

BRODIE HICKS ENGINEERING LTD  
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8005/1  
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REPORT ON

THE MOSQUITO CREEK GOLD MINING CO. LTD. (N.P.L.)

WELLS, B. C.

BY

H. BRODIE HICKS, P. ENG.

dated at  
Vancouver, B.C.  
November 5, 1980

Per \_\_\_\_\_

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INTRODUCTION

This report has been commissioned by Mr. A.H. Jukes, President of The Mosquito Creek Gold Mining Co. Ltd. (N.P.L.), Suite 586, Calgary Place Three, Calgary, Alberta, T2P 2E7.

The writer most recently visited the property on October 21, 1980, spending a full day in an examination of the operations. He has been generally familiar with ongoing developments since 1972 when the firm of Cannon-Hicks Associates Ltd., of which he was a principal, directed the Company's initial exploration work. Subsequently he has been engaged, from time to time, as a consultant and has visited the site on a number of occasions.

SUMMARY

1) The Company holds 29 Crown-Granted mineral claims near the town of Wells, British Columbia, a long-established mining centre. All necessary facilities are readily available.

2) The area has been the scene of placer mining for more than one hundred years. From 1933 to 1959, profitable lode mining was carried out on claims adjacent to and in part overlapping the present Company property, with total production aggregating 3,000,000 tons at a grade of 0.43 ounces gold per ton.

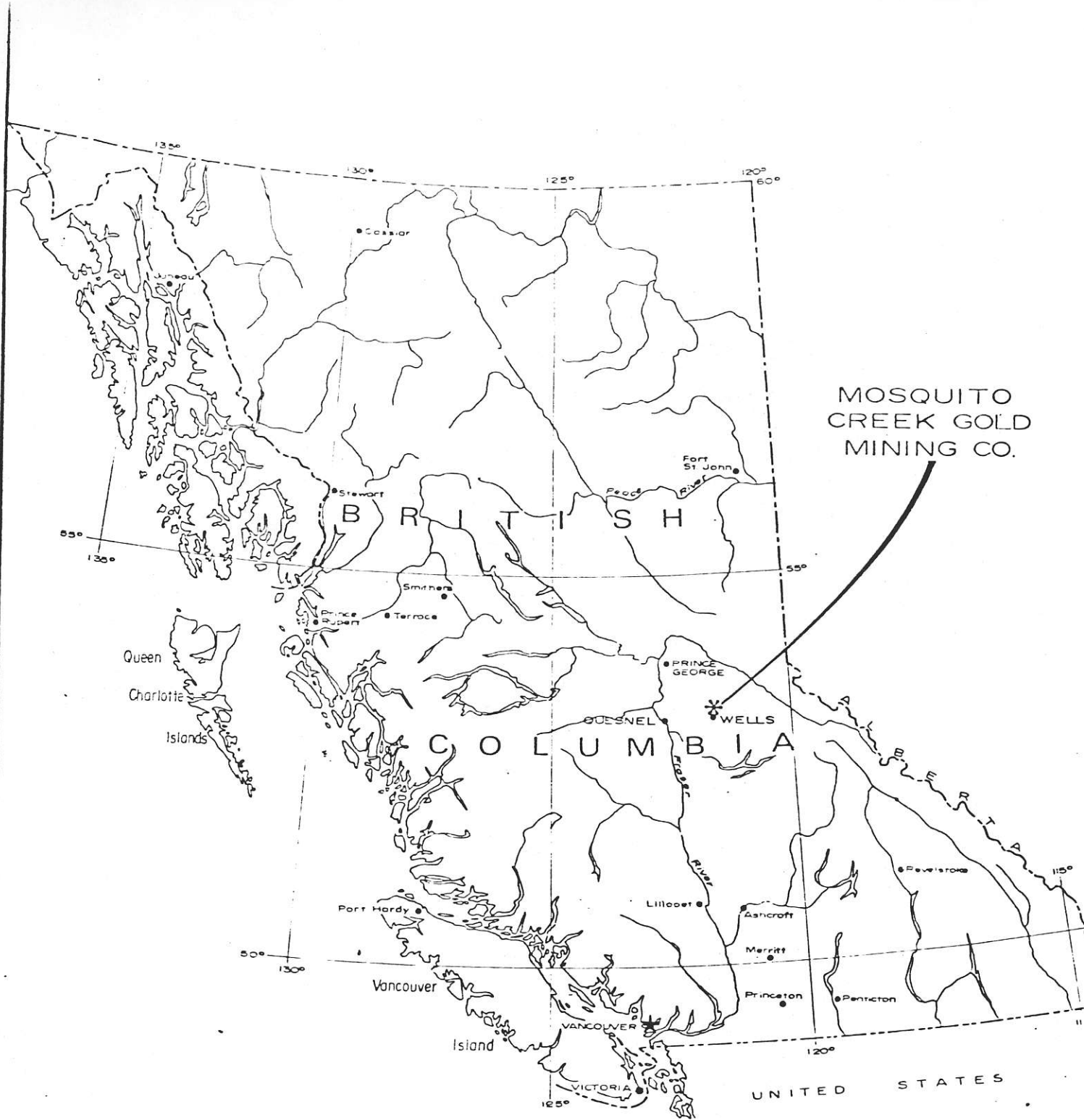
3) The favourable gold-bearing formation exploited by these earlier operators has been traced over the Company's ground for a distance of 4,000 feet. Mineralisation occurs both as sulphide replacements and in quartz veins.

4) The mine has been developed through a vertical shaft, 500 feet in depth with lateral work on four levels.

5) Reserves, including surface stock-piles and indicated material in place are estimated at 26,900 tons with a grade of 0.59 ounces gold per ton. Underground development is currently adding to this figure.

6) A cyanide plant of nominal 100-ton per day capacity commenced operation late in February 1980 and, to the end of September 1980, had treated approximately 5,200 tons with a gold recovery of 2,320 ounces.

*26,900  
80% = 336 days*



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THE MOSQUITO CREEK GOLD MINING CO.  
WELLS, B.C.

LOCATION MAP

Scale: 1" = 136 Miles

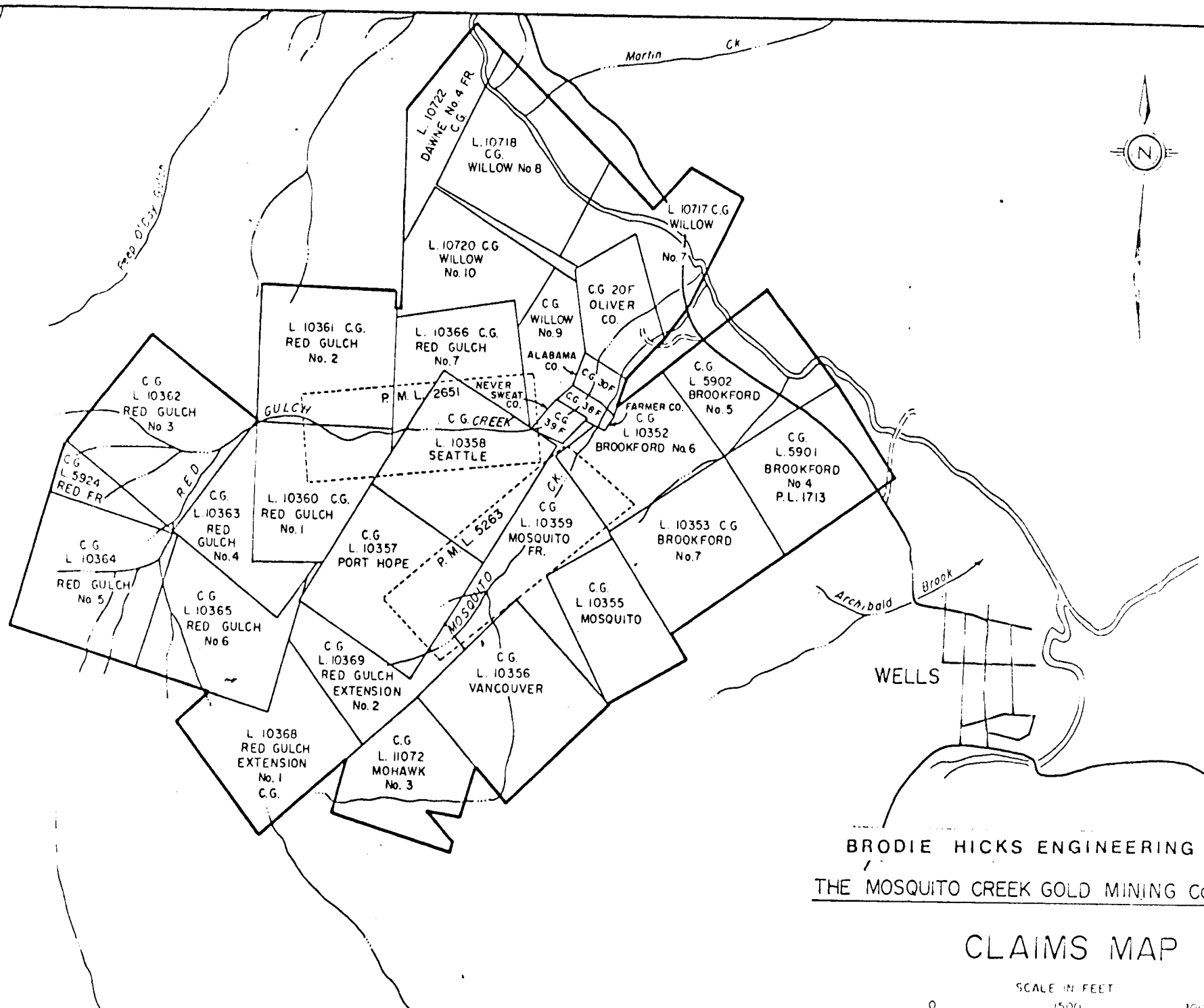
7) The outlook is favourable for the discovery of additional reserves and for a gradual increase in production rate to the full capacity of the plant.

### PROPERTY

The Mosquito Creek Gold Mining Co. Ltd. (N.P.L.) holds 29 Crown-Granted mineral claims and two placer leases on Island Mountain, two miles west of the village of Wells, B.C., in the Cariboo Mining District at latitude 53° 07' North and 121° 36' West.

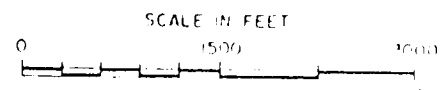
Titles were searched and claim posts examined in 1975 by an associate of the writer and found to be in good standing. Mr. A.H. Jukes, President of the Company, advises that the claims continue to be in good standing. A list follows:

<u>Crown Granted Mineral Lease</u>	<u>Lot. No.</u>	<u>No. of Acres</u>	<u>Date Crown Granted</u>
Brookford No. 4	5901	42.37	February 1, 1936
Brookford No. 5	5902	41.32	February 1, 1936
Brookford No. 6	10352	35.94	February 1, 1936
Brookford No. 7	10353	43.95	February 1, 1936
Mosquito	10355	31.67	February 1, 1936
Vancouver	10356	51.65	February 1, 1936
Port Hope	10357	51.65	February 1, 1936
Seattle	10358	51.36	February 1, 1936
Mosquito Fraction	10359	38.89	July 13, 1936
Mohawk No. 3	11072	35.14	April 30, 1935
Red Gulch No. 1	10360	40.89	October 30, 1939
Red Gulch No. 2	10361	51.65	October 30, 1939
Red Gulch No. 3	10362	51.65	October 30, 1939
Red Gulch No. 4	10363	26.04	November 11, 1939
Red Gulch No. 5	10364	51.64	October 30, 1939
Red Gulch No. 6	10365	42.15	October 30, 1939
Red Gulch No. 7	10366	31.99	October 27, 1939
Red Gulch Ext. No. 1	10368	43.41	October 27, 1939
Red Gulch Ext. No. 2	10369	25.33	October 27, 1939
Red Fraction	5924	9.52	October 30, 1939
Willow No. 7	10717	38.07	February 19, 1951
Willow No. 8	10718	47.13	February 19, 1951
Willow No. 9	10719	19.38	February 19, 1951
Willow No. 10	10720	33.63	February 19, 1951
Dawne No. 4 Fraction	10722	27.08	February 19, 1951



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### CLAIMS MAP



The following also have placer rights:

Oliver	20F	23.52	September 2, 1875
Alabama Co.	30F	5.00	May 16, 1875
Farmer Co.	38F	3.00	May 17, 1876
Never Sweat Co.	39F	3.00	May 17, 1876
<hr/>			
Total	29	998.29	
	<u>claims</u>	<hr/>	

<u>Placer Mineral Lease</u>	<u>Work Recorded To</u>	<u>Date Recorded</u>
P.M.L. 5263	February 10, 1981	February 10, 1951
P.M.L. 2651	June 27, 1981	June 27, 1933

#### LOCATION, ACCESS, FACILITIES

The property is adjacent to the town of Wells, British Columbia, from which the shaft site and mill are reached by a gravel road some two miles in length. Wells is connected by paved highway to the town of Quesnel and the city of Prince George, road distances respectively of 55 and 125 miles. Both of these locations are serviced by rail and scheduled air line.

The village of Wells is a mining-oriented community with a population of 300-400 people, providing social and recreational facilities for a work force. Most of the supplies and parts necessary for an operation may be obtained at Quesnel or, in the case of major requirements, at Prince George. Vancouver is less than an hour away by plane.

Water and timber for the operation are locally available. There is no source of commercial electric power which is generated on site by the Company.

#### HISTORY

The gold rush of the 1860's to Williams Creek precipitated the gold placer mining which still continues sporadically. It may be noted that some of the present Mosquito Creek claims were first staked in 1875. Mr. Jack Gunn, the last owner, ceased hydraulic mining in 1960.

Lode mining in the area was carried out by Cariboo Gold Quartz Mining Company, from 1933 to 1959, on adjacent claims on Cow Mountain. The Island Mountain Mines Co. (owned by Newmont Mining Corp.) produced from their claims from 1934 to 1954 at which time they were acquired by the Cariboo Gold Quartz Mining Co. Production continued until 1967 when rising costs in the context of a fixed gold price forced closure. The Mosquito Creek claims overlap, in part, these former workings, and at depths of from 800 to 1,350 feet below the present shaft bottom old records show reserves of 40,000 tons grading 0.70 oz/ton. These working are flooded and, for the present, are inaccessible.

Production from the former mines comprised 2,927,246 tons with an average grade of 0.428 oz/ton. Gold production totalled 1,196,283 oz. and silver production 137,750 oz.

*Surface*  
 16180  
 10910  
 1150  
 28240

The present Company was incorporated in 1971 and a programme of surface and underground exploration was carried out through the Spring of 1975. This comprised road construction, geological, geochemical and geophysical surveys, bulldozer trenching, 16,180 feet of surface diamond drilling, 10,910 feet of percussion drilling, sinking of a 516-foot production shaft, 2,137 feet of drifting and crosscutting, 6,660 feet of underground diamond drilling, and environmental monitoring of the surrounding area.

*Drifts*  
 2137  
 1859  
 2259  
 2485  
 555  
 9295

Underground work was resumed in July 1977 and comprised 1,859 feet of lateral development, 5,313 feet of underground diamond drilling, plus 1,150 feet of surface diamond drilling, as well as some trial stoping.

*Underground*  
 6660  
 5313  
 8510  
 20483

In 1979, the necessary financing for a production operation was secured and mill construction went forward simultaneously with additional mine development. From March 15, 1979 to September 30, 1980, underground footage totalled 2,259 feet of drifting, 2,485 feet of cross-cutting, 555 feet of raising, and 8,510 feet of diamond drilling. The mill commenced operation on February 28, 1980.

GEOLOGY

The rocks of the area are comprised within the Snowshoe formation of the Cariboo Group and consist of meta-sediments of early Cambrian age including phyllites, quartzites and limestones. There are no local intrusions. The formation has been intensely folded and the main mineralized areas occur within a fold, overturned to the southwest, on the northeast flank of an anticlinorium which strikes northwest and plunges 22° in the strike direction. The anticlinorium has been flexed normal to the plunge with resulting major faults developing at intervals of 700 to 1800 feet. These faults strike northerly and have varying dips to the east.



Gold production has been derived from two distinctive rock types. The Rainbow bed is composed of dark quartzites, argillites and some phyllites in which tension fractures have developed normal to the bedding. These fractures have in turn been filled with gold bearing quartz and pyrite.

RAINBOW  
(DARK)

The Baker member is composed of light fine grained calcareous quartzites, talcose rocks and interbedded limestones. The limestones have been replaced by gold bearing sulfides and this generally occurs in the bed nearest the Baker-Rainbow contact. This contact zone, which is the major exploration target of the Mosquito Creek project, has been traced over a distance of 9.6 km (6 miles) and was a main source of ore for the previous producers. The contact area has been complicated by overturned folding and has provided the environment for gold deposition.

BAKER  
(LIGHT)

In general, the average grade of the quartz veins in the Rainbow member has been in the order of 0.30 to 0.40 ounces of gold per ton with minor silver values. The Baker replacement ore has averaged 0.50 to several ounces of gold per ton with silver content generally 10% to 15% of the gold content. At the present time, attention is being confined to the replacement ore, but in the course of development some quartz veins are also being encountered.

#### DEVELOPMENT

The individual replacement bodies conform to the local pattern of folding and in consequence have a flat plunge of 22 degrees along the strike of the Baker-Rainbow contact. In general, they are of modest dimensions, ranging in size from a few hundred tons to a maximum of perhaps 30,000 tons. Their location is unpredictable hence a comparatively intense development schedule is required and, as discussed below, it is uneconomic to place into sight any substantial reserves.

Development practise is to drift, as closely as possible, along the general strike of the Baker-Rainbow contact and to put out crosscuts at 100-foot intervals followed by vertical diamond drilling both upward and downward. This procedure was developed after many years of experience at the former producing mines adjacent to Mosquito Creek. Success in locating bodies of replacement mineralisation has been achieved by the Company on all four levels.

#### MINERAL RESERVES

The irregular distribution and comparatively small size of the individual mineralised lenses render the forward development

of reserves costly and unpredictable. It is therefore anticipated that at no time will any substantial reserves be placed in sight. Present reserves are estimated at:

<u>Category</u>	<u>Tons</u>	<u>Grade, Oz/Ton</u>
Surface Stock Piles	3,300	0.40
Underground:		
Drift Indicated	3,400	0.70
Drill Indicated	<u>20,200</u>	<u>0.60</u>
	<u>26,900</u>	<u>0.59</u>

Nearly all of these reserves are in the sulphide replacements. The actual grades encountered in drifting and drilling are substantially higher than those used in the above estimate but during the next few months it is probable that substantial dilution will be encountered in the course of development and trial stoping, and grades have been adjusted to take this into account. Ultimately grades may be expected to approximate the historic figures recorded in previous operations which, for the sulphide replacements were of the order of 0.50 to several ounces per ton, probably averaging about 0.80 oz/ton.

In view of the geological setting and the experience of the older adjacent mines there is reason to suppose that new reserves will continue to be located. There can be no assurance, however, that this will in fact take place.

Lying from 800 to 1,350 feet below the Mosquito Creek Mines, old workings of the former Island Mountain Mines Ltd. contain reserves estimated by the former operators at 40,000 tons grading 0.70 ounces gold per ton. These will not be available for mining in the immediate future but are of importance in demonstrating the continuation of the ore-making structure on to the Company's claims.

#### MINING

Mining methods are based on experience of similar occurrences in the former adjacent mines. In general, the replacement lenses plunge at an angle of 22°. Open stoping is employed with the material being scraped to boxholes or to loader draw-points. Ground support is effected by rock-bolts and strapping as required, usually at four to five foot centres.

The production is delivered in trains, drawn by battery locomotives, to the shaft at each level. Hoisting is in cars.

#### METALLURGY AND MILLING

The former producing mines attained an average recovery of 95% of the gold and silver content by a straight cyanidation process using methods and equipment standard in the industry. The present reserves appear to be mineralogically identical and hence the same process has been adopted.

The mill, erected during the latter part of 1979 and early 1980, comprises all of the necessary equipment for treating 100 tons per day and, with minor adjustments, capacity could be increased to perhaps 150 tons per day. It is situated approximately 4,900 feet from the shaft, mine production being delivered by truck. The tailings disposal area is immediately adjacent to the plant.

All of the Government permits required for the operation have been obtained.

For reasons of economy, used equipment was purchased, and the integration of the various units into a smoothly integrated whole has not yet been fully achieved. To some extent, therefore, the plant must be considered as being still in the tune-up phase but it is apparent that normal operations are gradually being reached.

Because of the difficulties involved in regularising the mechanical aspects of the plant, metallurgical records have not yet attained normal professional standards and the writer has encountered some difficulty in arriving at estimates of material treated to date. Based on actual returns from the mint and other refiners, production to the end of September is estimated at 2,320 ounces of gold and 552 ounces of silver, derived from the treatment of 5,222 tons. Recovery has averaged about 80%. Hence, head grade may be estimated at 0.53 ounces gold per ton.

A refinery, on site, smelts the cyanide precipitate to gold-silver bars.

A fully-equipped assay office has been erected adjacent to the mill and all other necessary auxillary facilities, including pollution control equipment, are on site.

CONCLUSION

Broadly speaking, the operations of The Mosquito Creek Gold Mining Company may be considered a revival of production along a well-established gold structure with a successful 35-year history of profitable production, interrupted in 1967 by economic circumstances and not by exhaustion of reserves. The present price of gold suggests that these unfavourable circumstances no longer exist and that renewed profitability may be possible. While there can be no assurance that this will be the case, the outlook is now favourable.

Respectfully submitted,

BRODIE HICKS ENGINEERING LTD.



H. Brodie Hicks, P. Eng., M. Eng.

Vancouver, B.C.  
November 5, 1980

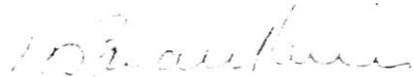
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TELEPHONE 688 4725

CERTIFICATE

I, H. Brodie Hicks, of 903 - 5455 Balsam Street, Vancouver, British Columbia, declare as follows:

- 1) That I am a graduate of McGill University, Montreal, Quebec, with the degrees of B. Eng. (1934), and M. Eng. (1935) in Mining Engineering.
- 2) That I am a member of the Associations of Professional Engineers of British Columbia and of Ontario.
- 3) That I have practiced my profession continuously since 1935.
- 4) That the preceding report on the property and operations of the Mosquito Creek Gold Mining Company Limited is based on personal knowledge gained as a consultant to the Company since 1972, including a number of on-site inspections, the latest on October 21, 1980.
- 5) That I have no interest in the properties or securities of The Mosquito Creek Gold Mining Company Limited nor do I expect to receive any such interest.

DATED at Vancouver, British Columbia, this fifth day of November, 1980.



H. Brodie Hicks, P. Eng., M. Eng.