

REPORT ON THE KNIGHT INLET
PROPERTY
VANCOUVER MINING DIVISION

July 18, 1969 673052

For
KNIGHT INLET RESOURCES LTD., N.P.L.
670 - Bentall One,
Vancouver, B.C.

By
ALLEN GEOLOGICAL ENGINEERING LTD.
507 - 789 West Pender Street,
Vancouver, B.C.

C O N T E N T S

	<u>Page</u>
INTRODUCTION.....	1
LOCATION AND ACCESSIBILITY.....	1
PROPERTY.....	2
TOPOGRAPHY, TIMBER AND CLIMATE.....	3
HISTORY.....	4
GEOLOGY.....	5
WORKINGS.....	6
ECONOMIC CONSIDERATIONS.....	12
SUMMARY AND CONCLUSIONS.....	16
RECOMMENDATIONS,.....	17
REFERENCES.....	19

MAPS

1. Knight Inlet, Sketch Plan, Mineral Claims
 2. Knight Inlet, Sketch Plan, Adit Locations
 3. Knight Inlet, Sketch Plan, Lower Adit Tunnel
 4. Knight Inlet, Sketch Plan, Main Adit Tunnel
- Copy - Independent report on Crystalline Marble Deposit

THE KNIGHT INLET PROPERTY

VANCOUVER MINING DIVISION

INTRODUCTION

The Knight Inlet property was examined by the writer, June 24th - 28th inclusive, 1969. Mr. Peter Auxier and Mr. Tom Thomas assisted with the examination.

The report was requested by Mr. J.G. Eichhorst of 45 Southview Place, Lions Bay, B.C., who, along with Dr. R.H. Rogers, of 175 East Broadway, Vancouver, B.C., visited the property and staked six mineral claims during the examination.

The purpose of the report was to acquire all available information pertaining to reported copper and marble deposits on the property, and to recommend a works programme considered most practicable for the development of same.

LOCATION AND ACCESSIBILITY

The property is located on the coast of British Columbia, opposite the north end of Vancouver Island, at 50° -43' -40"

north latitude and 125°-49' -00" west longitude.

The claims are located on Matsiu Creek which flows South into Knight Inlet 5 miles west of Haena Point, where the inlet changes direction from east to north.

Access is by aircraft or boat from Kelsey Bay on Vancouver Island, a straight line distance of 22½ miles to the mouth of Matsiu Creek.

PROPERTY

The property is made up of the following mineral claims:-

Catherine	No. 1	Recorded	August 21st	1969
	2	"	"	"
	3	"	"	"
	5	"	"	"
	6	"	"	"
	7	"	"	"
	8	"	"	"
	Rogers	No. 1	Recorded	July
2		"	"	"
3		"	"	"
Gordon	No. 1	Recorded	July	15th 1969
	2	"	"	"
	3	"	"	"
John	No. 1	Recorded	July	15th 1969
	2	"	"	"
	3	"	"	"

The posts of most of the claims were examined by the writer and are considered to be staked in accordance with the requirements of the British Columbia regulations.

TOPOGRAPHY, TIMBER AND CLIMATE

Typical of many of the fiord-type inlets of the British Columbia coast Knight Inlet is surrounded by precipitous mountains.

Matsiu Creek flows south through a narrow valley on both sides of which steep walls rise at slopes up to 44 degrees. The showings are on the east side of the creek. The west slopes of Mount Catherine, at this location are, for the most part, in excess of 30 degrees, with some nearly vertical. Small creeks flow westerly in small narrow gullies into Matsiu Creek.

From the beach to the highest adit tunnel is an elevation difference of about 1,400 feet, whereas the main tunnels are at approximately 750 and 1,100 feet above sea level. The claims area is covered with a moderate to heavy growth of typical coast timber. It is understood that this is held by one of the major logging companies.

The climate is suitable for all-year mining. Rainfall is moderate to heavy. There is snow at the levels of the workings during the mid-winter months.

HISTORY

The property was held prior to 1920 by the Princess Copper Mining Company of Vancouver, and the claims were known as the Princess Group. This company had driven the main adit tunnel a distance of 210 feet, the upper tunnel 10 feet, and several open cuts to depths of about 5 feet.

In 1928 the property was re-staked and known as the Cambria Copper Company. They conducted exploratory work on the property for the ensuing several years. The main adit tunnel was extended an additional 200 feet, the upper tunnel 10 feet further into the hillside, and a lower adit tunnel was driven for a length of 100 feet.

In 1966 the property was acquired by P.B.M. Explorations,

and was subsequently taken over by the present owners, Knight Inlet Mines Ltd., of Vancouver, B.C.

The early workers were exploring for copper along the roof pendant-intrusive contact. Currently, Knight Inlet Mines are investigating both the copper potential and the possibilities of producing a high quality marble for architectural building stone.

GEOLOGY

A northwesterly trending roof-pondant of metamorphosed sedimentary and volcanic rocks, of unknown vertical or lateral extent, lies within Coast Range granodiorite on the north side of Knight Inlet in the vicinity of Matsiu Creek. The roof-pondant has been prospected but not mapped. A band of marble lies along and close to the northwest contact of granodiorite and additional similar bands are reported to the southeast.

Over a vertical distance of about 650 feet, on the steep east side of Matsiu Creek, several open cuts and three

adit tunnels have been driven on small scattered lenses of copper mineralization in marble. To date no copper mineralization of economic significance has been encountered. The tunnels have, however, partially outlined zones of banded marble, pure white marble and a high quality blue marble. This rock is compact, medium grained, beautifully coloured and relatively free from fractures. There is an excellent possibility that a market can be found for the various grades and colours of this marble.

WORKINGS

There are discrepancies in the portal elevations noted in previous reports and an accurate measurement and survey of all workings will be necessary before the exact locations of these are established. For the present, the elevations recorded in a company engineer's report of 1928 are used, and are so shown on the accompanying sketch map. These are as follows:-

Elevation of Matsiu Creek at bottom of trail up to workings, 100 feet above sea level.

Elevation of Lower Adit Tunnel, 750 feet above Sea Level.

Elevation of Main Adit Tunnel, 1150 Feet above sea level
" " Upper Adit Tunnel, 1400 " " " "

The Lower Adit Tunnel

This tunnel is in excellent condition and was surveyed by chain and Brunton compass by the writer. The portal is about 125 feet south of a small westerly flowing creek. It extends from the steeply sloping sidehill southeast for 100 feet. From the portal the tunnel is driven along the granodiorite skarn contact on the southwest, and marble on the northeast, for 45 feet, and from there to the face is entirely in marble.

Two short crosscuts have been driven into the southwest wall for 5 to 6 feet. One is 50 feet from the portal and the other is 15 feet from the face of the adit. Narrow skarn zones were exposed in each short crosscut. The marble is white, grey, and cream, with some grey and brown banded sections. Malachite and azurite staining indicates copper mineralization at the portal, two locations on the northeast wall about 20 and 30 feet from the portal. On the same wall, 40 feet from the face, there is pyrite, pyrrhotite and chalcopyrite on both walls, and 10 feet from the face there

is a narrow zone of skarn containing pyrrhotite, pyrite and chalcopyrite.

Although the tunnel is driven close to the granodiorite contact, the marble in the inner 50 feet appears to be of good quality, with no excessive zones of shearing or impurities. The small copper showings are not of sufficient size or grade to be of commercial value, but they indicate that the invading igneous solutions deposited metallic constituents in the older rocks and it is possible that elsewhere within the roof pendant larger deposits may have been formed.

The Main Adit Tunnel

This adit tunnel was started at the contact between limestone, skarn and granodiorite where some narrow copper-zinc mineralization was evident. It was directed south 30 degrees east for 226 feet and then turned south for an additional 160 feet where it once again encountered the granodiorite contact. One 5-foot crosscut was directed into the west wall just before the turn to the south and a second one 12 feet into the east wall just

after the turn. Granodiorite is evident in the first 76 feet of the tunnel, and from that point to the face it is believed to follow within 20 to 50 feet of the contact until it re-enters the igneous rock at the face.

From 76 feet to 128 feet from the portal, there is white, grey and banded marble. For the next 100 feet, to the crosscut into the west wall, there is blue marble. It is uniform and good looking quality, except for several bands of pure white marble, some small skarn zones, and one sheer zone. It appears to swing from a southeasterly strike to east near the south contact, where it grades into white and grey marble, and where a small lense of skarn, pyrrhotite, bornite and chalcopyrite occurs followed by 20 feet of skarn, altered marble, and scattered disseminations of chalcopyrite, pyrite, pyrrhotite and sphalerite. The next 15 feet is white and grey marble, and from there to 10 feet from the face is through impure marble and skarn. The granodiorite contact strikes southeast and appears to dip 45 degrees southwest at this location. There is considerable alteration and folding within the impure marble at the contact.

The tunnel angles across what appears to be a true width of 80 to 140 feet of marble. The zone of blue colouration is 20 to 40 feet wide and the remainder is white, grey, blue and white banded and grey and white banded.

Only minor zones of copper and zinc-bearing material were encountered, and these were too widely separated to be mineable at a profit.

The Upper Adit Tunnel

The upper tunnel is little more than an open cut in the very steep rocky slope about 300 feet vertically above the main tunnel. It is in an 8-foot skarn zone which is vertical and strikes southeast. A 2-inch shear zone lies almost parallel to the surface and cuts through the tunnel portal, extending above and below the tunnel for 50-feet or more. Throughout the narrow shear are bunches and veinlets of pyrite, chalcopyrite and pyrrhotite. Much green and blue copper staining is associated with each small mineralized zone, but being like a sheet along the surface it imparts the impression that the copper mineralization is widespread rather than being confined to the thin plain of the shear zone.

A 50-foot band of grey and white marble lies along the northeast side of the skarn zone, and this in turn is bounded on the northeast by an igneous rock resembling diorite or granodiorite. On the southwest side of the skarn zone there is 12 feet of altered granite and skarn and this grades into medium-grained pink granite.

This tunnel exposes only the small shear zone with limited copper mineralization. No work has been done on the marble at this elevation.

An unsubstantiated report to the effect that a magnetite body is located about 600 feet higher in elevation has to the writer's knowledge not been checked.

Open Cuts

Within a few hundred feet from the portals of the main and lower adits there are open cuts in marble, but these are small and serve only to substantiate the presence of the marble band close to the workings.

ECONOMIC CONSIDERATIONS

In the early days the property was considered a good copper prospect. Because of the transportation and other difficulties all prospecting was concentrated in the general area of the three tunnels. This work was terminated about 1930. Current evaluation of the potential of the property places the copper in a secondary status and points to the marble as the number one potential.

The Copper Potential of the Area

The property lies in the environment of the Coast Range Batholith. It, however, partially blankets a roof pendant within the batholith. The roof pendants of the Coast Range Batholith are fairly common up and down the coast, and large copper mines have been found associated with several. Hence, if copper and other minerals are found associated with a roof pendant this location is usually rated as prime prospecting ground, warranting thorough investigation. On the Knight Inlet property copper-iron-zinc mineralization has been found in small scattered

deposits within a limited segment of a sizeable roof pendant. Geological conditions are favourable for the occurrence of sizeable deposits containing copper-iron-zinc mineralization elsewhere within the roof pendant and thorough investigation, using modern prospecting and geophysical methods, is warranted.

The situation is somewhat improved for Knight Inlet Mines, in comparison to a company holding a copper-zinc property only, in that there appears to be a safety factor for the company by virtue of the indicated occurrence of high grade architectural building stone on their holdings.

The Marble Potential of the Area

The area explored by the present workings is only a small portion of the roof pendant, and it is possible that additional marble deposits will be discovered and several quarry sites established. An assessment of the potential of the deposit in the vicinity of the tunnels may, however, at this time be made with available data.

The main tunnel penetrated a band of marble the true width of which is at least 100 feet, and within which there is a 20-foot width of blue marble. From surface indications and data provided by the other tunnels and open cuts, it is evident that the marble deposits are large enough to support a quarrying operation for some years. The grade and marketability of the marble are considered favourable. A specialist in the industry, Luigi Scalera Marchesi of Carrara, Italy, reported on December 11th, 1968 as follows:-

" The stone itself, is coarse grained, light blue banded, and appears to take a nice polish. Because of the coarse grain, it should have a pleasing texture on the polished surface and be quite weather resistant".

" In fact it is known that blue colour is almost impossible to find in natural form. I do not know of any other stone with the same colouration as the only other blue stone is the Blue Pearl granite from Norway (somewhat darker and with much coarser crystals). This is, of course, the most expensive material in the market but not always obtainable."

"World markets have expanded considerably in the last few years. Italian production has grown from 600,000 tons in 1950 to about 2,000,000 tons now. (annually) Most of the quarries there are now operating at capacity and not able to fill demand."

"In keeping with present architectural trends and public taste, the most desirable stone at the present time is light in colour. This blue marble will obtain a ready preference as comparable stone is not readily available."

"Marble has been traditionally and will continue to be the glamour item in the ornamental stone industry."

"From all the above circumstances, I should say that it would not be unreasonable to expect to sell about 1,000 tons annually for the first few years at a price of \$60.00 per ton rough quarried, and with the possibility of increasing the amount to 10,000 tons annually as the marble becomes better known."

"It should be possible to quarry marble here at a cost of about \$20.00 per ton."

In the opinion of the writer the quality of the marble is excellent as exposed in the main tunnel. It is adjacent to the intrusive contact, however, which has produced some shearing, contortion and small igneous dykes. It is reasonable to assume that even higher quality stone will be found further off from the contact zone.

The quantity of marble will, in the opinion of the writer, be found adequate to warrant a quarrying operation of long duration.

SUMMARY AND CONCLUSIONS

The property is well located, near tidewater, on the Matsiu Creek drainage, on the north side of Knight Inlet. By straight line distances this is $22\frac{1}{2}$ miles north from Kelsey Bay on Vancouver Island or 150 miles northwest of Vancouver, B.C.

Copper-iron-zinc mineralization has been discovered in small occurrences under favourable geological conditions, and whereas no sizeable deposits have been outlined it is possible that such could exist. High quality marble has been found and partially explored by three adit tunnels and several open cuts. The marble zone contains a band of rare blue stone which should bring a premium price. It is concluded that the property warrants thorough prospecting for possible copper-iron-zinc occurrences, and of primary importance additional investigations pertaining to the development of a high quality marble quarrying operation.

RECOMMENDATIONS

It is herewith recommended that the following field programme be carried out forthwith.

	<u>Estimated Costs</u>
1. Establish a camp at the beach on the east side of Matsiu Creek, suitable for 10 men,	\$3,500.00
2. Establish a suitable trail from the beach to the workings, and a smaller camp and storage facility near the main tunnel,	4,000.00

3. Prospect the roof pendant area, and conduct preliminary magnetometer and geochemical investigations over selected areas,	\$5,000.00
4. By chain and transit survey make a topographic map of the area including the workings, as far west as Matsiu Creek,	2,000.00
5. Clear, strip and trench to bedrock, selected areas to expose the marble deposit as adequately as practicable to provide data for the necessary sampling of the stone,	12,500.00
6. Diamond drill to check location of the marble to depths of at least 100 feet underground,	10,000.00
7. Office, overhead, engineering and research,	9,000.00
8. Contingencies,	<u>4,000.00</u>
Estimated Costs	\$ <u>50,000.00</u>

S The time schedule for this programme will depend upon when the project is started, weather, and which aspects of the work are carried on simultaneously. A rough estimate of the time necessary to complete the programme is from one to four months.

Respectfully submitted,

Alfred B. Allen P. Eng.

for ALLEN GEOLOGICAL ENGINEERING LTD.

REFERENCES

- B.C. Minister of Mines Annual Reports, 1920 P. N212
1928 P. C380
1929 P. C386
- Campbell-Johnston, R.C., Cambria Copper Company Ltd.,
May, 1929
- Mitchell, R.G., Geological Report, Cambria Group,
Oct. 1, 1968
- Marchesi, L.S., Independent Report On Crystalline
Marble Deposit, Dec. 11, 1968
- Roscoe, R.L., Knight Inlet Mining Co., Ltd.,
Cambria Property, March 24, 1969

INDEPENDENT REPORT ON CRYSTALLINE

MARBLE DEPOSIT

On the request of Mr. Peter Auxier, I have examined the geological reports and marble samples he obtained from the claims of P.B.M. at Knight Inlet, with the object of assessing the probability of turning said property into a producing and profitable marble quarry.

The stone, itself, is coarse grained, light blue banded, and appears to take a nice polish. Because of the coarse grain, it should have a pleasing texture on the polished surface and be quite weather resistant. In order to make a definite pronouncement regarding the quality of the stone, I would need a piece about two cubic feet, that could be put through the gang-saw and slabbed. If such a sample is consistent with those I have already seen, there is little doubt that the stone would be commercially marketable in some quantity, providing blocks would be obtained in sizes not less than 6'-0" x 4'-0" x 2'-0".

World market have expanded considerably in the last few years. Italian production has grown from 600,000 tons in 1950 to about 2,000,000 tons now. Most of the quarries there are now operating at capacity and not able to fill the demand.

The Vancouver market consumes about 750 tons annually, because of its depressed stage, and all the West coast of North America about 200,000 tons. Any quarry operating in B.C. and supplying Vancouver should keep this American market in mind, as there is a duty of only 4¢ per cubic foot on unfinished stone and 12½¢ on finished material entering the U.S.

As the shipping rate from Carrara to here is about 35 to 40 dollars per ton, a domestic quarry would be in a very competitive position pricewise.

About 75% of this marble is used in Office Buildings and commercial establishments, remainder in residences and various miscellaneous applications. Many buildings in city cores require stone facings as there is an increasing tendency for city building ordinances requiring the covering of concrete surfaces as in Vancouver. The only problem in the past has been the difficulty in obtaining some weather resistant marble at reasonable prices, and Vancouver has indeed very poor weather conditions for marble

in general. In keeping with present architectural trends and public taste, the most desirable stone at the present time is light in colour. This blue marble will obtain a ready preference as comparable stone are not readily available. The Government of California last year bought 10,000 tons of blue Granite from Europe for two public buildings. The quarry received about \$120.00 a ton for this shipment.

Marble has been traditionally and will continue to be the glamour item in the ornamental stone industry. Its only serious rival is granite for its greater durability and the Granite installed on a building cost about twice as much as marble. The stones have a good weather resistance, but in atmosphere that contains high concentrations of sulphuric acid, granite is preferable where a polished surface is required. Where the atmosphere contains concentrations of carbonic acid, marble is equal to granite.

The P.B.M. marble, being of coarse grain, is more weather resistant than standard fine grained varieties as weathering progresses on the crystall boundaries which are, of course less numerous in a stone of this texture. From all the above circumstances, I should say that it would not be unreasonable to expect to sell about 1,000 tons annually for the first few years at a price of about \$60.00 a ton rough quarried, with the possibility of increasing the amount to 10,000 tons annually as the marble becomes better known.

All this is conditional, of course, on there being an adequate supply both regards quality and quantity at the quarry site.

There are considerable risks in proving up any quarry. Some potentially good quarries have been totally destroyed by inexperienced development. They may be laid out so that the waste ratio makes quarrying uneconomic or the stone may be fractured by improper blasting.

The only procedure to follow is to start quarrying and see how the stone turns out at depth. This deposit is intersected by a mine tunnel and the blasting for the tunnel will have shattered the stones adjacent to it as it is almost a certainty that they have used dynamite. The surface exposure is small so that its extent cannot accurately be assessed at this time. From reading Mr. Mitchell's report and that of Mr. Campbell-Johnson, I would say that there is sufficient likelihood that the stone is unfractured at depth to justify some expenditure towards development. Any money spent should be spent with the object of most efficiently outlining the greatest tonnage of usable stone

possible. Without visiting the site personally, I would hesitate to state specifically the best method to employ. The first stage would in any case be the stripping of the overburden to determine the consistency of colour pigmentations and soundness of beds. Of course the fractured surface material needs always to be removed before reaching the workable face, which is usually at about 8 to 10 feet in depth.

Diamond drilling can give valuable information as to gross tonnage but is of no value in assessing the soundness of the stone.

It should be possible to quarry marble here at a cost of about \$20.00 a ton.

Before starting to quarry, I would strongly suggest that the Company hire a man expert in all phases of quarrying. Experienced quarrymen are not generally available in Canada and you may find that fully experienced Italians are available at quite reasonable expense.

There should not be any great difficulty in acquiring the necessary equipment. A medium sized bulldozer, a compressor and drills are all that is required to start quarrying. A wire saw could be very useful in producing large tonnages, but is not necessary at first.

It is impossible to say exactly how much money has to be spent in order to develop a quarry as the expense is dependent on the local conditions. It is not unusual, however, to spend up to \$50,000.00 before production is obtained. A far smaller expenditure, however, should go far towards assessing the commercial viability of a deposit.

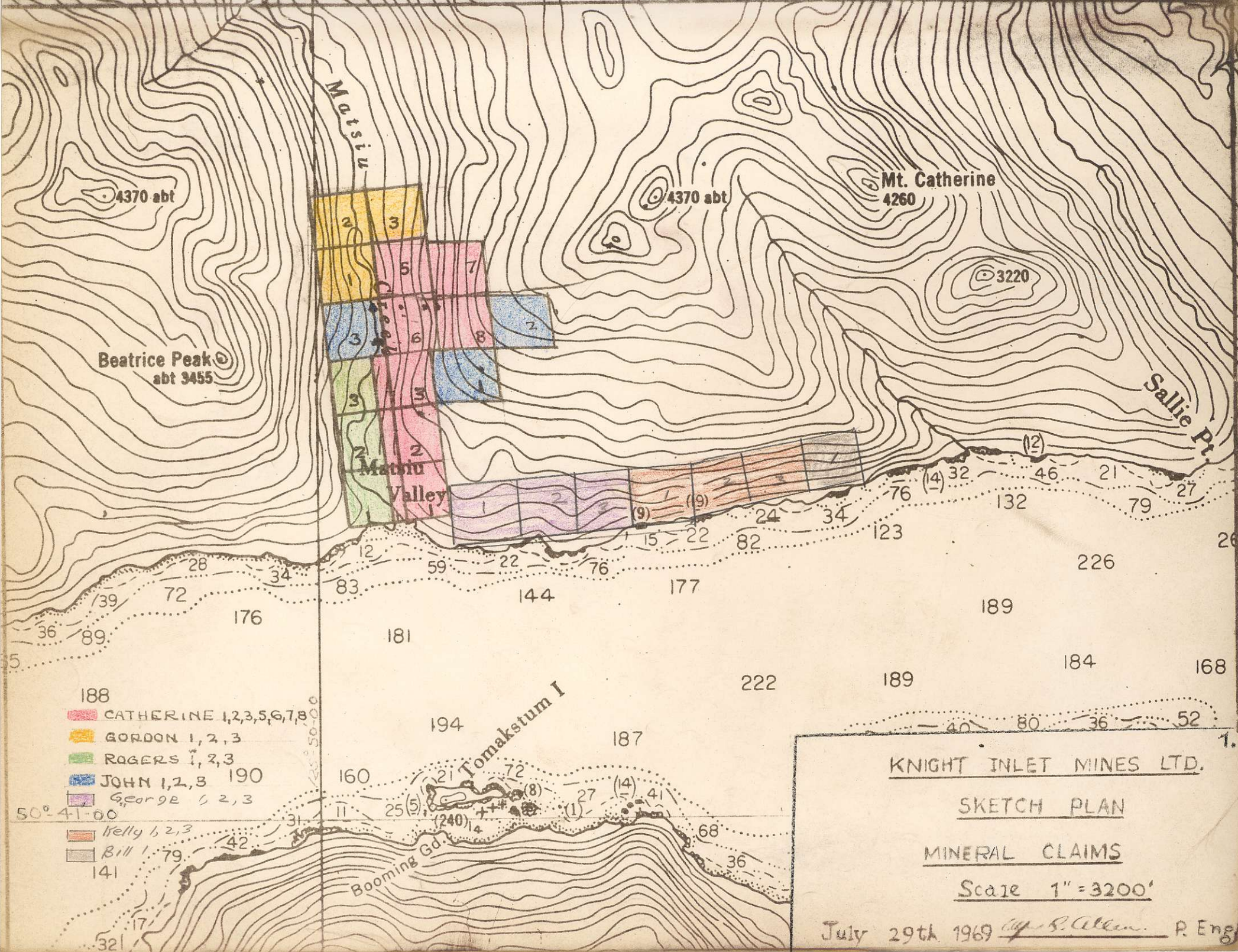
I personally find the P.B.M. marble extremely interesting, being unique in colour. In fact it is known that blue colour is almost impossible to find in natural form. I do not know of any other stone with the same colouration as the only other blue stone is the Blue Pearl granite from Norway (somewhat darker and with much coarser crystals). This is, of course, the most expensive material in the market but not always obtainable.

I have been involved in the quarrying industry for 15 years, presently employed as a Production manager by Columbia Marble of Vancouver. I am also Production manager and Director of Giorgi Marble Co. S.p.a. of Carrara, owner of quarries and saw-mills, as well associated with Campolonghi Granites S.p.a. of Massa, Italy, the largest granite manufacturers of Europe.

Vancouver 11 December 1968

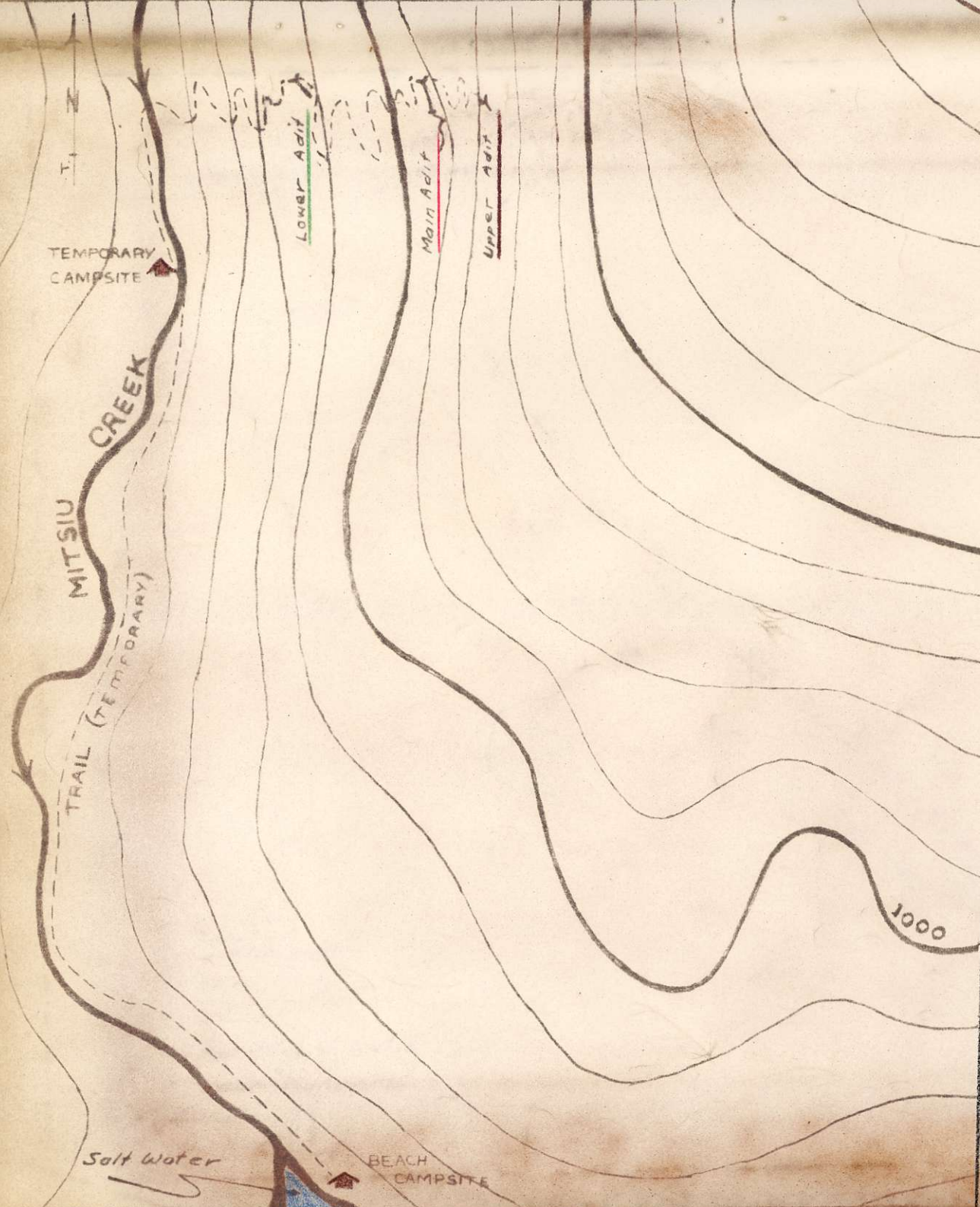
Signed: "Luigi Scalera Marchesi"

Luigi Scalera Marchesi
Viale xx Settembre 262 Scala B
Avenza - Carrara - ITALY



- 188
- 189
- 190
- 191
- 192
- 193
- 194
- 195
- 196
- 197
- 198
- 199
- 200
- 201
- 202
- 203
- 204
- 205
- 206
- 207
- 208
- 209
- 210
- 211
- 212
- 213
- 214
- 215
- 216
- 217
- 218
- 219
- 220
- 221
- 222
- 223
- 224
- 225
- 226
- 227
- 228
- 229
- 230
- 231
- 232
- 233
- 234
- 235
- 236
- 237
- 238
- 239
- 240
- 241
- 242
- 243
- 244
- 245
- 246
- 247
- 248
- 249
- 250
- 251
- 252
- 253
- 254
- 255
- 256
- 257
- 258
- 259
- 260

KNIGHT INLET MINES LTD.
 SKETCH PLAN
 MINERAL CLAIMS
 Scale 1" = 3200'
 July 29th 1969 *W. S. Allen* P. Eng.



Scale 1"=800'

2.

KNIGHT INLET MINES LTD.,

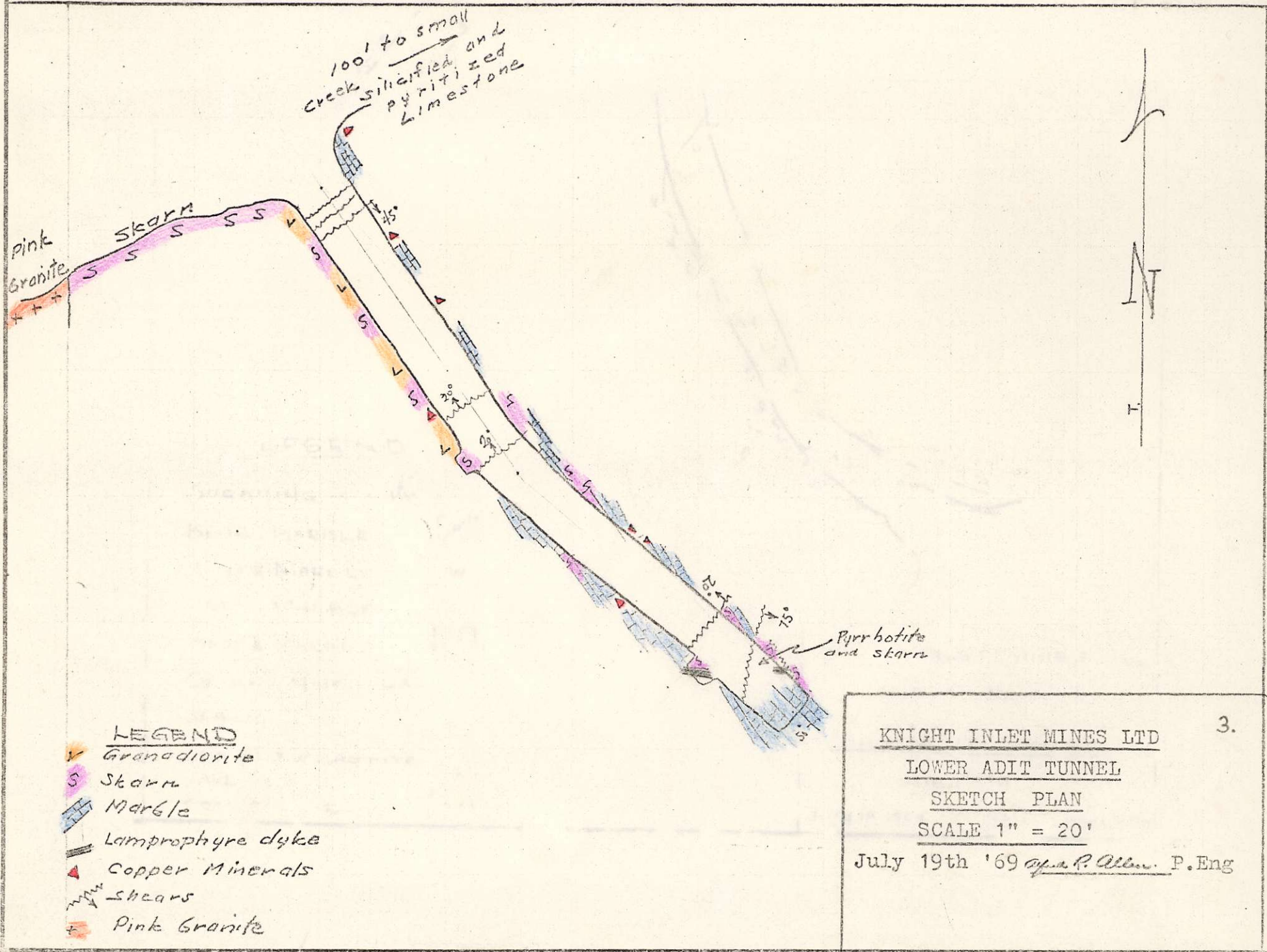
SKETCH PLAN

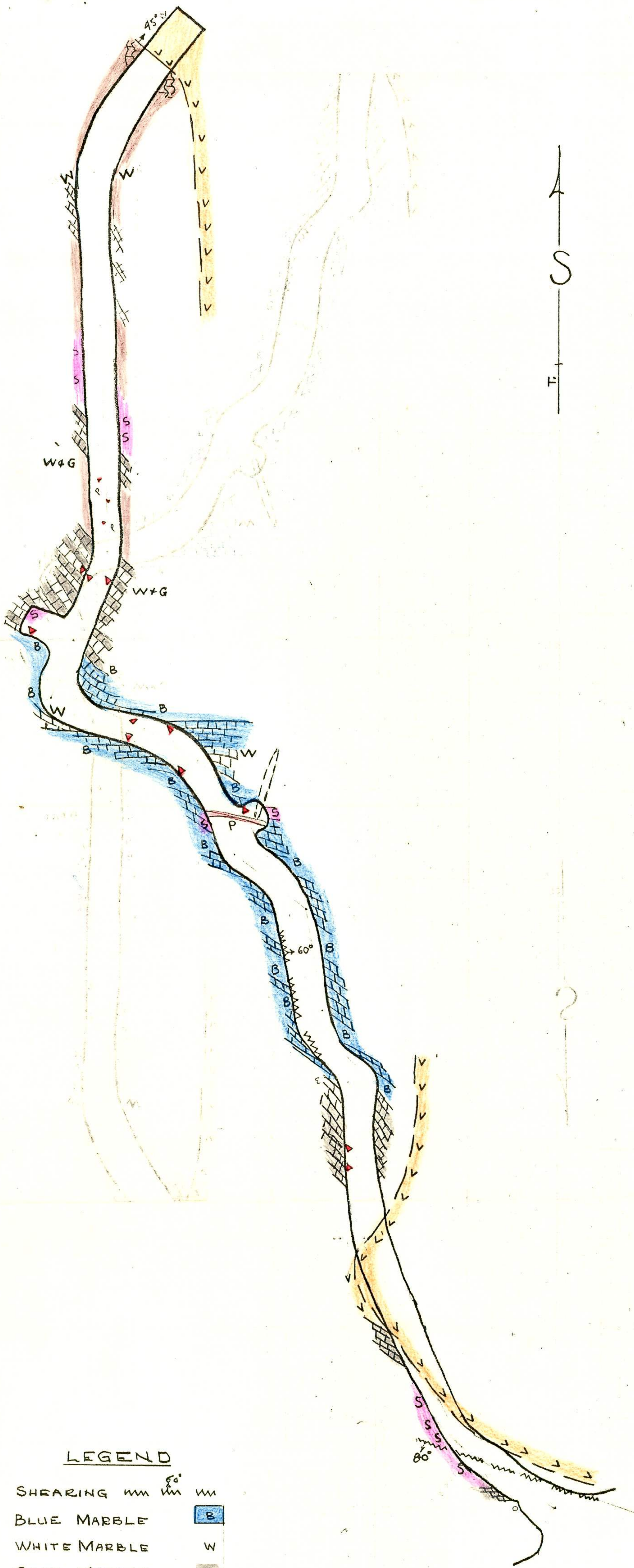
OF

MITSUI CREEK

ADIT LOCATIONS

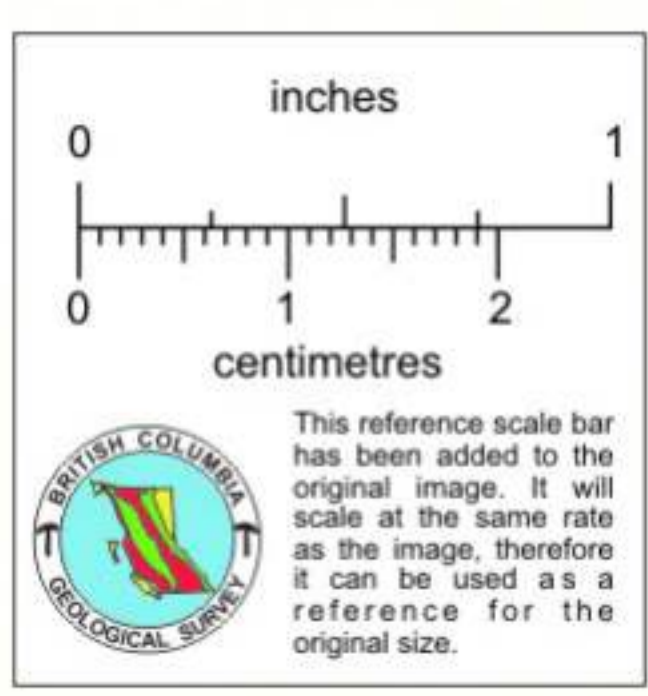
July 29th, 1969 *Alfred R. Allen* P. Eng.





LEGEND

SHEARING	mm	mm	mm
BLUE MARBLE		B	
WHITE MARBLE		W	
GREY MARBLE		G	
IMPURE MARBLE		 	
COPPER MINERALS		▲	
SKARN		S	
SKARN, PYRRHOTITE AND COPPER		P ▲	
GRANODIORITE		L	



KNIGHT INLET MINES LTD. 4
 SKETCH PLAN
 MAIN ADIT TUNNEL
 Scale 1" = 20'
 July 18 1969 *Alfred R. Allen, P.Eng.*