

REPORT ON EXAMINATION OF DATA

ORIGINAL  
1 of 6

SHEEP CREEK MINES LTD.

QUEEN MINE

82F/3E

674416

J.C. Stephen

January 18, 1980

REPORT ON EXAMINATION OF DATA

SHEEP CREEK MINES LTD.

QUEEN MINE

SALMO B.C.      NELSON MINING DIVISION

J.C. STEPHEN EXPLORATIONS LTD.  
1124 WEST 15th STREET,  
NORTH VANCOUVER, B.C.

JANUARY 18, 1980

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APPENDIX I

MAPS AND DRAWINGS OF SHEEP CREEK QUEEN MINE (Ross Data)

REPORT ON EXAMINATION OF DATA

SHEEP CREEK MINES LTD.

QUEEN MINE

INTRODUCTION

Data on the Queen Mine was obtained from J.A.C. Ross, owner, for examination on behalf of B.C. Gold Syndicate with a view toward possible rehabilitation of the mine for purposes of exploration and renewed production.

Records obtained consisted of a report by F.R. Thompson dated April 30, 1970 together with mine plans as listed in Appendix I of this report. Excellent data is also available in Bulletin No. 31, B.C. Department of Mines, by W.H. Mathews, 1953.

A visit was made to the Goldbelt mine, north of the Queen, for purposes of comparison. Some cost figures and estimates were obtained from several sources.

CONCLUSIONS

The cost of rehabilitating the Queen mine and conducting extensive underground exploration is considered too high to be justified as part of the B.C. Gold Syndicate program.

There are approximately 44,000 tons of material with a mining grade of about 0.30 ounces gold per ton as pillars and stope extensions left in the Queen mine. These reserves are of importance in relation to the ultimate viability of the Goldbelt property and could be critical to justification of building a mill.

There are exploration possibilities to the south of the Queen mine workings along the west anticline structure for a distance of about 5000 feet on the Ross property. The writer feels these possibilities are not sufficient to be an attractive exploration bet for this Syndicate.

REVIEW OF SIGNIFICANT DATA

The ore reserves outlined by F.R. Thompson in his 1970 report are taken to be substantially correct after examination of available mine plans and sections. These total 44,000 tons at 0.30 oz/ton.

There is an important difference in the trend of the upper axis of the western anticline as outlined by Mathews in Bulletin No. 31 and by staff of Sheep Creek Mines Ltd. on Map No. 2, Sheep Creek Camp, Profile at N 10° E. in roll No. 11 of the J.A.C. Ross data.

Ore in the camp is largely confined to quartzites lying below the crest of the western anticline. On Map No. 2 this crest plunges south at about 10° and, when projected, extends below 7 level in the vicinity of the 44 vein at the extreme south end of the underground workings. In Bulletin No. 31 this crest rises to the south diverging from the productive sections of the veins explored in the Queen mine workings.

Since all ore in the western anticline structure is enclosed within a limited vertical range of each vein and, since the productive zone appears to plunge at about 10° to the south all the way from the Reno workings at the north end of the camp to the 44 vein at the south end, the relationship to the crest of the anticline is important.

If the Map No. 2 interpretation is correct then the 7 and 9 levels of the Queen mine have explored the most likely zones of mineralization with only limited success. Further exploration of the zone to the south would require a winze shaft or a decline and would be very expensive.

If the Mathews, Bulletin 31, interpretation is correct the apparent south plunge of the productive zone may not be real and good exploration possibilities would remain well above 7 level on the 44, 57, etc. vein structures. In particular the Bonanza, 44, Ore Hill trend would be attractive.

Insufficient evidence has been found and examined to make a decision as to the correct plunge of the anticlinal structure but the writer feels that the south plunge indicated by the mine plans is correct.

Mineralized vein structures have been encountered at 400 to 500 foot intervals along the Sheep Creek structure. The following table outlines statistics concerning the various vein structures.

TABLE I

RELATIVE SIZE AND GRADE OF ORE BEARING VEINS

(A) VEINS WHICH PRODUCED >50,000 OUNCES GOLD

<u>MINE</u>	<u>VEIN</u>	<u>TONS</u>	<u>OUNCES</u>	<u>GRADE</u>
SHEEP CREEK MINES	QUEEN	234,500	93,725	0.40
	92	180,500	86,275	0.48
	81	167,500	80,700	0.48
RENO GOLD MINES	RENO	261,500	146,725	0.56
	MOTHERLODE	108,000	51,475	0.48
KOOTENAY BELLE	A	204,000	84,300	0.41

(B) VEINS WHICH PRODUCED 20,000 to 50,000 OUNCES GOLD

SHEEP CREEK MINES	NONE			
RENO GOLD MINES	NUGGET	57,500	32,250	0.56

(C) VEINS WHICH PRODUCED 10,000 TO 20,000 OUNCES GOLD

SHEEP CREEK MINES	83	56,000	19,850	0.35
	75	30,500	12,725	0.42
RENO GOLD MINES	NONE			
KOOTENAY BELLE	BLACK	45,000	15,475	0.34
GOLDBELT	3500	47,000	18,625	0.40
	8000	59,500	17,075	0.29
	2360	47,000	11,900	0.25
	DIXIE-6600	33,500	11,725	0.35
	8200-COLUMBIA	41,000	10,050	0.25

THIRTEEN OTHER VEINS ON THE WESTERN ANTICLINE WHICH PRODUCED LESS THAN 10,000 OUNCES AVERAGED 2912 OUNCES PER VEIN.



The following table sets forth tonnages, development footage, gold produced and dollar values, at arbitrary levels, for the individual Queen mine veins.

TABLE II

<u>VEIN</u>	<u>TONNAGE</u>		<u>DEVELOPMENT</u>		<u>TOTAL COST</u>	<u>TOTAL OUNCES</u>	<u>VALUE AT \$300/OZ.</u>
	<u>MINED</u>	<u>COST @\$100</u>	<u>FEET</u>	<u>COST @\$150</u>			
YELLOWSTONE	-	-		\$ 75,000	\$ 75,000	-	-
QUEEN	234,500	\$23,450,000	7700	1,155,000	24,605,000	93725	\$28,117,500
92	180,500	18,050,000	5400	810,000	18,860,000	85100	25,530,000
85	6,000	600,000	1700	255,000	855,000	1500	450,000
83	56,000	5,600,000	3000	450,000	6,050,000	19200	5,760,000
81	167,500	16,750,000	5800	870,000	17,620,000	78500	23,550,000
76	6,500	650,000	1050	157,500	807,500	1600	480,000
75	30,500	3,050,000	2500	375,000	3,425,000	12800	3,840,000
68	16,000	1,600,000	2300	345,000	1,945,000	5400	1,620,000
64	2,000	200,000	250	37,500	237,500	700	210,000
57	15,500	1,550,000	1490	213,500	1,763,500	5200	1,560,000
44	-	-	150	22,500	22,500	-	-
TOTALS	715,000	\$71,500,000	31840	\$4,776,000	\$76,276,000	303725	\$91,117,500
X-CUTTING			20940	3,141,000	3,141,000		
TOTALS		\$71,500,000			\$79,417,000		\$91,117,500

INDICATED OPERATING PROFIT \$11,700,500

Tonnages, development footage and gold recovered taken from:-

F.R. Thompson, REPORT ON SHEEP CREEK MINES LTD. CLAIMS April 30th, 1970

W.H. Mathews, GEOLOGY OF THE SHEEP CREEK CAMP, BULLETIN 31, B.C.D.M. 1953

COMPARISON OF EXPLORATION SUCCESS

Since one of the main exploration possibilities on the Ross property consists of testing the 5000 feet of structure, between 44 vein and the south boundary, the following comparisons are made. Arbitrary costs of \$150 per foot for development, and \$100 per ton for total mining costs are applied.

(A) The ten veins in the Queen mine, from the 92 vein to the 44 vein, occur over a distance of about 4800 feet. They produced 480,500 tons at 0.437 oz/ton for 210,000 ounces gold.

Development and production at \$150/ft and \$100/ton \$53,000,000

Value at \$300/ounce gold \$63,000,000

However, 37.5% of tonnage and 40.5% of value came from 92 vein.

(B) The Goldbelt property, in 4800 feet between 3900 vein and 6600 vein produced 260,000 tons at 0.31 oz/ton for 80,600 ounces.

Development and production at \$150/ft and \$100/ton \$31,000,000

Value at \$300/ounce gold \$24,180,000

(C) The last six veins to the south on the Queen property, 76 to 44 veins inclusive, produced only 70,500 tons at 0.364 oz/ton for 25,700 ounces.

Development and production at \$150/ft and \$100/ton \$ 8,211,000

Value at \$300/ounce gold \$ 7,710,000

COSTS

Cost estimates per foot development heading and per ton ore mined were solicited on an informal basis from Nu-Energy, Highland-Bell, Dankoe and Goldbelt. The following several items are quoted as indications of current costs.

Rail		\$800-900 per ton
Pipe	4" Victaulic, not including fittings	\$2.08/ft
Miners	\$9/hr plus about 50% bonus average	\$110/day or
Wages	\$96/day guarantee with \$130/day if round pulled	\$130/day
Diamond Drilling - local contractor		\$13/ft
Cost per Foot Development 6'x7'		
	Goldbelt	\$102/ft
	Highland-Bell would expect	\$200/ft
	Dankoe 200'-4000' from portal in 1978, direct cost including supplies	\$ 61/ft
	Nu-Energy for exploration with all over- head expect at least	\$200/ft
Cost per Ton Mined		
	Dankoe at 3000 tons per month, no head office or depreciation	\$60/ton
	Highland-Bell "overall mining and milling"	\$50/ton
	Goldbelt Estimated mining \$60, milling \$16	\$76/ton
Raising		
	Dankoe Alimak rental with 550' rail in 1978	\$7350/month
	Drove 753 ft in 1978 at cost of	\$148/ft

Goldbelt have estimates made for:-

Extension of power from HB mine to Goldbelt made by Kootenay Light and Power in 1978	\$ 140,000
Mill without power or tailings disposal	\$ 700,000
Plant - mill, tailings disposal etc. total estimated	\$2,000,000
Goldbelt have spent to date	\$1,200,000
and are currently doing some drifting, raising, and stoping with a 16 man crew at monthly cost of	\$ 50,000/month
Smelter costs are too high to ship to Trail. Basic	\$ 60/ton

Goldbelt hope to outline 40,000 tons at 0.30 oz/ton to justify erection of a mill. Extensive possible exploration to the north toward Reno would be done if, as, and when, profits justify.

F.R. Thompson made an estimate, dated April 1970, of the cost of dewatering the Queen mine. This estimate follows with arbitrary increases indicated to approximate current costs.

TABLE III  
REVISION OF PUMPING COST

<u>ITEM</u>	<u>THOMPSON 1970</u>	<u>CURRENT 1980</u>
SUPERVISOR 6 months	\$6,600	\$12,000
LABOUR 10 men, 6 months	48,000	90,000
POWER SUPPLY	20,000	40,000
HOIST	15,000	25,000
TIMBER, LUMBER, ETC.	7,000	25,000
SHAFT EQUIPMENT ETC.	15,000	25,000
PUMP RENTAL 600 gpm 3 months	8,000	12,000
STATION PUMPS	5,000	6,000
	<hr/>	<hr/>
	\$124,600	\$235,000
20% CONTINGENCIES	25,000	47,000
	<hr/>	<hr/>
TOTALS	\$149,600	\$282,000

Thompson estimated 50,000,000 gallons of water were present in the mine workings and that they would be making 150 gallons per minute. If pumping could be done in three months approximately 70,000,000 gallons would have to be discharged.

PROGRAM

A hypothetical program for the Queen might include the following:-

	<u>COST</u>	<u>VALUE</u>
REHABILITATION OF COLLAR AND DEWATERING	\$ 300,000	
COST OF PLANT SHARED WITH GOLDBELT	1,300,000	
MINING AND MILLING 44,000 TONS INDICATED @ \$76	3,344,000	
GOLD PRODUCED 44,000 tons @ 0.30 oz/ton @ \$400/oz	<u>                    </u>	<u>\$5,280,000</u>
TOTAL	\$4,944,000	\$5,280,000

EXPLORATION:-

Decline from south end of 7level along plunge of anticline - 5000 feet @ \$250/ft	\$1,250,000	
Diamond drill pattern around exploration decline at vein intersections- 8 holes x 200' x 5 veins	<u>104,000</u>	
TOTAL COSTS	\$6,298,000	
PRODUCTION		\$5,280,000
COST INDICATED TO EXPLORE MAIN POSSIBILITIES	\$1,018,000	

The 44,000 ton ore reserve at 0.30 oz/ton represents 13,200 ounces gold. Each \$100 increase in gold price above \$400 represents additional revenue of \$1,320,000 to this estimate. This increase is approximately sufficient to carry the exploration program with gold at a price of \$500 per ounce.

OBSERVATIONS AND DISCUSSION

The visit to Goldbelt ascertained that the intriguing references in Bulletin 31 to greater vein width at depth, but lower grade, meant just that. This wider vein material appears to average 0.10 oz/ton or less and is not considered mineable.

No deep drilling is known to have been done to explore the most productive veins at depths of 200 to 500 feet below known ore for repetition of ore bearing zones.

The zones being explored at Goldbelt do contain some good grade material. Detailed mine plans and assay results were not available to us. From the extent of workings, and appearance of the veins, the writer very much doubts that 40,000 tons of mineable material will be found and expects 20,000 tons to be more likely. Addition of the ore available in old workings of the Queen might justify erection of a mill to service both properties.

The deterioration in productivity of veins south of 81 vein (6 veins) is not encouraging. The 44 vein (46 vein in some references) may not be far enough south to represent the Bonanza - Ore Hill trend but two drill holes were extended up to 400 feet south without success. There is a possibility, however, that the 7 level and the drill holes may be above the crest of the main productive portion of the anticline.

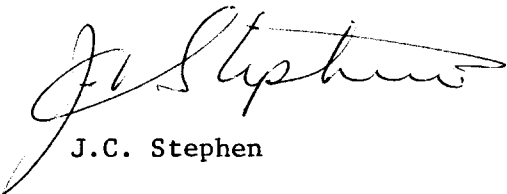
Costs and values calculated for Table II indicate those veins grading less than 0.40 ounces per ton would not make money at \$300 per ounce for gold if mining cost approximate \$100 per ton. This cost would be likely if new veins were found by exploration cross-cutting at distances over 5000 feet from the Queen shaft. This grade is the approximate average for the camp.

Figures provided indicate that an exploration program, offset by production from existing ore reserves, would cost approximately \$1,000,000 after shared capital expenditure of about \$1,600,000. This program, if extremely successful, might duplicate production from the whole Queen mine with indicated operating profit of \$11,700,000 at \$300 gold.

The deterioration in productivity of the last six veins found in the Queen mine is considered to be real, not a function of misunderstood geology or lack of initiative, and suggests that the possibility of finding another vein equal to the Queen or 92 is relatively remote and that duplicating the whole Queen mine is exceedingly unlikely.

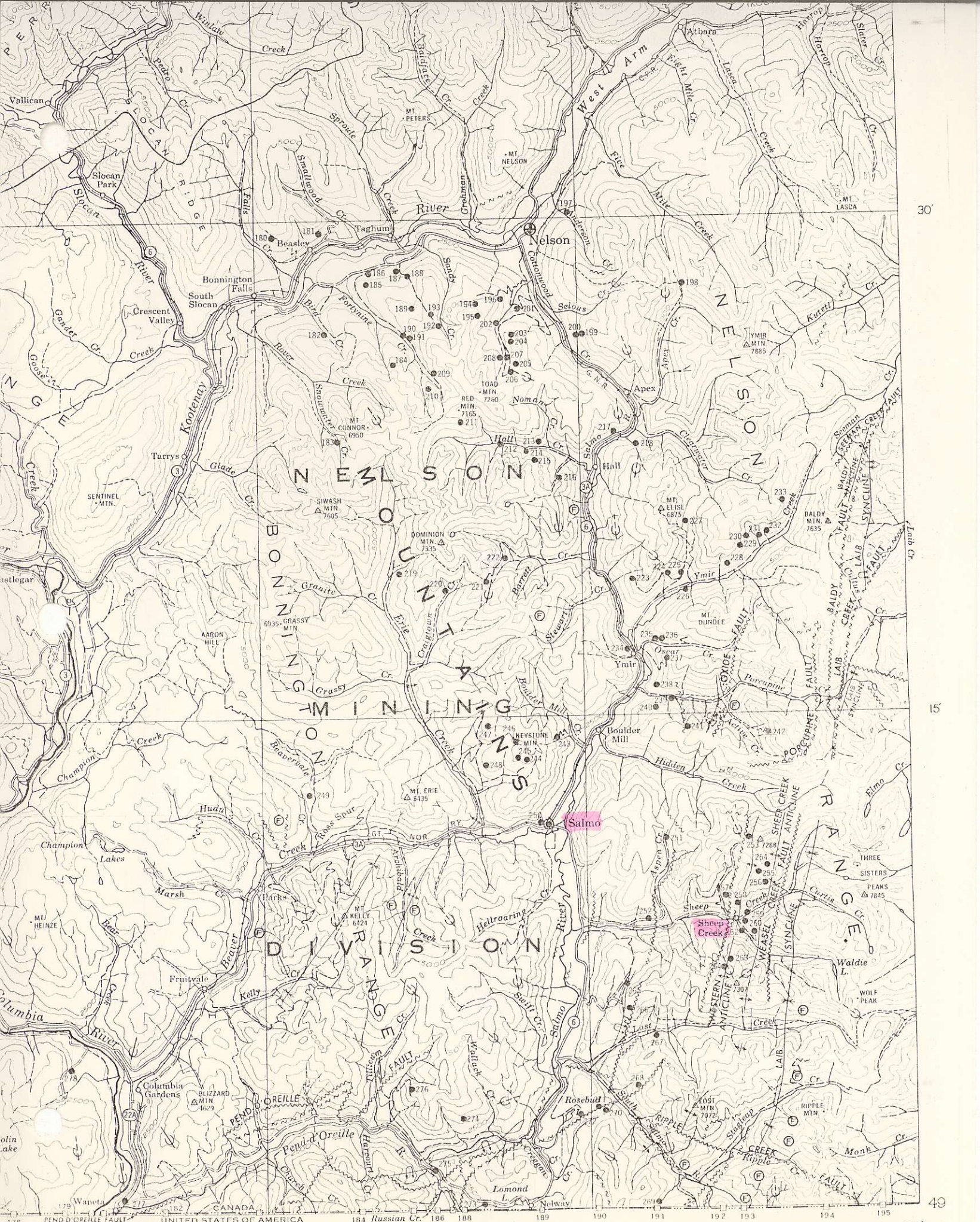
It is concluded that the complications of a joint program with Goldbelt, the cost of rehabilitating the shaft collar and dewatering the Queen mine, and the high cost of exploration underground, are only marginally justifiable and are beyond the province of the B.C. Gold Syndicate.

Respectfully submitted,  
J.C. Stephen Explorations Ltd.



J.C. Stephen





30'

15'

40'

30'

15'

117°00'

SCALE 1"=4 miles

178 184 186 188 189 190 191 192 193 194 195

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CANADA

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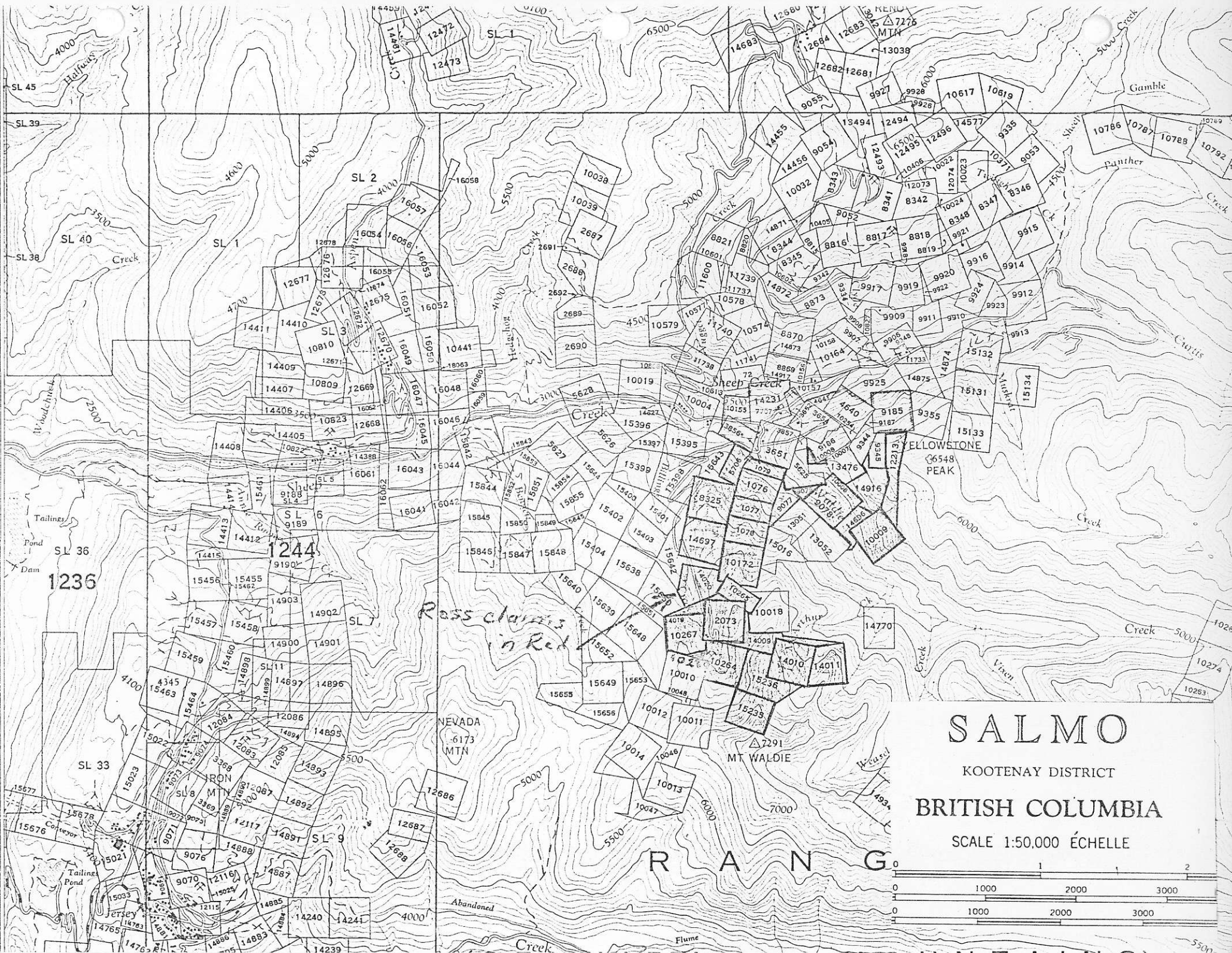
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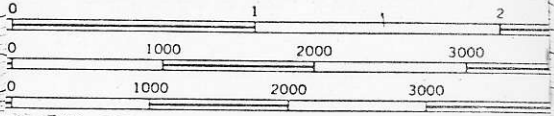
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**SALMO**  
KOOTENAY DISTRICT  
**BRITISH COLUMBIA**  
SCALE 1:50,000 ÉCHELLE

R A N G



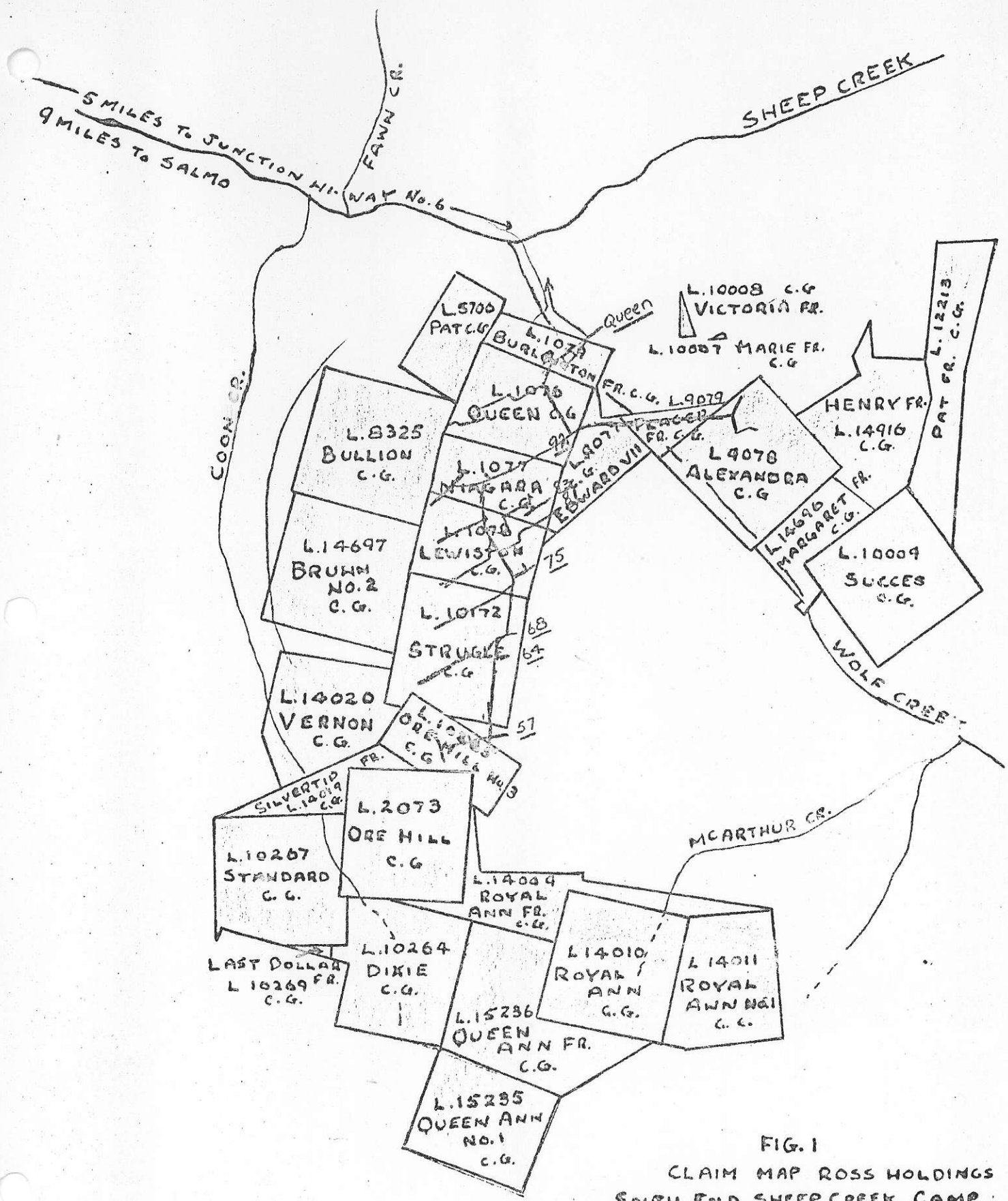
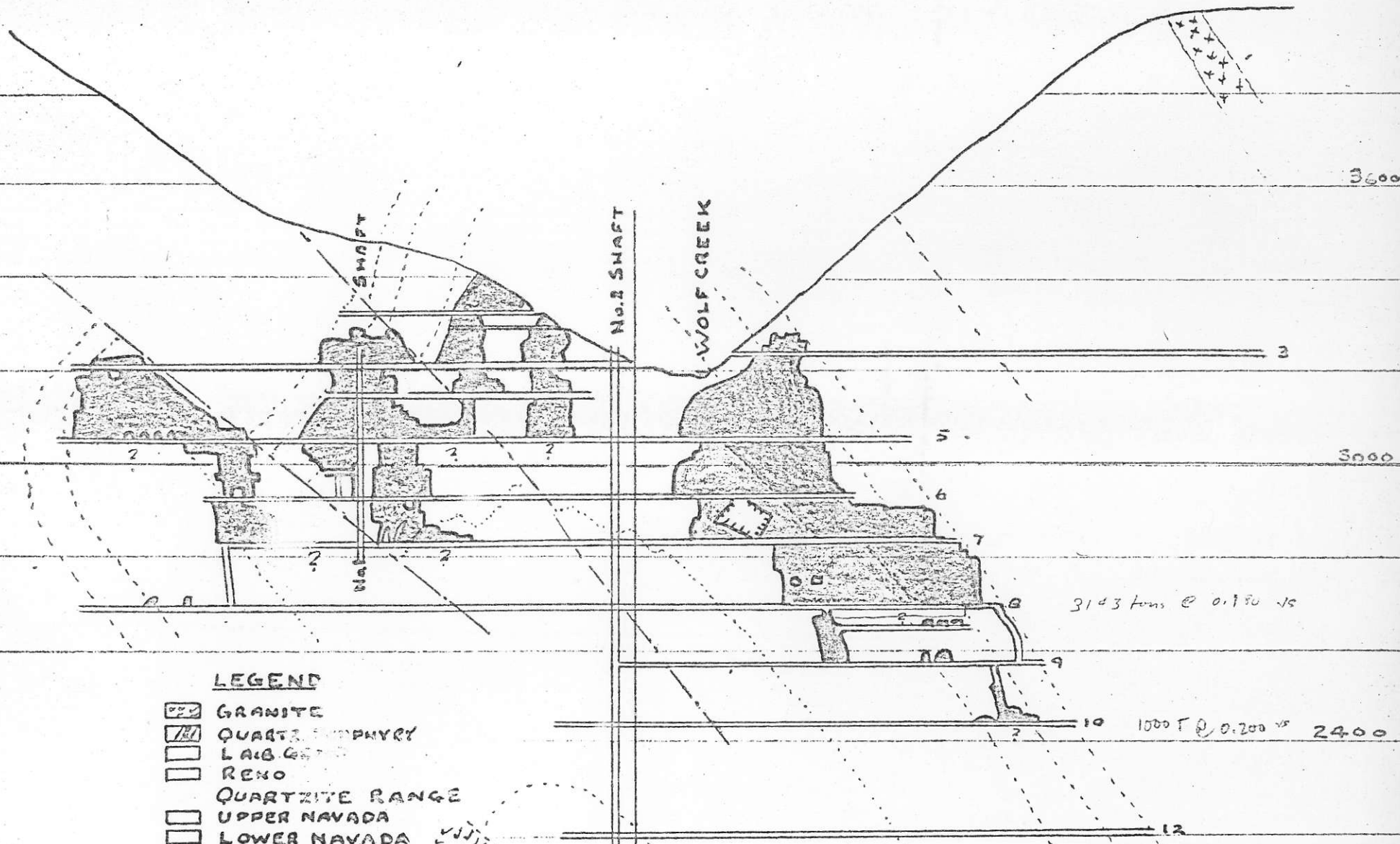















FIG. 1  
 CLAIM MAP ROSS HOLDINGS  
 SOUTH END SHEEP CREEK CAMP  
 1500'-1" MARCH 1970



**LEGEND**

-  GRANITE
-  QUARTZ PORPHYRY
-  LAIB GESS
-  RENO
-  QUARTZITE RANGE
-  UPPER NAVADA
-  LOWER NAVADA
-  UPPER NUGGET
-  MIDDLE NUGGET
-  LOWER NUGGET
-  FAULT
-  STOPE
-  BACK FILLED STOPE - colored

10000  
 20000

3-1  
**QUEEN VEIN N 65° E**  
 300'-1"

MAR. 1970  
 F.R.T.

GEOLOGY FROM FIG. 7 B.C. MINES BULL. 31

APPENDIX I

MAPS & DRAWINGS OF  
SHEEP CREEK QUEEN MINE

<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>
10	2	District claim map showing workings north half and south half	✓	1" = 500'
	1	District claim map (Queen, Kootenay Belle, Gold Belt, Reno, etc.)	✓	1" = 500'
	1	District - section summarizing all production from district 1901-1950		1" = 300'
	3	District plan of all workings Ore Hill to Reno - contour & geology		1" = 300'
	2	District plan regional geology		1" = 300'
11	1	District geology map (Queen, Kootenay Belle, Gold Belt, Reno, etc.)		1" = 500' <i>Good Information</i>
12	3	Old claim maps		1" = 500' } <i>not checked</i>
	1	U/G workings of 75, 76, 81, 83, 92, Queen, Yellowstone, Midnight & Alexandra veins	1939	1" = 500' }
	1	Queen-Yellowstone group	1907	1" = 300' }
	1	Vancouver & Alexandra	Aug. 1938	1" = 100' }
13	11	Ore reserves - 57, 68, 75, 81, 76, 83, 85, 92, Queen	June 1, 1947	1" = 635' } <i>looked at</i>
	11	ditto	Jan. 1, 1948	1" = 635' }
	10	"	June 1, 1949	1" = 635' }
	12	" (plus 64)	Jan. 1950	1" = 635' }
14	3	Back fill - Longitudinal sections veins 81, 83, 92	Apr. 1, 1948	1" = 100' <i>checked</i>
15	2	Geological plan of Queen Mine		1" = 40' ✓ <i>no immediate use Jan 16/80</i>

*take this roll*

<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>
16	1	Queen mine geological	Apr. 1934 (H.H. Yuill)	1" = 30'
	2	Assay plan (original & print)		
	1	Geology - 7 level		1" = 100'
	1	Geology - 75 vein - north wall		1" = 100'
	2	Geology (?) 2 maps - unidentified		1" = 100'
17	1	Tracing - claim map & geology	July 1947	1" = 500'
	2	Prints - Geology of Queen Anne, Queen & Vancouver		1" = 500'
18	1	81 Vein south wall geology		1" = 200'
	1	792 East to Alexandra - Geology		1" = 100'
19	1	Claim map - recent survey of Queen & Burlington surface lots (L. Ross)	Aug. 1970	1" = 300'
20	1	Surface property	Nov. 2, 1937	1" = 100'
21	1	Proposed power line to Bonanza Fr.	Aug. 1939	1" = 100'
	1	Mill tailings line	Aug. 1947	1" = 100'
	1	Mill flow sheet		
22		MINE HARD PLANS		
	2	Mine composite with DDH's	1940-50	1" = 100'
	2	Veins 92-75 (duplicate)		1" = 40'
	1	" 68-57	1940-50	
	1	" Queen		1" = 40'
	1	" 92-81 (old)	1937-40	1" = 40'
	1	" 76-75 (old)	1938-39	1" = 40'
1	" Alexandra	1942	1" = 40'	

*looked at*

*Some good but not put into info*

*not looked in detail*

*checked*

*not checked*

*not looked at*

*Outline plans*

<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>	
23		UNDERGROUND PLANS			
	1	2 level	May 1949	1" = 100'	} outline plans only Jan 16/50
	1	2 - 5 - 7 levels composite		1" = 100'	
	1	5 & 7 levels	1938	1" = 100'	
	2	5 level plans	May 1949	1" = 100'	
	2	7 level plans	May 1949	1" = 100'	
	2	9 level plans	July 1949	1" = 100'	
24	2	Underground composite level plan (linen)	Jan. 1951	1" = 100'	} appears to be outlines only
	1	Underground composite level plan (old)		1" = 100'	
25		UNDERGROUND SECTIONS OF VARIOUS VEINS			
	1	57 vein	1948-50	1" = 40'	} Section show some assays
	1	64 vein	1950	1" = 40'	
	1	68 vein	1948-50	1" = 40'	
	4	75 vein (2 old)	1943	1" = 40'	
	1	76 vein	1942	1" = 40'	
	2	81 vein (1 old)	1948	1" = 40'	
	7	81 vein stope (2 old)	1944-50	1" = 40'	
	2	85 vein stope	1949-50	1" = 40'	
	6	92 vein stope (2 old)	1947-48	1" = 40'	
	5	83 vein stope (3 old)	1946-50	1" = 40'	
	2	Misc. sections		1" = 100'	
26		LONGITUDINAL SECTIONS OF VEINS			
	1	Queen vein		1" = 100'	} Good assay information on ore sections but not other parts
	2	92 vein	Oct. 1947	1" = 100'	



<u>ROLL NO.</u>	<u>NO. OF MAPS</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>SCALE</u>
26 (cont'd)				
	1	85 vein		1" = 100'
	3	83 vein		1" = 100'
	2	81 vein		1" = 100'
	1	76 vein		1" = 100'
	1	75 vein		1" = 100'
	1	68 vein		1" = 100'
	1	64 vein		1" = 100'
	1	67 vein		1" = 100'
27	58	Assay plans of mine workings	Various	1" = 40'
28		Alexandra plans and assays	1914-1940	Various <i>some good assay info</i>
29	1	Hard plan of Hideaway, Vancouver & Midnight workings	1939	1" = 40'
	2	Yellowstone mine plan, section & assays	1899	1" = 50' <i>Looked at</i>
	2	Hideaway & Vancouver sections	1938	1" = 100'
30	7	Queen mine plans & sections by Arthur Lakes	1922-3	1" = 100' <i>not looked at in detail</i>
31	6	Gold Belt property - claims & assay plans	1947	Various <i>main good assay info</i>
32	10	Gold Belt property - claim, assay & mine plans		Various <i>apparently good but not checked in detail</i>
33	6	Reno property - claims & geology maps		<i>checked in detail</i>
34	1	Reno property - section of regional geology	Nov. 1943	Horiz. 1" = 200' Vert. 1" = 300'
		Reno claim map with U/G workings & geology		1" = 300'

*Good assay info on one section*

*some good assay info*

*Looked at*

*not looked at in detail*

*main good assay info*

*apparently good but not checked in detail*

INTER OFFICE CORRESPONDENCE

January 20, 1980

ATTENTION OF: J.C. Stephen

SUBJECT: Production costs of the Queen Mine based on the  
Gold Belt Operation

FROM: J. Shearer

A tour of the Gold Belt operation, Sheep Creek, was made on January 14, 1980. Discussions with Bill Brown, Mine Manager, and Floyd Fleming, Mine Superintendent, emphasized mining cost and methods. Future production with a small cyanide mill has been studied by Gold Belt and they are presently defining enough ore reserves to justify the capital expense of such a mill. Geological studies are being done by D. Cannon, consultant, and C.E. Gordon Brown who visits the mine every two weeks. Gordon Brown has extensive experience in mining narrow gold bearing quartz veins. Smelting charges by Trail, even without penalties for minor elements is about \$60.00 per ton. Adding mining and transportation cost indicates a break even grade of more than \$100.00 per ton. This is not an attractive proposition for the Gold Belt or with possible production from the Queen Mine. A stockpile of about 3,000 tons @ 0.3 oz per ton has been dumped outside the 1850 portal.

In the Gold Belt, present ore reserves increase in elevation toward the north but the service adits are located at the south boundary. This is opposite to the Queen where future ore zones are progressively deeper to the south but the only shaft is in the north.

At Gold Belt, access is provided by a large crosscut (1850 level). The old millsite was situated near the 2100 level portal

but this level is not used in the present operations. Work force totals 17 men and a second shift is planned to start in the near future. To date approximately \$1,200,000.00 has been spent largely rehabilitating the old workings and limited new development headings. This work is costing about \$50,000.00 per month. A major benefit is a stable work force mainly from the former Remac and HB mines, who live in nearby Salmo. Serious work on the Gold Belt started in 1978. Some initial funding came from the Accelerated Mineral Development Program.

The search for new ore reserves at the Gold Belt is presently confined to three levels: 1850, 1400 and 1100. Several veins were seen on the 1850 level notably 2360 vein, 2590 vein and 3040 vein. A raise to test for ore grade material in the 3040 vein above 1850 level is scheduled to start shortly. No work is apparently being done on the 8000 and 8200 veins (refer to Mathews 1953 Figure 6). The intersection of the 1850 cross cut and the 2360 vein is shown on Figure 2 (Mathews 1953) as being to the east of the axial plane in the Western Anticline. This is opposite to information from Mr. Brown.

An irregular shaft equipped with an air hoist connects 1850 level with 1400 level (450 feet above). A potential bottle neck may occur in the future due to the narrow 40 inch space between guides in this shaft. On the 1400 level, several old stopes were viewed that had been developed in the 3500 and 3040 veins. The 3500 vein is thought to be an extension of the Motherlode vein which was productive in the Eastern Anticline (refer to Figure 5, Mathews 1953). Some ore has been blocked out and more raises are planned.

A shaft connects the 1400 level up to 1100 level and beyond 600 level to surface providing good natural ventilation. Air flow reverses in the spring and fall. No hoist has been installed in this shaft although one is planned. All workers must climb from the 1400 level to 1100 level. Veins examined on the 1100 level were the 3500, 3900, 4600, 4800 and 4900.

Ore has been outlined in the 3500 vein (refer to Figure 5, Mathews 1953) with the 1135 raise and sampling has been done in both 1400 and 1100 levels in the west limb of the Western Anticline for a 3 foot mining width as follows:

1400 level	46 feet long @ 1.25 oz Au per ton
1100 level	128 feet long @ 1.19 oz Au per ton

An old stope on the 3900 vein is presently being filled with waste from the 1145 drift to save the long haul down to surface.

Major exploration potential for substantial tonnage is hoped for in the 4600 or 4800 veins. Either one could be the extension of productive Nugget vein on the Eastern Anticline in the Upper Nugget member (refer to Figure 4, Mathews 1953). Drifting is presently in progress. The 4900 vein is apparently a large barren vein although sampling is not complete.

The following items relate to costs at the Gold Belt, Dankoe and Beaverdell (Teck) operations.

(A) GOLD BELT

- (1) Air Supply - 900 Gardner Denver with back up 750 Holman just enough for 5000 feet of workings.
- (2) Power line from HB Mine to Gold Belt was quoted in 1978 at \$140,000, now 1980, more likely \$200,000.
- (3) Shrinkage stopes, 3 foot minimum, old production thought to have excessive dilution (0.31 oz per ton average) to feed 200 ton per day mill.
- (4) Development costs approximately \$102.00 per foot total, \$800.00 per ton for rail, ties  $\frac{1}{2}\%$  grade, track laying 100' to 120' per day. 4" Airline - \$2.00 per foot, couplings extra.
- (5) Mucking machines - \$34,000.00 new, many used still available at around \$5,000.00, Hard rock, 6" per bit per sharpening, 6 sharpenings per bit., Jack leg drills.

- (6) Labour - \$130.00 per day for muck, drill and blast, 2 men in drift. \$96.00 per day standby, pay for climbing.

(B) BEAVERDELL (Teck)

- (1) Development costs approximately \$250.00 per foot total
- (2) Mining and milling costs - \$50.00 per ton.
- (3) Rail more like \$900.00 per ton.

(C) DANKOE

- (1) Alimak raise - \$148.00 per foot direct costs only, \$7,350.00 per month rental plus shipping (approximately \$4,000.00 return).  
Cost of Alimak new: \$150,000.00 to 175,000.00. Contract raise: lowest price \$150.00 to \$200.00 per foot, without problems.
- (2) Development work (1700 level) \$61.00 per foot direct costs  
4000 feet long. (1978)
- (3) Milling and Mining - \$60.00 per ton direct costs, 5 foot mining width, ore won't run, needs slusher.

At the Gold Belt and Queen Mines the veins are steep enough so that ore will move by gravity. Bill Brown suggests that about 40,000 tons of ore (presumably about 0.35 oz per ton) is needed as proven ore reserves before a 100 ton per day mill can be purchased which would cost in the neighborhood of 2 million dollars.

Assuming 7,000 feet of development work (@ \$102.00 per foot) plus a mining and milling cost of \$100.00 per ton, then direct costs to produce 40,000 tons of ore would be \$4,714,000.00. Revenues from this \$40,000 tons at 0.35 oz Au per ton with 98% recovery and an average gold price at \$450.00 per ounce is \$6,174,000.00. A mining break even gold price would be \$343.60. Considering that the mill and power are about 2.5 million dollars then 40,000 tons is not sufficient to retire the capital expense. A larger ore reserve is needed or higher gold price.

The price of gold on the L.M.E. on January 18, 1980 was \$835.00 per ounce U.S. An average gold price in 1980 of around 500 dollars U.S. seems likely.

Problems particular to the Queen Mine are:

- (1) Ventilation south of 44 vein, a new decline or shaft will likely have to be sunk.
- (2) Pumping out the 50,000,000 gallons of water estimated at greater than \$200,000.00.
- (3) Presence or absence of track in the old workings. If track has been removed the cost of rehabilitating the workings would be dramatically higher.

In the Queen Mine, undeveloped blocks of ore remnants, as known in 1950, total about 13,720 ounces of gold. Development, mining/milling and capital expenditures on a scale similar to Gold Belt assuming that pumping out the Queen is broadly comparable to rehabilitating Gold Belt (hoping that the track is still intact in the Queen) then an average gold price of \$550.00 per ounce is needed to reasonably expect to break even. (refer to December 16, 1979 report by J. Shearer) Of course, a major consideration would be the likelihood of finding a rich vein south of the 44 vein.

A key to the Gold Belt approach is to start out on a small scale until sufficient ore reserves are in sight.

J. Shearer

J.S./ms