CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
520-770-3500
http://www.azgs.az.gov
inquiries@azgs.az.gov

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Docket No. C-BD-4469
Date Auth. for Exam. Rec'd Oct. 19, 1942
Date of Exam. rec'd. Nov. 19, 1942
Date of Report Dec. 17, 1942

1. Name and Address of Applicant

Name Don W. Haverly
Address 309-A Sonoita Ave.,
City & State Nogales, Arizona

Correspondent same

2. Character of Mine
Development of Copper Deposit

3. Location of Mine.
The mine is located in the Patagonia Mining district in T. 24S., R. 16E G&S.R.M. in Santa Cruz County, Arizona The nearest rail point, Patagonia, Arizona is 25 miles from the mine. The last 3 miles to the mine is very rough and rocky but not steep. The balance of the road to Patagonia is good hard surfaced highway. Nogales is the nearest supply center and is 25 miles distant by road which is good except for the last 3 miles of rough road noted above. The roads are accessible at all seasons.

4. The applicant is a middle-aged man. He has spent practically all his adult life in mining and milling work in southern Oregon. For the past 15 years he has prospected and mined in a small way. He would be competent to handle a limited mining loan development project.

5. Loan Requested.

The applicant request a loan of $10,000 in his application. Following discussion and agreement with this engineer in the development program hereinafter outlined he reduced the amount requested to $6000.

6. Description of Project

A. General Features

1. There are no mine workings, etc. which are not confined within the applicant's ownership.
2. The project would comply with state compensation and safety-first statutes
3. There are no apparent legal discrepancies in the project.
4. There are no impeded right-of-way facilities.
5. There is no likelihood of surface or sub-surface trespass.

B. Existing Development

1. Mine is opened by shaft and tunnel
   a. Accompanying sketch is made from compass and tape survey.
   b. Samples were cut with pick and mail and gathered on canvas or in a box.
   c. The tunnel and tributary workings

were accessible and in fair condition. An 80 foot shaft on the property was half-filled with water.

belt of altered granite porphy cut by small qtz stringers contains much silvery mica and in this type of material when it lies against nearer granite dike the ore seems to make.

At the foot of the shaft

Mr. Haverly estimates that he has removed 5 tons of material for each ton shipped from this area. ~~and~~ His shipments are listed as follows:

The ore appears to occur in disconnected bunches rather than in a continuous ~~shoots~~ vein and ~~seems~~ to favor contacts against

The country rock of the region is
The mineralization on the property occurs in ~~a granite porphy dike some 300 feet wide which strikes in a generally N-S direction and dips approximately~~ an altered granite belt some 300 feet wide near porphy

~~The~~

The country rock of the region is granite and mineralization on the property occurs in a belt of altered ~~contact belt of~~ granite near its contact with an intrusive granite porphyry. This belt of ~~granite~~ altered granite ~~has in places been intensely~~ strikes approx N-S and dips W at approx 45° ~~sericitized and~~ which is some 300 feet wide contains much silver-white mica and in places has been intensely sericitized. ~~The ore that has~~

~~The ore ~~bodies~~ occurs as disseminations in bunches or lenses rather than in vein-like forms. The lenses conform in general to the dip and strike of the ~~contact of~~ underlying granite porphyry.~~

The property, known as the Lucky Boy Mine, consists ~~comprises~~ of one patented claim owned by Rodrick O'Connor, a doctor living in San Francisco. The applicant operates under a lease from the owner. The ~~provision of the~~ lease stipulates a royalty payment of 10% on net smelter or custom mill returns until the ~~prospecting~~ RFC loan is paid off. Thereafter the lessor and lessee share equally ~~alike~~ in profits. The lease dated Aug 22, 1942 is granted for a term of 2 years and contains no provision for renewal upon expiration. Copies of the lease are included in the supporting data with the application.

The mine was originally opened and operated for a short time during the last war and some shipments of ore were made. There is no record of the amount or value of such production. Judging from the openings in the mine and the present faces ~~seen~~ the quantity was not large - certainly not as much as a carload - and the ore was not rich. The mine lay idle until the date of the applicant's present lease. Since making application for a development loan the applicant has shipped several small lots of ore to an ore-buyer in Tucson. The ~~present~~ settlement sheets for these shipments are presented as supporting data with the application. Following is a tabulation of the shipments:

Date shipped	Tons	Oz Au	Oz Ag	% Cu
Oct 8, 1942	1.32	.10	2.0	7.5
Oct 12,	2.05	.05	2.0	6.3
Oct 22	3.76	.05	2.5	8.1
Nov. 13	4.18	.05	1.5	8.4
Nov. 16	3.94	.05	2.0	5.6
Total and average (weighted)	15.25	.054	1.98	7.24

There is no mining activity in the immediate vicinity. The Santo Niño or Southern Copper mine is ~~situated~~ located 4 miles NW of the property, and is being developed in a small way by a lessee. This mine at one time was a substantial ~~pro~~ shipper of copper ore and is reputed to have taken out a large pocket of almost pure ~~MOSc~~ molybdenite ~~values~~ ~~being~~ a value of ~~sixty to~~ 60-70 thousand dollars. The Duquesne mine of the Callahan Zinc and Lead Co is 3 miles Northeast of the property. This is an old silver-lead copper mine which has recently been rehabilitated and placed in active production. The Trench mine, a silver-lead producer owned by the A.S.&R. Co is located some 10 miles north of the property. ~~This~~ Former 2 mines have produced some molybdenum and practically all the prospecting in the region has shown traces to appreciable amounts of molybdenum.

11

24
3
72

The mine lies in a region of low-hills ~~out~~ on the Mexican border east of Nogales Arizona. The end line of the property is only 60 ft north of the border.

The country rock of the region is granite and mineralization on the property occurs in a belt of altered granite near its contact with an intrusive granite porphyry. This belt of altered granite which is some 300 feet wide strikes approximately N-S and dips east at about 45°. It contains a considerable amount of silver-white mica and in places has been intensely sericitized. Such ore as has been found occurs in these highly sericitized areas ~~where they occur~~ near the granite porphyry contact. The ore occurs as disseminations, in bunches or lenses, rather than in a vein. These lenses conform in general ~~to~~ with the strike and dip of the underlying granite porphyry.

Ore minerals are chalcopyrite, bornite and ~~tennorite~~ the black oxide of copper, tennorite. The areas of sericitization are heavily impregnated with pyrite and clusters of pyrite up to 1" square occurring as ~~lining masses are~~ ring linings are common. The pyrite generally shows partial replacement by copper, and coating by black copper oxide. Because of heavy overburden and the small amount of surface work no surface mineralization could be seen except at ~~the~~ a point several feet below the collar of the 35 Ft. shaft. Here the oxidized copper minerals appear to give way to sulphides at shallow depth and on the tunnel level at the bottom of the shaft sulphides predominate ~~the whole~~

The ~~whole area~~ area throughout is cut by numerous small thin quartz stringers. Occasional crystals of molybdenite can be seen in these stringers particularly in pieces in a part of the dump at the collar of the 80 foot shaft.

The mine is opened by a tunnel which connects with the bottom of a 35 foot shaft, and an 80 foot shaft with reportedly a 20 foot drift in the bottom. This latter shaft now stands half full of water ~~and~~ appears to be open though there are no collar sets or other timbers in it, and no ladders. There are no other workings on the property beyond ~~some~~ several shallow surface scratchings. There is no recognizable mineralization in the altered belt on its extension north of the property. South of the property, in Mexico, some mineralization has been uncovered in a few ~~some~~ shallow cuts and a shaft 90 feet deep (all caved) but there is no record nor evidence that any production has been made. Following is a description of the workings and the sampling:

The tunnel is driven in the hill in a S 25° W direction which is about the course of the belt of altered ~~belt of~~ granite. At 70 feet from the portal the tunnel turns sharply west and connects with the bottom of the shaft. A short distance beyond the shaft the tunnel swings around on a short radius making almost a full circle, in fact a ~~short~~ small hole has been broken thru into the south end of the drift where it turns sharply west. The former production from the mine was ~~appears to have been~~ made from a small stope above the level ~~in the S toward the~~ in southeast portion of the workings. The ore here apparently occured as a lens which dipped ~~at~~ 45-50° SE. The stope has a maximum length of about 20 feet in a SW direction. ~~The ore was all rem~~ and a maximum height of 20 feet on the dip. ~~The ore was all remove~~ The stope now shows no ore on either end or in its bottom. A sample cut across the most favorable

At places in the back and walls of the tunnel a heavy coating of copper sulphate and carbonate was noted in joint cracks in the rock. There is no appreciable mineralization however in the mass of the rock.

portion of its upper face ~~&~~ showed a narrow width of ~~only~~ low grade material ~~represented by~~ containing disseminated pyrite with some chalcopyrite ~~and~~ chalcocite and black oxide of copper. The sample assayed as follows:

Sample	Width	Oz Au	Oz Ag	% Cu	% MoS_2
No 1	30"	Tr.	0.60	3.25	0.08

A winze 17' deep in the floor beneath the stope was partially filled with water. A thin showing of chalcopyrite and bornite can be seen on the north foot wall of the winze at the collar. It occurs along a seam in unaltered granite and shows for a length of only several feet. ~~of length and several inches of width~~ There is no other ore showing here or in the two stub drifts at this point.

~~Some 25' south of the above described stope~~

A good bunch of ore can be seen in the south wall of the shaft and in the back of the small stope at the bottom of the shaft. The outline of the ore body here is irregular though in the main it appears to dip at a low angle toward the ~~south~~ south east ~~and has it~~ with its longest axis extending in a SWS direction.

Sample No 4 was cut in an opening in the south wall of the shaft. The shaft ore ~~body is~~ occurs ~~occurs in~~ in an intensely sericitized area ~~of which~~ resting upon fresh granite porphy. ~~which~~ So far as can be seen in the limited exposure here this ~~is the~~ appears to be the contact ~~between the~~ on the ~~south~~ west side of the ~~altered~~ belt of altered granite. A sample across the ore assayed:

Sample	Width	Oz Au	Oz Ag	% Cu	% MoS_2
No ~~66~~ 4	66"	Tr.	.80	2.80	0.50

Sample No 6 was cut ~~horizontally~~ across the ~~top of the stope near~~ wall of the shaft opposite Sample No 4 and assayed:

Sample	Width	Oz Au	Oz Ag	% Cu	% MoS_2
No 6	54"	Tr.	0.60	.80	nil

Sample No 7 was cut horizontally across the top of the stope near the bottom of the shaft and below sample No. 4. This sample assayed:

Sample	Width	Oz Au.	Oz. Ag.	% Cu	% MoS$_2$
No 7	10'4"	~~.Tr~~	.40	6.05	0.03

~~A~~ Sample No 3 was cut across the back of the drift ~~some~~ 15 feet South of Sample No. 7. The material here showed a little ~~some~~ finely disseminated pyrite ~~with~~ and some green and blue copper stain. There is no mineralization in the floor or walls or east end of the workings ~~at this point~~ place.

Sample No. 3 assayed:

Sample	Width	Oz Au	Oz Ag	% Cu	% MoS$_2$
No. 3	28"	Tr.	.40	.20	nil.

Sample No. 5 was a grab from material discarded while exploring the south wall of the shaft where sample No 4 was taken. About 2½ tons of this material is piled at the foot of the shaft. It ~~assayed~~:

Sample	~~Oz~~ Oz Au	Oz Ag	% Cu	% MoS$_2$
No 5 (muck)	Tr.	0.60	2.05	0.05

The applicant states that his recent ~~material~~ shipments were made up of material ~~has shipped from the~~ stoped above the level at the foot of the 35 foot shaft. ~~He says that about 4 tons of material was removed~~ The material was broken selectively and sorted, and he states that about 5 tons of material was removed ~~to~~ make 1 ton of shipping product. As noted above his shipments averaged .054 Oz Au, 1.98 Oz Ag and 7.24% Cu. ~~Ores~~ of this grade if shipped to the smelter at Douglas Arizona would give ~~a~~ the following results:

The 80 Ft vertical shaft which is located about 180 feet south from the tunnel workings is about half full of water. The dump shows only very low grade material. Material in a selected pile in the dump shows small amounts of pyrite, chalcopyrite and limonite with some black oxide of copper. Occasional pieces contain leafy patches and specks of molybdenite. A sample of this material representing not more than several tons assayed:

Sample	Oz Au	Oz Ag	% Cu	% MoS_2
No 8 (dump)	Tr	.80	2.60	0.33

It was not possible, because of the inaccessibility of the shaft, to correlate the work here with the tunnel workings. ~~The dark of the showings near the shaft, the poor appearance of the dump material and together with the low grade of the sample of selected material~~ No production has been made from this shaft and this fact together with the poor appearance of the dump and low grade of the selected material leads to the conclusion that there is nothing of interest in the shaft.

It will be noted that the samples taken by this engineer assayed considerably less in gold and silver than those shown for the lots which were shipped. It is probable that the gold-silver and copper ratios of the latter are more nearly correct since payment was made on the figures.

~~11.77~~
~~24~~
~~9 1.75~~

9

			$
Gold	.054 oz @ 32.32	=	1.75
Silver	(1.98 oz - .5 oz) × 69 5/8 ¢	=	1.03
Copper	(7.24 - .4) × .95 × .9175 × 2000		1192
	Bonus 130 × $.05	=	650
			1842
		Total	21.20

Less Frt.	1.25	
Treatment	3.50	
	4.75	4.75
Smelter Net		16.45

Trucking to Patagonia would cost around $3.50 per ton. The ground is soft and can be augered and picked. Mining cost per ton would be low and is estimated at $2.50 per ton of material broken. The ore is bunchy and ~~sev~~ in the past 4 to 5 tons of material was handled in order to make 1 ton of shipping ore of the grade noted above. Because of the bunchy nature of the occurrence of the ore it is not possible to ~~predict~~ calculate a sorting ratio for ~~of~~ the material now exposed but apparently it would be be about the same as in the past. - or around 4 to 1 Mining cost therefore per ton of ore shipped would be several times the above figure of $2.50 per ton, probably around $10.00 per ton. The indicated profit on the above ore therefore would be:

Net Smelter Value	
Less Royalty (10%)	
Less Trucking	3.50
Less Mining	
Profit	

Trucking to Patagonia would cost around $3.50 per ton. The ground is soft and can be augered and picked down. Mining cost would be low and is estimated at $2.50 per ton per ton of material broken. Because of the brittle nature of the ore occurrence it is ~~is~~ not possible to calculate a sorting ratio for the material now exposed but it would probably be about the same as in the past and ~~the~~ mining cost therefore per ton of ore shipped would be several times the above estimate of $2.50 per ton, probably around $10.00 per ton. The indicated profit then on ore of the above grade would be about as follows:

Net Smelter Value		16.45
Less: Royalty 10%	1.65	
Trucking	3.50	
Mining	10.00	
~~15.15~~		15.15
Profit		$ 1.30

There is some question as to whether Douglas ~~will~~ would accept this material. In ~~the~~ the event that they would not or so the market for the ore would be at Hayden and the freight rate would $2.21 instead of $1.25. Obviously there would be little ~~or~~ no profit in this class of material.

The Applicant hopes to be able to send his ore to the near-by mill of the Callahan Lead and Zinc Co. and presents a letter from that company ~~which~~ expressing a willingness to accept a trial lot of 50 to 100 tons of ore. Payment for the copper would be made on the basis of 75% of the assay @ market less 4.6¢ or 7.175¢ per lb. Bonus credit for copper would calculate at 87% of assay × 5¢ (according to recent schedule of WPB). Silver would be settled for on the basis of 80% at market price. The sample submitted by the applicant assayed 4.50% Copper. Gold and silver content was not reported. ~~If these~~ These metals probably were present in about the ratios shown on the before-mentioned settlements for ~~of~~ the five small ~~smelter~~ lots shipped to the Tucson ore buyer. On this basis the gold and silver in the sample submitted to the Callahan mill would calculate ~~at~~ as follows: Gold .03 oz. per ton, Silver 1.23 oz per ton. The settlement basis for gold content is not mentioned in the Callahan letter. Other, custom plants generally pay for all the gold at $24.00 per ounce. Profit per ton ~~on~~ ~~this type of ore~~ ~~material of the grade of the above sample~~, assuming that the above sample represents ~~it would be~~ run-of-mine grade i.e. not a sorted product, would work out about as follows:

Gold .03 × $24.00		.72
Silver 1.23 × .80 × $.71		.70
Copper 4.6 × 2000 × .75 × $.7175		4.95
Bonus 4.6 × 2000 × .87 × .05		4.00
	Custom Mill Net	10.37
Less Royalty	1.04	
Milling	3.50	
Haul	1.00	
Mining	2.50	
		8.04
		2.33

It should be noted that ~~silver~~ gold and silver contents of the above ore are each very near

the ~~low~~ minimum limit below which no payment ~~would be made~~. for these metals would be made.

Also, the grade of ore is an arbitrary assumption based upon a single sample submitted by the applicant. The applicant states that a considerably greater volume of this grade of ore would be available than of the sorted shipping ~~product~~ grade which has to date been sent out. This is no doubt true to a limited extent. The material sorted out from the shipments is scattered on the dumps and could not be practically sampled. This engineer estimates however that this discarded material would run not over 2% Cu, and probably considerably less, and that ~~of the above calculation~~ a certain amount of sorting would still be necessary to bring the ore up to the grade upon which the above calculation has been made. ~~This~~ would result in a mining cost higher than $2.50 per ton and there would therefore be no profit in this material. Milling of the ore on the property is not a practical consideration in ~~view of the~~ the present state of development of the ~~ore~~ property.

Proposed Development.

The applicant proposes ~~to~~ drive into the hill on the ore now showing ~~in the~~ near the bottom of the shaft. The slope of the hill is gentle and the work which would begin with approximately 20 feet of tracks would gain 20 to 30 feet of depth below the surface for each 100 ft. of advance. Cost of further development is estimated as follows:

Used Truck	1,000	
5 Ore cars in lieu of ore bin	150	
1½ tons mine rail @ $70.00	105	
2000 Bd. Ft. lumber @ $75.00	150	
Drill Steel	75	
Ship and misc. tools	125	
		1605
100 Ft. drifting @ 15.00	1500	
100 Ft. Xcut @ 15.00	1500	
		3000
		6000
Superintn. 3 mos. @ $200		600
Foreman, Auto Exp. Apt. etc		675
Rent. $6000 for 6 mos @ 6%		180

Total $6,000

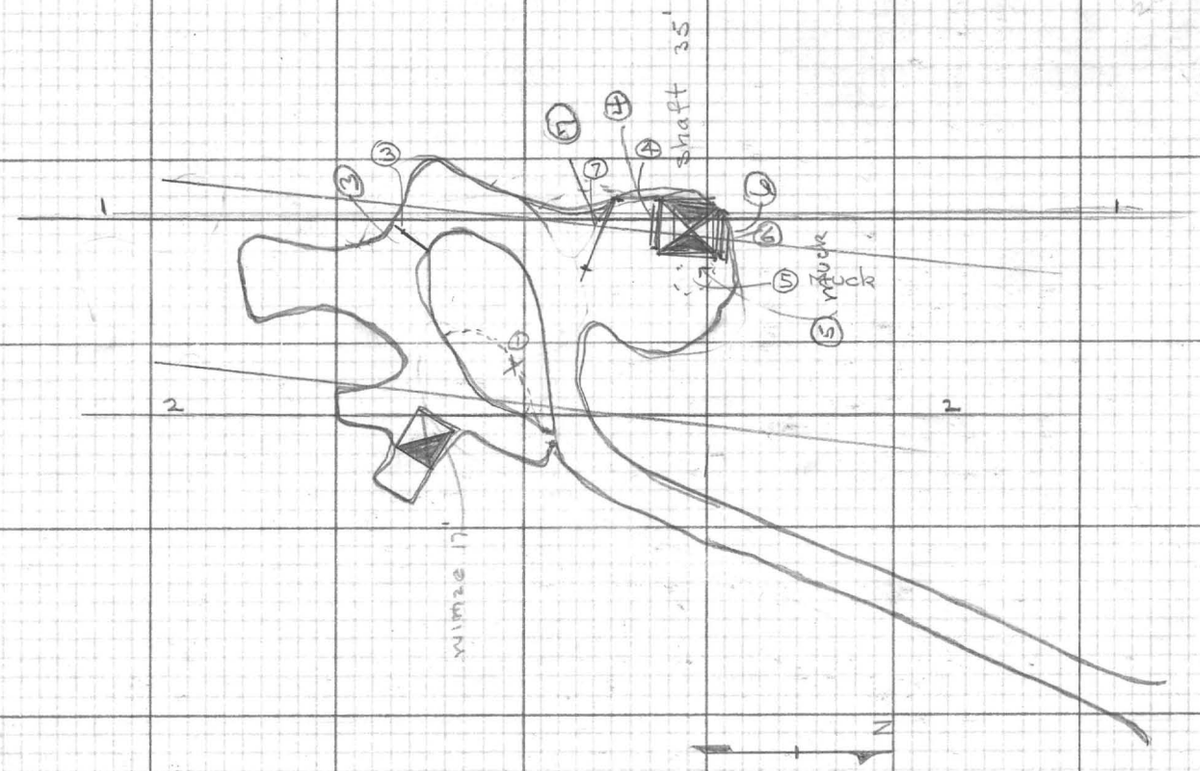
Comments of Supervising Engineer

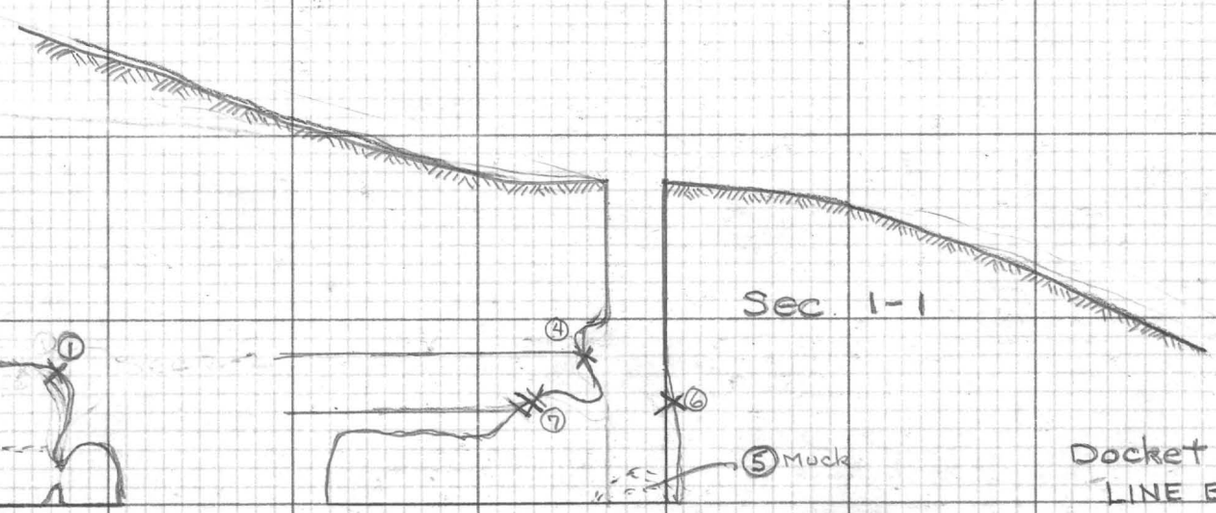
Work upon the property has been quite limited in extent. The only ore showing of intrinsic is a bunch near the bottom of the 35 ft. shaft. Unless this bunch proves upon development to ~~the~~ have a very much greater extent than any previously discovered it could be counted upon for only some 20 to 30 tons of a shipping product.

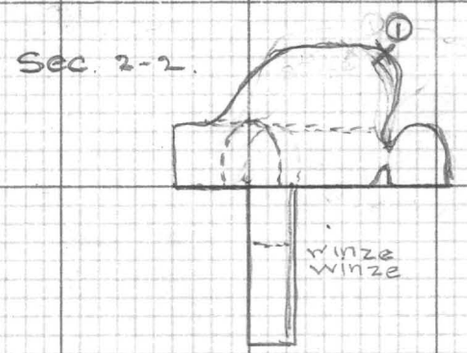
While development of further ore is a possibility and geological conditions seem favorable the limited development to date and the generally uninteresting results from this development do not permit classing the project better than a long chance exploratory development. A development loan therefore does not appear to be justified.

Samples

Sample	Width	Oz Au	Oz Ag	% Cu	% MoS_2
No 1	30"	Tr.	.60	3.25	.08
2	No	Sample			
3	28"	Tr.	.40	.20	Nil
4	66"	Tr	.80	2.80	.50
5	Muck	Tr	.60	2.05	.05
6	54"	Tr	.60	.80	Nil
7	104"	Tr	.40	6.05	.03
8	Dump	Tr	.80	2.60	.33







Docket B-BD-4469
LINE BOY MINE
Santa Cruz Co., Ariz.
Scale: 1" = 20'
Nov. 19, '42

Ore:
Proposed Work:
sample: —①

Applicant G.M.C. 1½ '32 platform

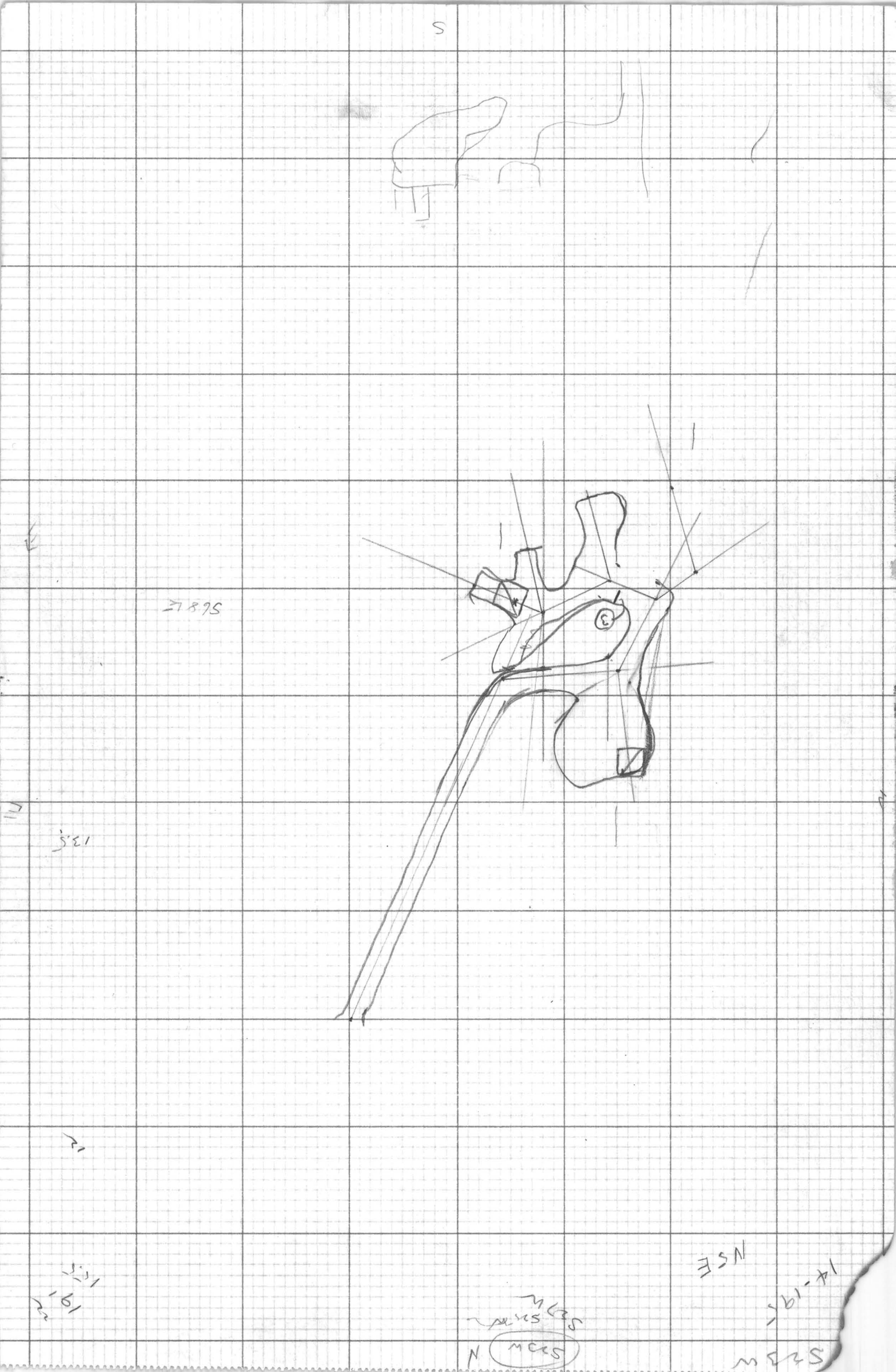
Eqpt.

Used truck	1000	
5 Cars in place of bin	150	
1½ tons rail delivered	100	
2000 Bd Ft. sq. timb. chutes still etc	150	
300# Drill Steel @	75	
Tool & Hume	125	
		1600
100 ft Drift @ 15.00		1500
100 v. Xcut @ 15.00		1500
Supervision 3 mos @ 200		600
Insurance Deposit (Lloyds		125
Int 6000 @ 6% 6 mos		180
Auto exp. frt., unforseen		495
		$ 6,000

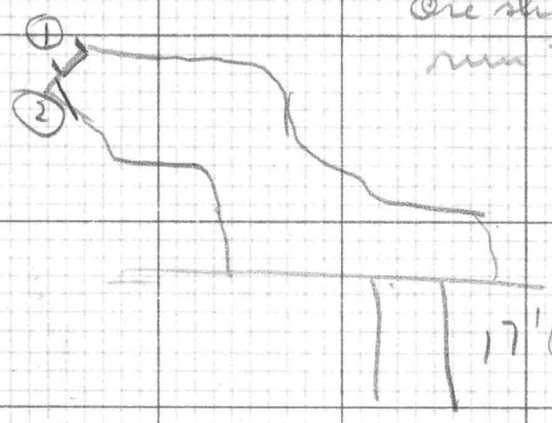
(800)

12
24
33
72
72
792
6
5
30
118

Drift South 100' at lower horizon of present on south of shaft, and Xcut in sericite if seems advisable. 505



#1 Iron stained heavily
disseminated Chalcocite in sericite
30" wide Best showing in stope above wings
Size of stope indicates possibly carload shipped
in 1914. Lowe part of face is low grade est 2%
Ore shows no continuity seams
run thru it.



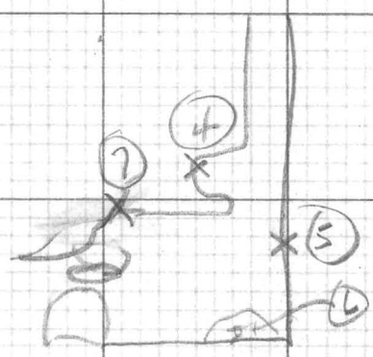
#3 Very Hy Pyrite w/chacocite & bornite
Vein appears to cut out
entirely 6' E of #3

#4 S end of shaft 18' down some Cu Stn. hy iron
w/ chalcocite chalcopyrite & bornite

5 Muck at foot of shaft fine mat. 2½ tons

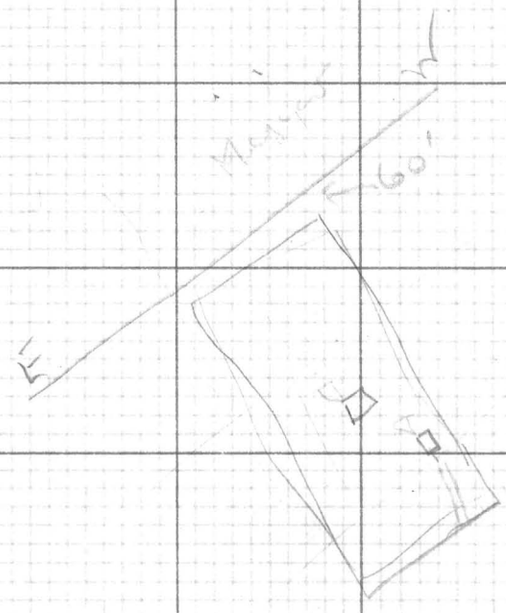
6 4.5' N edge of shaft 8' below #5

7 104" across back S end stope at foot of
shaft (horizontal cut)



Layer of intrusive
granite 4' thick
underlies ore

Shaft 75' deep
Water stands 36 from top
Borrowed 2 HP Mulk Johnson Jack Pump rain water
Nearest water 5-600 to Govt. spring cattle 300 g/day
3 miles to nearest water in valley 500 ft lower
Mineralization not recognized M.J. working
is recognized 800 S on Max side 60 Shaft

75' Shaft dump shows hy iron
chalc bornite little oxide copper

75' shaft is center of claim MW.SE.
35' shaft is 90' from west side line