equivalent to 0.002205 pounds
4. One cubic yard is equivalent to 0.7646 cubic metres.
5. One troy oz. is equivalent to 31.1 grams.



SAMPLE CALCULATION

one tyler screen full is 2" deep x 4" radius
or approximately 100 sq. inches.

two screens is therefore 200 square inches

or $\frac{200}{12 \times 12 \times 12} = 0.116$ cubic feet.

one cubic foot is estimated to weigh 100 lbs.

∴ each sample weighed (before concentration)

$$100 \times 0.116 = 11.6 \text{ lbs.}$$

since one pound is equivalent to 373.24 grams,
each sample weighed approximately 4330 grams. After
concentration the pan concentrate was dried and weighed,
and the weight ranged from 0.30 to 3.90 grams.

The concentrating ratio varied therefore from

$$\frac{4330}{0.30} = 14433 \text{ to } 1$$

to

$$\frac{4330}{3.90} = 1110 \text{ to } 1$$



The concentrate assay divided by the concentrating ratio gives the actual assay of the gravel per ton , for example:

sample 28 returned a concentrate value of 62.93 troy ounces per ton or (since one cubic yard is 2700 lbs or 1.35 tons) the assay is $62.93 \times 1.35 = 84.96$ troy ounces per yard.

The weight of pan concentrate 28 was 2.90 grams giving a concentrating ratio of

$$\frac{4330}{2.90} = 1493 \text{ to } 1$$

∴ the actual value is

$$\frac{84.96}{1493} = 0.057 \text{ oz. per yard.}$$

The metric equivalent is

$$\frac{0.057 \times 31.1}{0.7646} = 2.32 \text{ grams per cubic metre.}$$

Table A lists the results and the conversions.



TABLE A

Panned Samples - Otter Creek

(for location see sketch map).

Sample No.	Description	Estimated troy oz. per cubic yd.	grams per cubic metre
DRC			
1.	boulder clay: two very small colors	trace	trace
2.	partly sorted gravels: six good sized colors	0.01	0.41
3.	well sorted sand/gravel: no colors	trace	trace
4.	poorly sorted gravels: one small color	0.00026	0.011
5.	rusty gravels: no colors visible	trace	trace
6.	boulder clay: several very small colors	"	"
7.	" " above bedrock: a few small colors	"	"
8.	boulder clay: a few colors	"	"
9.	" " no colors	"	"
10.	" " " "	"	"
11.	hybrid clay/sand: a few colors	"	"
12.	gravel: one very small color	"	"
13.	stream silt: no colors	"	"
14.	boulder clay: one small color	0.00042	0.017
15.	unsorted gravel: two small colors	trace	trace
16.	slightly rusty gravel: one wheat size, several small colors	0.002	0.081
17.	clayey gravel: one good size, one small color	0.00039	0.016
18.	slightly clayey gravel: one fair color, one small	trace	trace
19.	clayey gravel: seven very small colors	0.00019	0.0077
20.	gravel: no colors visible	trace	trace

Cont'd...

TABLE A (cont'd.)

Sample No.	Description	Estimated troy oz. per cubic yd.	grams per cubic metre
21.	sand and gravel: 3 good sized, 3 small colors	0.0017	0.071
22.	poorly sorted gravel: one fair, a few small colors	0.00073	0.029
23.	rusty horizon above sand: no colors	trace	trace
24.	clayey gravel: no colors	"	"
25.	talc bedrock: no colors	"	"
26.	sorted gravels: 8 good colors, several small	0.0155	0.631
27.	Drain lease: one color	0.00055	0.022
28.	same as 26	0.057	2.315

To: Cochrane Consultants Ltd.

REPORT NO. A29 - 566

PAGE No. 1

BONDAR-CLEGG & COMPANY LTD.

DATE: July 20, 1979

#1 - 4882 Delta Street
Delta, B.C. V4K 2T8

CERTIFICATE OF ASSAY

Samples submitted: July 18, 1979
Results completed: July 20, 1979

PROJECT: OTTER

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER		Percent	Percent	Percent	Percent	Percent	Percent	Percent
	Ounces per Ton	Grams per Metric Ton	Ounces per Ton	Grams per Metric Ton							
9458	0.005		0.04								

Nº 9458 D

Date

Company

COCHRANE CONSULTANTS LTD.

4882 DELTA ST., DELTA, B.C.

(604) 946-9221

Assay for Pu/Pg

For delivery to Cochrane Consultants

OTTER CR - FLOAT

SAMPLE **Nº 9458 D**

NOTE:
Rejects retained three weeks
Pulps retained three months
unless otherwise arranged.


Registered Assayer, Province of British Columbia

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET
 NORTH VANCOUVER, B.C.
 Phone: 980-5814

Certificate of Assay

TO: Cochrane Consultants,

PROJECT No. Otter

4882 Delta St.,

DATE July 25/79.

Delta, B.C.

File No. 9-379

SAMPLE No.	PAN CONCENTRATES			
	Au oz/ton	Sample wt. grams		
DRC 1	.004	2.56		
2	13.400	2.40		
3	.027	2.05		
4	.306	2.78		
5	.133	0.30		
6	.100	2.66		
7	.175	2.85		
8	.042	3.08		
9	.010	2.11		
10	.160	2.22		
11	.181	2.38		
12	.023	1.77		
13	.023	1.52		
14	.547	2.47		
15	.266	2.03		
16	2.390	2.68		
17	.644	1.94		
18	.210	2.26		
19	.324	1.88		
20	.125	0.96		
21	3.350	1.67		
DRC 22	1.352	1.72		

MIN-EN Laboratories Ltd.

CERTIFIED BY [Signature]

DISCUSSION

The best result obtained, 0.057 troy ounces per cubic yard (sample 26) is equivalent to \$17.10 per cubic yard with a gold price of \$300.00 per ounce. There are serious limitations to the field process employed however, and consequently the results should be considered as "approximate" only. The following lists some of the more serious short-comings of the procedure.

1. The total amount panned at each sample location was approximately $\frac{1}{233}$ rd. of a cubic yard, and the actual amount of gold in a full cubic yard (or cubic metre) may well vary considerably from that estimated from the small sample. A mechanized bulk sampling approach is much more desirable, however the hand panning approach is expedient and inexpensive for a "first look".



2. The majority of samples were obtained from near surface in easily accessible areas. Presumably there are other zones between surface and bedrock that contain higher concentrations of gold but are at present inaccessible.

3. There are inevitable losses of fine gold in the hand panning process, and possible losses in the transfer to filter papers.

The method employed does however suggest where the best accessible gravels are located and indicates in a very rough manor the amount of gold recoverable in a pan.

Several types of unconsolidated alluvial material are present in the Otter Creek valley and these include:

1. A fairly extensive grey boulder clay unit that appears, in places, to rest on bedrock and is characterized by sub angular, very small particles of gold. The overall



grade appears to be lower than reworked boulder clay described below.

2. Present stream of Otter Creek has washed much of the fines from the boulder clay described above and therefore native placer gold is more concentrated.
3. Abandoned channels of Otter Creek (such as that through the Drain lease, and in the draw at sample locations 26 and 28). Once again the boulder clay is reworked and the gold more concentrated.
4. The uppermost one to three metres of the boulder clay has been reworked at the upper (south) end of the leases. It appears as if an interglacial lake may have occupied the upper reaches of Otter Creek and reworked and concentrated gold. Sample 21 was obtained from this type of deposit.



5. Reworked boulder clay and sand lenses near the mouth of Otter Creek, possibly the interface between Pleistocene Surprise Lake and Otter Creek. Samples 2 and 3 were collected from this type of environment.

6. Hybrid alluvium composed of rusty, cemented (Tertiary?) gravel and Pleistocene clay and gravels. A sample of the rusty cemented Tertiary gravel was collected, sent to assay and returned 0.005 troy ounces of gold per ton and 0.04 ounces of silver per ton. Colors of gold may be obtained from the cemented gravel by crushing with a mortar and pestle and panning the fines.

Three types of gold were observed on the placer leases. Type one is subangular, extremely fine and moderately bright in color. It is common to the boulder clay.



Type two gold is a bright color, and occurs as flattened rounded discs commonly in sandy horizons.

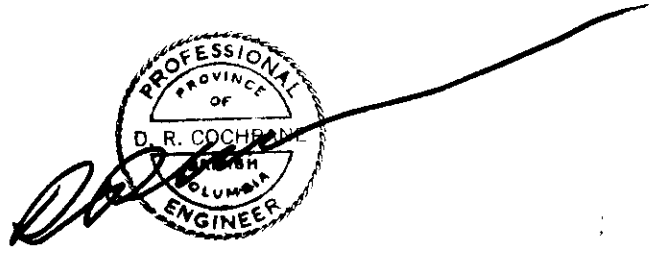
Type three gold is a dull color, sometimes rusty and well rounded (possibly some native copper content). This type of gold may be a Tertiary (?) type.

The brief sampling program has suggested that native placer gold is somewhat erratically distributed and has a somewhat complex history. The best results obtained were in areas of re-worked gravels, notably at the upper (south) end of Otter Creek; near the mouth close to Surprise Lake, and in what appears to be an abandoned channel at sample location 26 and 28. Sample 28 was collected from a fairly recent trench and from approximately 2 metres below surface immediately above a clay horizon in moderately well sorted and washed gravels.



Additional, and bulk testing of the areas of interest is herein recommended. Testing may be done by a small loader-backhoe unit and portable wash plant.

Respectfully submitted

A handwritten signature in black ink is written over a circular professional seal. The seal contains the text: "PROFESSIONAL ENGINEER OF THE PROVINCE OF BRITISH COLUMBIA" around the perimeter and "D. R. COCHRANE" in the center.

D. R. Cochrane, P. Eng.

August 28, 1979,

Delta, B. C.



APPENDIX I

Assessment Work Details

PROJECT: Otter Creek gold placer

MINING DIVISION: Atlin

LOCATION: 19 road kilometres east of the
settlement of Atlin, and south
of Surprise Lake.

N.T.S.: 104N/11 (w 1/2) Latitude 53°35'N
Longitude 133°25'W

WORK DONE: Tie line and gravel control sampling

FIELD PERSONNEL:

D. R. Cochrane, P. Eng.
W. Chase (prospector)

FIELD DATES: July 9, 10, 11, 12, 13, 14, 15, 1979

OFFICE WORK: D. R. Cochrane - report preparation
2 3/4 days
Typist - Cochrane Consultants Ltd.
18 hours
Draftsperson - Cochrane Consultants Ltd.
37 1/2 hours.

Cont'd.....



APPENDIX I (cont'd)

COSTS

Prospector		
6 1/2 days at \$100/day	\$	650.00
D. R. Cochrane, P. Eng. July 9th to 15th		
6 3/4 days at \$200/day		1,350.00
Report preparation		
2 3/4 days at \$200/day		550.00
Draftspersons		
37 1/2 hrs at \$14.85/hr		556.87
Typist		
18 hrs at \$10/hr		180.00
Assays		280.00
Reproduction		154.01
Air fare		786.00
Board		422.71
Supplies		100.06
Vehicle expense		457.17
Misc office and field expenses		88.55
		<hr/>
Total costs	\$	5,575.37



APPENDIX II

BIBLIOGRAPHY

Minister of Mines Reports, B. C., 1898 - 1975.

Sharpe, Wm.M.

1973: Report on Preliminary Surveys
and Geological Examinations of
Placer and Lode Mining Prospects
near Atlin, B. C. (Private Report
for Surprise Resources Ltd.)

Mason, J.D.

1979: Report on the Placer Gold Potential
Otter Creek, Atlin, B. C.

Daily, P.E.,

1946: Report on Otter Creek for Atlin
Placers Ltd.

Aiken, J.D.

1959: G.S.C. Memoir 307

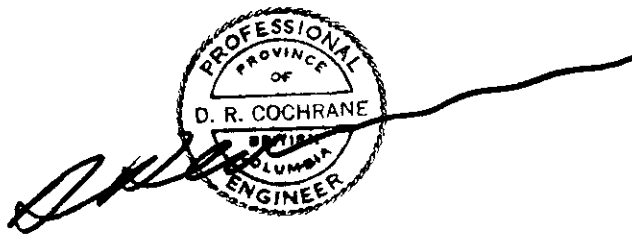


APPENDIX III

CERTIFICATE

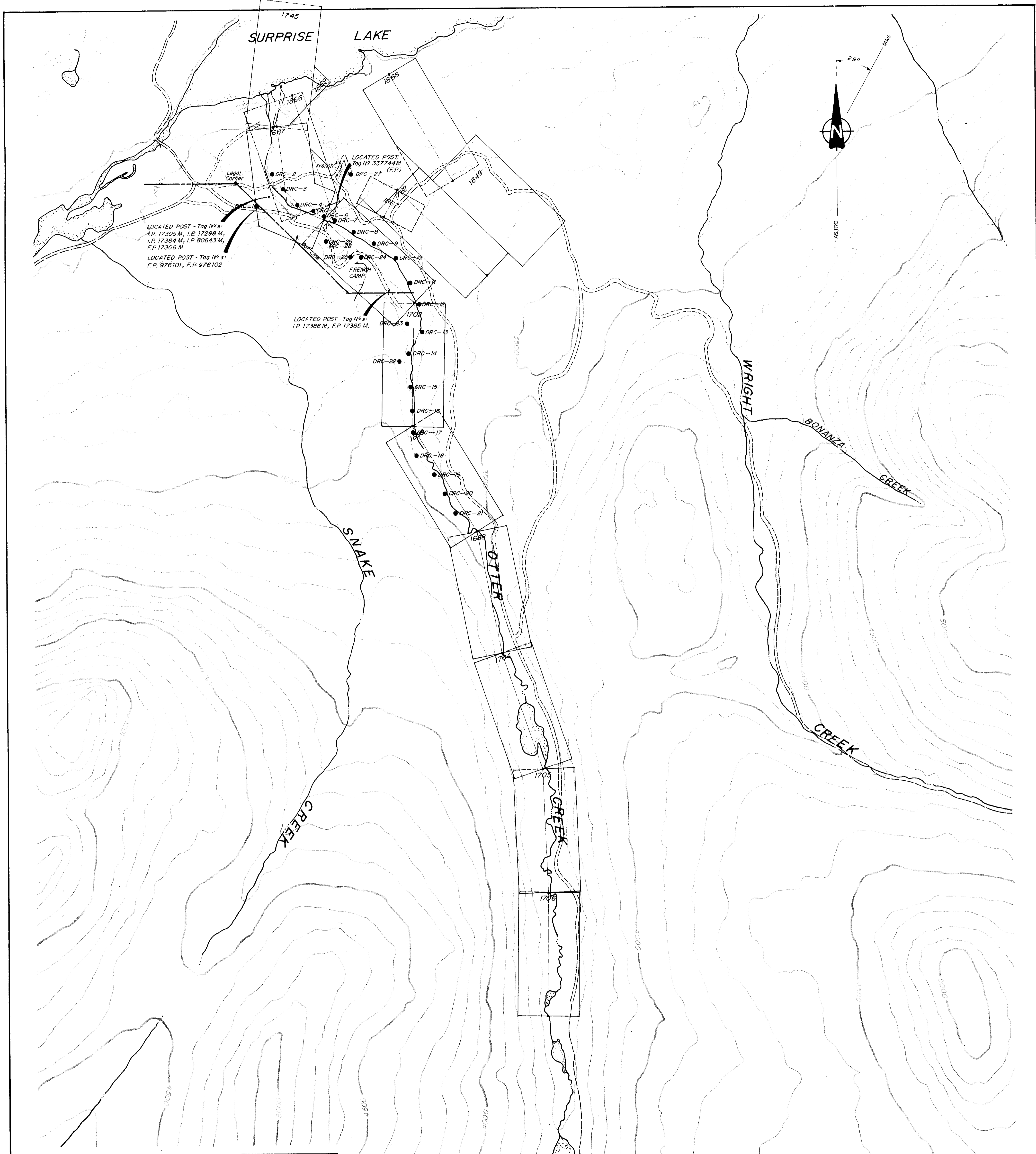
I, Donald Robert Cochrane, of the Municipality of Delta, British Columbia, do hereby certify that:

1. I am a consulting geological engineer with an office at 4882 Delta Street, Delta, B. C.
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 while being employed by such companies as Noranda Exploration Co. Ltd., Quebec Cartier Mines, and Meridian Explorations Syndicate. I have been in private independant practice since 1969.
4. I am a member in good standing of the Association of Professional Engineers (A.P.E.) of the Province of British Columbia, and also a member of the A.P.E. in the Province of Ontario, Saskatchewan, Alberta, and the Yukon Territories.



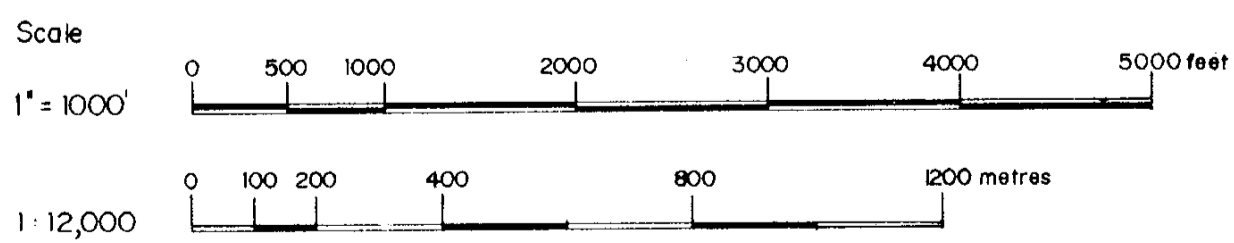
D. R. Cochrane, P. Eng.
August 28, 1979,
Delta, B. C.





Otter Cr. Placer Gold Property

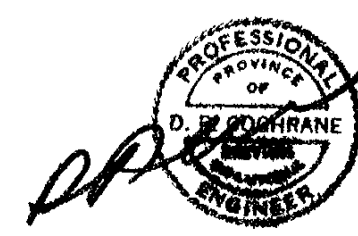
Otter Creek Area Atlin, British Columbia
 Atlin Mining Division N.T.S. 104N/11W.



SAMPLE LOCATIONS Figure 3.

To accompany a report by D.R. COCHRANE, P.Eng., on the
 Otter Creek Placer Leases dated August 28, 1979.

- MINIMAX OVERLAYS:
- A. Base Map ROADS & DRAINAGE
 - B. Leases *APPROXIMATE POST LOCATIONS (Form 1's)
 - C. Sample Locations ●
 - D. Topography 100' INTERVAL



MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
7553
 COCHRANE CONSULTANTS LIMITED
 4882 Delta St., Delta, B.C. V4K 2T8 946-9221