

REPORT ON THE PROPERTY OF THE  
B I G M I S S O U R I M I N I N G C O . ,

located in

Salmon River Cassiar District, British Columbia, Canada.

Company offices, Tacoma, Washington, U.S.A.,

By

DUNCAN MacVICHIE, Salt Lake City, Utah.

The property of the Big Missouri Mining Company is located in the Salmon River Cassiar District, British Columbia, eighteen miles northerly from the Canadian Government Docks between Hyder, Alaska, and Stewart, B. C.

There is a good truck road for thirteen miles from the Docks, and five miles of trail from the end of the truck road to the Big Missouri property.

The property comprises 20 claims and fractions, with an area of 1780 acres.

GEOLOGY:

The Big Missouri ground is in what is known as the Bear River Formation of Jurassic period, Mesozoic era.

The Bear River formations contain volcanic tuffs and breccias altered to greenstone sericitic schists, and intruded by quartz-monzonite irregular intrusions and later small unimportant fine-grained basic dikes.

The Premier Gold Mine is in the same formation, and the ore occurs in shear zones in the quartz monzonite close to the contact with the tuffs.

The contact of the Bear River Formation and the Coast Range granite and granodiorite batholith, is about a mile and a half west of the Big Missouri, under the Salmon Glacier.

There is submitted with this report a map showing the property on a scale of 300 ft. to 1 inch, but in order to make the sample charts more easily understood the sample maps are on a scale of 50 ft. to 1 in. The name of the claim covered is given on each chart, so that the ore shown on the charts may be located on the large property map.

None of the small openings made by shallow pits have been considered. Not that the ore shown in the shallow openings cannot be considered of importance, but that very much more development work must be done on these showings before the aggregate tonnage of commercial ore that may be expected reaches a profitable figure over mining costs.

Practically all of the ore showings in the shallow openings are considered by the writer to have important possibilities, and work at these points will be instituted in regular order in accordance with the plan of development work that has been adopted by the Management.

The assay charts submitted with this report show ore bodies on which considerable development work has already been done, and which have favorable indications of affording extensive ore reserves with the minimum of further development.

In the writer's opinion, the ore bodies of greatest importance at this date are in the following order:

The E. Pluribus Claim for high grade ore and persistence in depth:

The Buena Vista Claim for high grade ore:

The Laura Claim for the promising character of the ore so far developed, which is a heavy sulphide ore carrying commercial values in lead and zinc, in addition to gold and silver.

The Province Ore Body for having the largest exposure of ore on the property, having a surface exposure of approximately 800' x 1500' with an average thickness of approximately 25 ft. (See Estimate Province Ore Body).



Different prominent engineers have made the Province ore body the subject of much study, and have estimated the available tonnage at anywhere from two to five million tons. As shown by the sample chart, the Province ore is of low grade, and as a whole was formerly considered of little value, but the success of the selective flotation method of milling which has come into practice during the past five years has entirely changed the outlook for this deposit.

This selective flotation method which makes possible the separation of the zinc from the lead before the ore goes to the smelter, makes the zinc an asset, instead of as formerly a liability, in the concentrates obtained by milling. The smelters now pay for the zinc content instead of penalizing the shipper, thus constituting a double profit on that portion of the mineral content.

Further, the Province ore body affords an important study as having a bearing on the several ore bodies now under development on other portions of the Big Missouri ground. The Province ore has a westerly dip at an angle corresponding to the underground ore now being developed on the Buena Vista and E. Pluribus Claims.

It is the consensus of opinion that the over-burden or hanging wall of the Province deposit was eroded by the Salmon Glacier as it receded, and undoubtedly a large portion of the mineral content was leached out of the Province ore during the long period covered by the recession of the Glacier. The eastern side of the Glacier still extends to the west line of the Province Claim, and there is sound basis for the above theory.

This theory is further supported by the fact that the ore now developed on the Buena Vista Claim is apparently on the same channel as the Province ore body, but has a heavy over-burden.

On the Buena Vista the ore is found in its normal condition, and as shown by the assay chart carries high values, particularly in lead and zinc.

As yet there has been no experimental work done by selective flotation on the Province ore, and it will not be possible to secure the necessary average ore for intelligent experimental work until the snow is off the ground, - probably in June or July of this year. The writer has already recommended that this experimental work be conducted at as early a date as possible.

There are certain geological conditions north and northeast of the E. Pluribus Shaft which make certain the development of a large tonnage. The development work being carried on from the E. Pluribus Shaft is being pushed as rapidly as possible, using due care to avoid mistakes and an excessive expenditure of funds.

Work is also being done on the Union Fraction, and with favorable results.

As soon as the ore reserves warrant it, the construction of a 100-ton mill should be undertaken. The high-grade ore now partially developed on the E. Pluribus, Union Fraction, Terminus, Golden Crown, and Buena Vista claims has now reached a point where it would not be a very good risk to construct a mill of a capacity of 100 tons per day; this without considering the possibilities of the low-grade ores of the Province claim.

The importance of having a mill - even of small capacity - in operation on the ground, can better be explained by describing the ore occurrences of the Big Missouri area. These are not unlike the deposits found in the large mines of Utah, where the ore is found in well defined channels in soluble lime. The ore in the limestone is found in disconnected bodies along these channels.



In the writer's opinion this condition of disconnected bodies prevails on the Big Missouri ground.

By having a mill in operation as mining is carried on, a steady production can be maintained, the returns from which will enable the management to carry on the development of the entire property without further investment.

The writer wishes to explain why, in his opinion, the former managements of the property failed to develop large ore reserves as the result of their development work.

Silver Creek flows through a North-South syncline approximately 400 ft. wide. Most of the former development work was confined to this syncline where the formation is badly broken and much of it disintegrated. The drainage area to the North is large, as is also that from the East and West, so that the flow of water resulting from the drainage from these three directions is through the syncline the entire year.

If commercial ore ever existed in the synclinal area the minerals have dissolved and probably redeposited at great depth, with the possible exception of the gold which is less soluble - if indeed gold is at all soluble in soft water; concerning which there is a great difference of opinion.

In some of the openings in the syncline, gold is found in small bunches, but most of the ground is so badly disintegrated that one cannot conceive of the metals withstanding the constant action of seepage and flowing of soft water draining through the syncline, which they would have had to remain in place.

The surface of the syncline is at an elevation of 3200 feet. The anticline on the west side of Silver Creek rises abruptly westward to an elevation of 3500 feet, which is the axis of the anticline. From that point the ground slopes gradually to the Salmon Glacier. The anticline on the east side of Silver Creek rises more gradually, and is not as high as the west anticline. The conditions in both anticlines are most favorable for ore deposition, and indicate the possibility of developing a large tonnage of commercial ore.

One might go on and give much interesting information regarding the syncline through which Silver Creek flows, but it is the writer's opinion that commercial ore will only be found in the syncline at a greater depth than it is practicable to attain at this time. The east and west anticlines offer more attractive opportunities for ore development - at less cost - than for the present development work and mining should be confined to the anticlines.

Regarding the ore reserves of the Big Missouri, at present it is difficult to measure tonnage, but this difficulty will decrease as development work outlines the ore bodies at depth. However, due to the occurrence of the ore bodies being similar to that of ore bodies occurring in limestone, the estimate of ore reserves will always be more or less approximate. The tonnages shown on the accompanying sample charts must also be considered as approximate.

#### CONCLUSIONS:

The valuation of the large ore body on the Province Claim cannot be accurately estimated until more openings are made in the deposit. It is the writer's opinion that these openings should consist of a series of pits from 10 to 20 feet in depth, located so as to explore the greatest possible area of the ore. From these pits careful samples should be taken and submitted to a comprehensive experimental test to ascertain the average value of the ore over the entire deposit, and the recoverable values.

Some idea of what may be expected on the Province ground may be obtained by reference to the property map accompanying this report. A number of ore channels have been located by shallow pits showing - as mentioned earlier in the report - that the province ore has a westerly dip at an angle corresponding to the underground ore developed on the Buena Vista and E. Pluribus Claims.

Further reference to the property map will show that ore



channels in a number of places on the Big Missouri ground, located by shallow openings, give promise of making the property a large producer of high grade ore capable of profitable returns, aside from the possibilities of the Province Claim.

The writer must repeat again that the area of the Big Missouri is so large that it is difficult to do the property justice in a report based on so little development work to depth. He does insist, however, that, for the present, development work should be confined to exploring to depth the ore bodies on the E. Pluribus and Union-Fraction, Laura, Golden-Crown, and Terminus claims.

#### HYDRO-ELECTRIC POWER POSSIBILITIES:

One of the most important economic advantages in the operation of the Big Missouri mining property is the feasibility of developing hydro-electric power. Attached to this report is a map of the District showing Long Lake, which is about two miles long and one mile wide. With inexpensive, short dams this lake can be made into a large storage reservoir to insure all necessary water during the low-water season, which is during the winter months.



Duncan MacSibbie M.F.  
June 20th 1927

-7-

Cascade Creek  
Falls  
June 8th 1927

## R E C A P I T U L A T I O N

All estimates are based on concentrating the ore at the mine, using Selective Flotation. The value of the ore is based on a 90% recovery of the metal content.

1. E. PLURIBUS CLAIM: Dago Cuts - Shaft. - 60 ft. Level - 100 ft. Level.

The developments on the E Pluribus Claim are the most important at the present writing, due to the fact that more real development work has been done on this ground and greater depth on the ore bodies has been attained.

The estimate of tonnage of probable ore of 26,600 tons covers the ore exposed in the Dago Cuts, and in the Dago Shaft from 42.5 feet from the collar of the shaft to the 60 foot level, and the ore exposed in the 60 and 100 foot levels from the Dago Shaft.

26,600 tons of probable ore, at the ratio of concentration of 8 tons into 1, will yield 3,325 tons of concentrates, with a net value, after all costs and metallurgical deductions, of \$175.26 per ton of concentrates, or a total value for the 3,325 tons of concentrates, - - - - - \$582,739.50

### Mann Tunnel

Development in the Mann Tunnel, E Pluribus Claim, has not proceeded sufficiently to determine the extent of these ore bodies, but the ore already partially developed may be estimated to have the following net values: -

#### No. 1 Drift.

1333 tons of Crude Ore, or 166 tons concentrates,	\$ 29,734.92
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#### No. 3 & No. 4 South Cross-Cuts,

1267 tons of Crude Ore, or 158.3 tons concentrates,	\$ 21,264.44	<u>50,999.36</u>
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Or a Total for the ore partially developed in the

Dago Cuts	
Dago Shaft Section	
60 foot level Dago Shaft	
100 foot level Dago Shaft	
No. 1 Drift Mann Tunnel	
No. 3 and No. 4 South Cross-cuts	
Mann Tunnel, of - - - - -	<u>-\$633,738.80</u>

2. BUENA VISTA CLAIM:

The Buena-Vista Claim, North Star workings, indicates a most important orebody, but unfortunately the developments are not sufficient at this date to permit the measurement of any tonnage of importance. The net value per ton of concentrates from the ore exposed is \$325.43 per ton.



3. LAURA CLAIM:

Similar conditions prevail on the Laura Claim, excepting that the ore is of lower grade. The ore exposed will yield a concentrate with a value of \$23.21 after all deductions have been made.

4. GOLDEN CROWN CLAIM:

No work has been done on the low grade showings of the Golden Crown Claim; however, the ore as exposed will yield a concentrate after all deductions have been made with a net value of \$18.39.

5. PROVINCE CLAIM:

I beg to submit the assay results from the sampling of the Province Deposit by three engineers. The great difference between the three sets of sampling makes one hesitate to use any of the different sets to arrive at the prospective value of the Province ore deposit. The greatest number of samples taken by any of the engineers was twenty, this no doubt for the reason of the limited number of openings on the deposit.

The samples, however, appear to demonstrate that there are channels of profitable ore if the entire mass should not be found profitable. The sampling further demonstrates that the deposit warrants additional development by the sinking of pits 20 feet to 30 feet in depth. These pits should be put down in a systematic manner to explore the greatest possible area, and at the same time, if possible, arrive at the average value of the ore.

Diamond drilling will not answer the purpose in prospecting the extent of this orebody. It is just as important to have large samples from the openings for experimental purposes to determine what percentage of the values can be recovered, as it is to determine the metal contents of the deposit.

One must keep in mind that the entire mass - estimated to be 1,500 feet long, 800 feet wide and 25 feet thick, is largely a manufacturing proposition and can be operated by open pit mining for at least five months of the year and by underground mining for seven months.

If the deposit is found to contain as estimated, from two to five million tons and is operated on a large scale, the profit per ton of crude ore need not be very high to amortize the cost of development and equipment and give a large profit.

The cost of determining the value of the deposit and of doing the experimental work should not exceed \$25,000.00. The average net value of the two last samplings is \$2.69 per ton. If this can be verified with an expenditure of \$25,000.00 it is surely worthwhile.

Average of P. E. Peterson's samples of the Province Claim.

	Gold Ozs.	Silver Ozs.	Lead %	Copper %	Zinc %	Iron %	SiO <sub>2</sub>
	.03	2.16	2.2	0.58	5.0	14.3	59.0
	.02	4.56	4.4	0.86	6.0		
	.0215	3.36	3.3	0.72	5.5	14.3	59.0
Value	43¢	\$1.91	\$3.23	\$1.69	\$2.20		
Gross value per ton		\$9.46					

On a concentration of 8 tons into 1 this sampling will show a profit of \$5.00 per ton.

Samples by F. B. Hyder, Geologist - Province Claim.

	Gold Ozs.	Silver Ozs.	Lead %	Copper %	Zinc %	Iron %	SiO <sub>2</sub> %
	60¢	\$ 1.82	9.36%	0.29	5.43	11.34	51.70
Value	60¢	\$ 1.82	\$8.16	\$.78	\$2.16	-- --	-- --
Gross Value per ton \$13.52							
On a concentration of 8 tons into 1 this sampling will show a profit of \$8.00 per ton.							

Samples by R. C. Nowland, Mining Engineer - Province Claim.

	Gold Ozs.	Silver Ozs.	Lead %	Copper %	Zinc %	Iron %	SiO <sub>2</sub> %
	\$1.09	\$ .63	1.14	.145	2.30	10.13	51.70
Value	\$1.09	\$ .63	\$1.06	\$.39	\$ .92	-- --	-- --
Gross Value per ton \$4.09							
On a concentration of 8 tons into 1 this sampling will show a profit of \$0.39 per ton.							

#### RECENT DEVELOPMENTS

##### CALCITE CUTS:

The Calcite orebody is located on the west side of the E Pluribus Claim. It has been developed by two cross-cut tunnels 62 feet and 35 feet, and by shallow cuts covering an area of approximately 250 feet on the strike of the vein. The dip of the ore channel has not been determined but the indications are that the dip is westerly at a steep angle. The north tunnel would indicate a width of 50 feet.

Some of the assays show high values in Gold and Silver, 10 ozs. in gold and 98 ozs. in silver, but the values are erratic. It should be remembered that these openings are comparatively near the surface and that more uniform values will be found at greater depth. The ore channel can be traced on the surface for a distance of over 350 feet on the strike of the deposit.

This is considered one of the most important discoveries on the property. Developments are not sufficient to estimate ore reserves.

*Duncan MacVickie*



## TACOMA SMELTING &amp; REFINING COMPANY

AMERICAN SMELTING &amp; REFINING COMPANY

TACOMA, WASHINGTON.

May 20

1927

Big Missouri Mining Corporation

Stewart, D.C.

MATERIAL Au Ag Ore

MILLER LOT

1133

MINE LOT

DATE RECEIVED 5/18

CAR OR VESSEL

Hogel

QUOTATION: SILVER

55 7/8

COPPER

LESS

CENTS

CENTS

NET WEIGHT

11 074

ASSAY

VALUE PER TON

100

BACKS

160

2 32

GOLD 100%

AT

19.50

45 24

NET WET WEIGHT

10 914

121 37

SILVER 95%

AT

55 7/8

64 42

.45 % MOISTURE

47

WET  
COPPER

LESS

LBS.

NET DRY WEIGHT

10 867

LBS. AT

GROSS VALUE

109 66

TREATMENT

7 50

NET TONS

5 4335

AT

NET VALUE

102 16

555 09

ANALYSIS

TREATMENT

DEDUCTIONS

BASE

LESS FREIGHT

3.00

16 61

10.5

.. Discharging

2 10

INSOL.

.. Customs Entry

2 50

LEAD

.. Material in sacks

3.0

.. at 75¢ ton

4 15

NICKEL

61.0

TOTAL DEDUCTIONS

25 30

1.1

Big Missouri Mine

16.2

NET PROCEEDS 606 Perkins Bldg.,

529 75

Tacoma, Wash.

NOTE:

(This ore mined on the 60' Level Dago Shaft  
E Pluribus Claim  
Big Missouri Mining Company)

NOTICE: All prices on Ore, not under contract for a specified time, are subject to change without notice.

An additional charge of \$10.00 per lot, for sampling and assaying, will be made on all lots containing less than five tons.

A reasonable size sample of above lot will be held for a period of 30 days

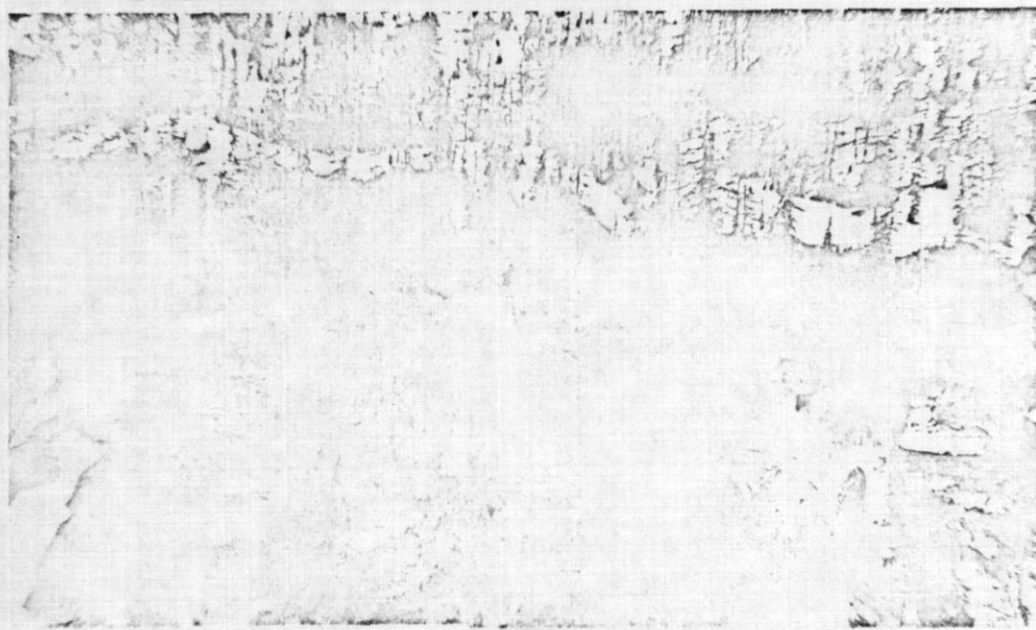
North - Or No. 2 Tunnel Calcite Cut

<u>Gold Ozs.</u>	<u>Silver Ozs.</u>	<u>Value Gold</u>	<u>Value Silver</u>	<u>Total</u>
6.02	19.98	\$ 120.40	\$ 11.38	\$ 131.78
1.02	9.54	20.40	5.43	25.83
14.30	59.50	286.00	33.91	319.91
5.72	20.18	114.40	11.50	125.90
.48	13.52	9.60	7.70	17.30
1.75	25.47	35.00	14.51	49.51

Calcite Cut - Open Cuts  
150 ft. to 225 ft. South of No. 2 Tunnel

<u>Gold Ozs.</u>	<u>Silver Ozs.</u>	<u>Value Gold</u>	<u>Value Silver</u>	<u>Total</u>
79.38	702.88	\$1,587.60	\$400.64	\$1,988.24
12.18	82.98	243.60	46.30	289.90
1.80	4.20	36.00	2.39	38.39
.88	15.66	17.60	8.91	26.52
.24	.76	4.80	.43	5.23

*Drill*



*View of Calcite Cut from Hago Shaft  
June 8th 1927*



Dike

Porphyry

Au tr Ag 0.26

Au tr Ag 0.60

Au 0.02 Ag 0.50

Au 0.90 Ag 19.94

Au 0.04 Ag 148

Au 0.20 Ag 184

Au 0.20 Ag 192

Au 0.70 Ag 282

Au 0.36 Ag 960

Note - Hole "A A" is 30" above section  
and  $37\frac{1}{2}^\circ$

Drift

Au 0.64 Ag 21.88

Au 3.44 Ag 205.88

Au 2.92 Ag 160.72

Au 6.70 Ag 146.42

Au 0.60 Ag 25.96

Au 1.70 Ag 83.30

Au 0.04 Ag 2.24

Au 0.72 Ag 248

Au tr Ag 0.20

Au tr Ag 0.28

Au tr Ag 0.32

Au tr Ag 0.08

Au tr Ag 1.32

Au tr Ag 0.08

Au tr Ag 0.16

Au tr Ag 0.32

Section of Shaft

52'3" Below Surface

Au 0.06 Ag 5.30

Au 0.06 Ag 2.10

Au 0.04 Ag 2.20

Au 0.02 Ag 2.00

H

G

F

E

Au 0.04 Ag 7.36

Au tr Ag 2.20

Au tr Ag 0.80

Au tr Ag 0.32

Au tr Ag 0.08

Au tr Ag 0.96

Au 0.02 Ag 1.10

Au tr Ag 0.84

Au tr Ag 0.68

Au tr Ag 0.56

Au tr Ag 0.96

Au tr Ag 0.84

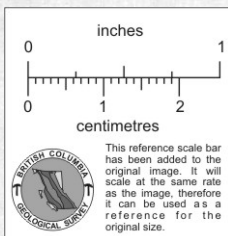
Au 0.02 Ag 0.46

Au tr Ag 0.72

Au tr Ag 1.84

Au 0.02 Ag 1.26

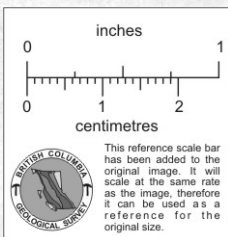
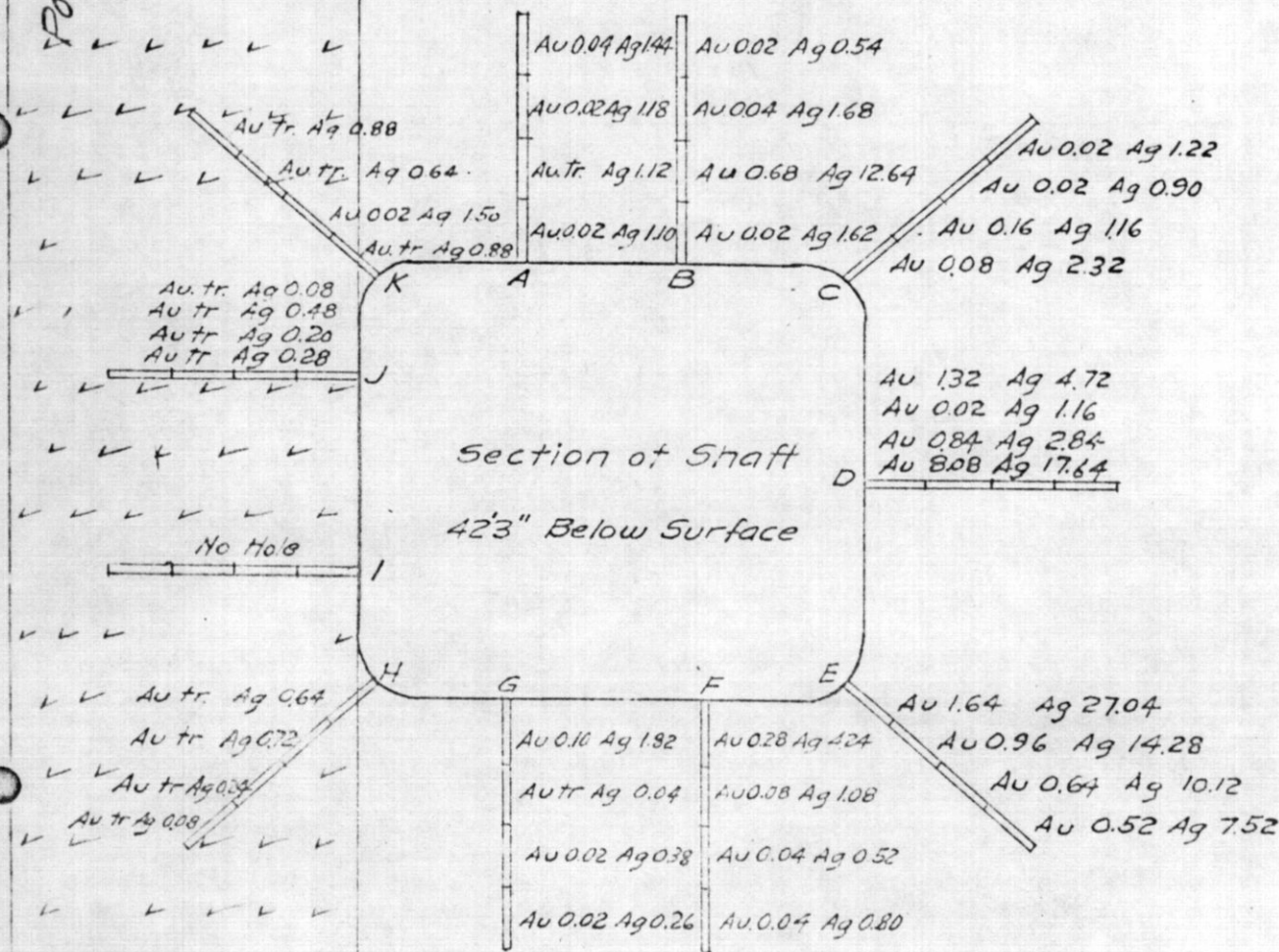
Au 0.02 Ag 1.42



Scale 1 in = 3 ft

Porphyry Dike

Section of Shaft  
42'3" Below Surface



Scale 1 in = 3 ft



FOLLOWING DATA ARE RESULTS OF SAMPLING

DAGO CUTS: (Shallow Openings) on E Pluribus Claim -

Assays:- Average of all samples taken.

Gold	.16 ozs.	@	\$20.00 per oz.	- - - - -	\$3.20
Silver	91.30 ozs.				
95% of Silver	- 86.735 ozs @ 57¢	"	"		<u>49.43</u>
Average value per foot over 25.25 feet					\$52.63

SHAFT: DRILL HOLES - 1st Set					
	Gold Ozs.	Silver Ozs.	Value Gold	Value Silver	
B	.19	4.12	\$ 3.80	\$ 2.35	
C	.07	1.40	1.40	.80	
D	2.56	6.57	51.30	3.75	
E	.94	14.75	18.80	8.40	
F	.11	1.66	2.20	.94	
Totals	3.87	28.50	77.50	16.24	
Ozs. per Foot	.77 ozs	5.7 ozs.	\$15.50	\$3.25	

Average Value per foot of Gold & Silver \$18.75

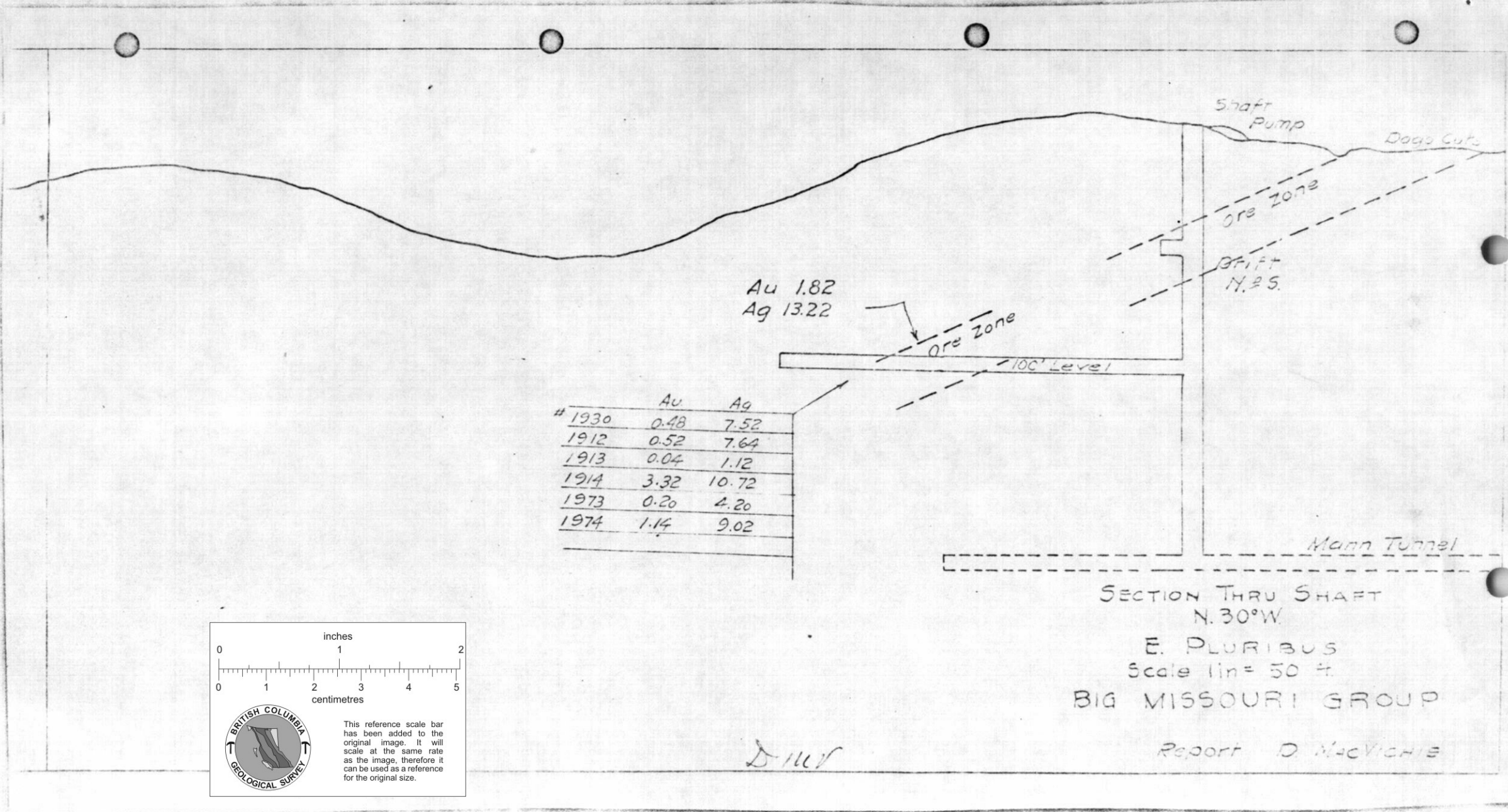
DRILL HOLES - 2nd Set					
	Gold Ozs.	Silver Ozs.	Value Gold	Value Silver	
A	.23	5.23	\$4.60	\$ 3.03	
AA	.26	3.53	5.20	2.01	
B	2.17	117.94	43.40	67.22	
C	2.015	44.27	40.30	25.23	
D	.04	2.90	.80	1.65	
E	.01	1.30	.20	.75	
Totals	4.72	175.27	94.50	99.89	
Ozs. per Foot	.785	29.21	\$15.90	\$16.65	

Average Value per foot of Gold & Silver \$32.55

ASSAY RESULTS FROM 60 FT. LEVEL N.E.  
DAGO SHAFT

Figuring Gold at \$20.00 per oz. and Silver at 57¢

Width Ore	Gold Oz.	Silver Oz.	Value Gold	Value Silver	Total
all )					
samples )					
6 feet )	.02	1.03	\$ .40	\$ .58	\$ .98
	2.16	94.57	43.20	53.90	97.10
	1.21	77.65	24.20	44.26	68.46
	1.63	133.90	32.60	76.32	108.92
	0.33	29.46	6.60	16.79	23.39
	.04	22.35	.80	12.74	13.54
	.03	1.71	.60	.97	1.57
	.06	3.21	1.20	1.83	3.03





<u>Gold Oz.</u>	<u>Silver Oz.</u>	<u>Value Gold</u>	<u>Value Silver</u>	<u>Total</u>
.03	2.31	.60	1.32	1.92
.78	28.74	15.60	16.38	31.98
.05	8.81	1.00	5.02	6.02
.20	8.64	4.00	4.92	8.92
.98	55.98	19.60	31.91	51.51
.11	5.01	2.20	2.86	5.06
2.02	61.57	40.40	35.09	75.49
.02	.92	.40	.52	.92
.41	9.84	8.20	5.61	13.81
.12	3.40	2.40	1.94	4.34
.34	10.33	6.80	5.89	12.69
.21	4.31	4.20	2.46	6.66
.36	11.60	7.20	6.61	13.81
.05	2.55	1.00	1.45	2.45
.34	14.46	6.80	8.24	15.04

		\$230.00	\$337.61	\$567.61
Average per foot ozs.	0.503	\$ 10.00	\$ 14.678	\$ 24.68
90% Recovery -	- - - - -	- - - - -	- - - - -	\$ 22.212

Total per ton Crude Ore \$22.21

8 tons Crude ore to 1 ton concentrates -\$177.68 per ton concentrates  
Less Mining, Milling, Frt. & Smelter chgs 59.60  
\$118.08  
Less Metallurgical Deductions by Smelter 1.16

Net Value 1 ton concentrates \$116.92

From the Dago Shaft 60 Foot Level for a distance of 36 feet the ore is fairly uniform, yielding a good grade of concentrating ore, A shipment of ore taken from this area and sold to the Tacoma Smelter showed the results of this shipment to be better than the average of the hand sampling, showing that the rock is more difficult to sample accurately and would indicate that the ore will mine better than the hand sampling.

ASSAY RESULTS FROM 100 FT. LEVEL  
DAGO SHAFT

Figuring Gold at \$20.00 per oz. and Silver at 57¢

<u>Width Ore</u>	<u>Gold Oz.</u>	<u>Silver Oz.</u>	<u>Value Gold</u>	<u>Value Silver</u>	<u>Total Gold &amp; Silver</u>	<u>Total Ft.Ozs.</u>
5'	0.48	7.52-	\$9.60	\$4.28	\$13.88	\$69.40
5	0.52	7.64	10.40	4.35	14.75	73.75
3	0.04	1.12	.80	.64	1.44	4.32
3	3.32	10.72	66.40	6.11	72.51	217.53
6	0.20	4.20	4.00	2.40	6.40	38.40
5	1.14	9.02	22.80	5.14	27.94	139.70
27'			\$114.00	\$22.92	\$136.92	\$543.10

Average per foot oz. - - - - -	\$ 20.114
90% Recovery - - - - -	18.10
Total per ton Crude ore	\$18.10
8 tons Crude ore to 1 ton concentrates	\$144.80 per ton concentrates
Less Mining, Millings, Ft. & Smelter chgs.	59.60
	\$ 85.20
Less Metallurgical Deductions by Smelter	1.03
Net Value 1 ton Concentrates,	\$ 84.17

It has not been determined that this ore is a continuation of the ore developed on the 60' level and the Dago Cuts. If it is a continuation of the 60' level ore, this development is important as it would then be the deepest discovery on the property.

ASSAY results from samples taken from -

NO. 1 DRIFT in MANN TUNNEL WORKINGS, E PLURIBUS CLAIM.

Width of: ore. :	Gold oz.:	Silver oz.:	Total Foot Ozs.	Total Foot Ozs.
1	5.08	14.68	5.08	14.68
4	1.12	.88	4.48	3.52
2	.64	3.64	1.28	7.28
4	.98	3.32	3.92	13.28
3	.40	2.16	1.20	6.48
4	.02	1.28	.08	5.12
2.5	.16	16.60	.40	41.50
5.	.80	.40	4.00	2.00
8	3.80	9.72	30.40	77.76
6	2.83	9.40	16.98	56.40
5	.36	1.84	1.80	9.20
5	.42	2.20	2.10	11.00
5	8.80	64.92	44.00	324.60
5	4.24	8.00	21.20	40.00
5	.72	3.00	3.60	15.00
5	3.56	40.48	17.80	202.40
5	4.12	32.64	20.60	163.20
6	.80	2.40	4.80	14.40
7	.60	3.00	4.20	21.00
6	.96	7.00	5.76	42.00
6.3	.16	trace	1.01	
6.6	.12	trace	.78	
6.3	.96	8.00	6.04	50.40
7	.80	7.00	5.60	49.00
7	.30	2.00	2.10	14.00
4	.92	3.88	3.68	15.52
5	.56	2.64	2.80	13.20
4	.48	.62	1.92	2.48
7	1.24	18.20	8.68	127.40
6.6	.68	9.60	4.49	63.36
5	.64	6.44	3.20	32.20
6	.64	8.00	3.84	48.00
6	.64	1.50	3.84	9.00
Avg.170.3	1.419	8.780	241.67	1495.38
90% Recovery	1.277	7.902		



Money Value figuring gold @ \$20.00 & Silver at 57¢ per oz.

Gold \$25.54 Silver \$4.50  
Total Gold & Silver in 1 ton of crude ore \$ 30.04

8 tons of crude ore combined into 1 ton of concentrates.

8 x \$30.04 gives values in 1 ton concentrates,	\$ 240.32
Less cost of Mining, Milling, Frt. & Smelter Chgs.	59.60
	<u>\$ 180.72</u>
Less Metallurgical deductions by Smelter	1.60
	<u>\$ 179.12</u>

Net Value per ton concentrates,  
For an estimated tonnage in this block of 1333 tons of  
crude ore - 166 tons concentrates @ \$179.12 -  
gives a total of - - - - - \$29,734.92

ASSAY results of samples taken from

NO. 3 and NO. 4 CROSS-CUTS, MANN TUNNEL, E PLURIBUS CLAIM.

Width of ore.	Gold oz.	Silver oz.	Total foot ounces gold	Total foot oz. silver.
7 ft.	.78	2.58	5.46	18.16
7 ft.	.48	1.84	3.36	12.88
7 ft.	.72	2.60	5.04	18.20
7 ft.	.76	3.80	5.32	26.60
7 ft.	.64	3.00	4.48	21.00
7 ft.	.28	2.44	1.96	17.08
5 ft.	.24	8.96	1.20	44.80
6 ft.	.22	13.56	1.32	81.36
4.5	2.28	9.88	10.26	44.46
5 ft.	1.40	1.72	7.00	8.60
4.5	1.80	177.68	8.10	799.56
4 ft.	1.76	50.84	7.04	203.36

Total 71 ft. 60.54 oz. 1,296.06 oz.

Average value 90% recovery of average values.

foot ozs. gold - - .852 - - - gold, oz. .767  
silver - 18.253 - - silver, oz. 16.43

Money value, figuring Gold @ \$20. per oz., silver at 54¢ per oz.

Gold - - - .767 oz. @ \$20 ---- \$ 15.34  
Silver - 16.430 oz. @ 54¢ --- \$ 9.37

Total value per 1 ton crude ore, - - - - - \$24.71  
Concentrated 8 tons crude ore into 1 ton concentrates:  
8 x \$24.71 gives total value 1 ton concentrates, - 197.68

The ore in the Mann Tunnel has only recently been discovered, and it lies comparatively flat. While we have reason to believe this is a large body of ore, the openings are not sufficient to permit us to estimate a large tonnage.

Without going outside of the open lines where ore is exposed, we have the following tentative estimates:

Crude ore 1267 tons, concentrated 8:1 - 158.3 tons concentrate

Gross Value 1 ton concentrates as above	\$ 197.68
<u>Less Mining, Millings, Frt. &amp; Smelter Chgs.</u>	<u>59.60</u>

	138.08
Less Metallurgical Deductions by Smelter	<u>3.75</u>

Net Value 1 ton concentrates,	\$134.33
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Total Value 158.3 tons concentrates @ \$134.33 - \$ 21,264.44

ASSAY return from samples taken on the Buena Vista Claim.-

Width : ore.	Gold: : oz.	Silver: : oz.	Lead %:	Zinc %:	Ft. Ozs. Gold.	Ft. Ozs. Silver.	Ft. % Lead.	Ft. % Zinc.
3	.30	0.50	2.2	12.00	.90	1.50	6.60	36.00
4	.26	4.78	15.40	10.30	1.04	19.12	61.60	41.20
6	3.80	8.20	6.85	3.00	22.80	49.20	41.10	18.00
4	15.96	13.50	32.20	7.60	3.84	54.00	128.80	30.40
2 1/2	.76	5.90	19.50	3.80	1.71	13.275	43.875	8.55
2 1/4	1.92	4.32	8.50	1.00	4.32	9.82	19.125	2.25
2	.72	5.04	14.50	6.80	1.44	10.08	29.00	13.60
1 1/2	1.00	0.28	9.60	4.50	1.50	.42	14.40	6.75
1	1.00	6.60	17.20	10.60	1.00	6.60	17.20	10.60
3	.86	4.20	11.40	4.40	2.88	12.60	34.20	13.20
3	.72	4.84	20.50	15.20	2.16	14.52	61.50	45.60
3 1/2	.32	3.26	17.80	14.20	1.12	11.41	62.30	49.70
4 1/2	.40	3.60	22.10	13.80	1.80	16.20	99.45	62.10
4	3.00	1.00	12.00	17.50	12.00	4.00	48.00	70.00
7	.76	51.68	10.00	7.40	5.32	361.76	70.00	51.80
4	.26	3.26	10.60	8.80	1.04	13.04	42.40	33.20
7	.14	4.30	15.00	6.40	.98	30.10	105.00	44.80
4	.14	5.10	15.40	5.60	.56	20.40	61.60	22.40
7	.08	1.84	12.40	6.00	.56	12.88	86.80	42.00
3	.12	1.24	5.50	7.20	.36	3.72	16.50	21.60
Ft. 76					67.33	664.64	1049.45	623.75

	<u>Gold.</u>	<u>Silver</u>	<u>Lead.</u>	<u>Zinc.</u>
Aver.	.886 oz	8.744oz.	13.80%	8.20%
90% re-				
covery.	.7974 oz	7.87 oz.	12.42%	7.38%

Money Value, figuring Gold @ \$20.00, Silver @ 57¢ per oz.,  
Lead at 6.4¢ and Zinc @ 2¢ per lb.

Gold \$15.95; Silver \$4.48; Lead \$26.97; Zinc \$2.95



Total Values in one ton crude ore,	\$50.35
8 tons of crude ore combined into 1 ton concentrates,	
8 x \$50.35 gives value of 1 ton of concentrates,	\$402.80
<u>Less</u> cost of Mining, Milling, Frt. & Smelter Chgs.	59.60
	<u>\$343.20</u>
<u>Less</u> Metallurgical deductions by Smelter,	17.77
	<u>\$325.43</u>

Development work on this block of ore has not reached the stage where tonnage can be estimated.

ASSAY RESULTS FROM LAURA CLAIM						
Width Ore	Gold Oz.	Silver Oz.	Lead %	Foot Ozs. Gold	Foot Ozs. Silver	Foot % Lead
4	.03	7.5	12.5	.12	30.0	50.0
8	.06	7.8	6.4	.48	62.4	51.2
4	.03	3.6	3.3	.12	14.4	13.2
8	.06	3.5	3.9	.48	28.0	31.2
, Composite of Copper 1.7%						
24 feet			Totals	1.20	134.8	145.6
			Averages	.05	5.6	6.0
90% Recovery				.045	5.04	5.4
Gold .045 ozs. @ \$20.00					\$ .90	
Silver 5.04					2.87	
Lead 5.4% or 108#					6.90	
Total per ton Crude Ore,					\$10.67	
8 tons crude ore to 1 ton concentrates,					\$85.36	per ton concentrates
<u>Less</u> - Mining, Milling, Frt. & Smelter Chgs.					59.60	
					<u>\$25.76</u>	
<u>Less</u> Metallurgical Deductions by Smelter,					2.55	
Net Value 1 ton concentrates,					\$23.21	

ASSAY RESULTS FROM GOLDEN CROWN CLAIM						
Width Ore	Gold Oz.	Silver Oz.	Lead %	Foot Ozs. Gold	Foot Ozs. Silver.	Foot % Lead
4.5	.18	1.4	---	.81	6.3	
1.2	.16	0.6	0.2	.19	0.72	.24
3.33	.31	1.5	1.1	1.03	4.99	3.66
2.2	.47	2.25	0.6	1.03	4.95	1.32
5.5	.68	2.7	3.5	3.74	14.85	19.25
16.73 feet			Totals	6.80	31.81	24.47
			Averages	.40	1.9	1.46
90% Recovery				.36	1.71	1.31
Gold .36 ozs. @ \$20.00					\$ 7.20	
Silver, 1.71 "					.97	
Lead, 1.31% or 26.2#					6.40	
Total per ton Crude Ore,					<u>1.67</u>	
					\$ 9.84	

8 tons crude ore to 1 ton concentrates,  
Less Mining-Milling-Frt. & Smelter Chgs.

\$78.72  
59.60

\$19.12

Less Metallurgical Deductions by Smelter  
Net Value per ton concentrates,

.73  
\$18.39

2774