1210 0069

(48)

ITEM 69

MARSHALL MINE
CONTACT, NEVADA

Elko, Co.

June 9, 1954

Rodgers Peale

RODGERS PEALE

MARSHALL MINE
CONTACT, NEVADA

CONTENTS

MARSHALL MINE

GENERAL INFORMATION

The Marshall (Nevada Bellevue) Mine is the most important producer of the Contact, Nevada, copper district. The workings are about 1½ miles west of the railroad at the station of Contact. The district is reached by driving north from Highway 40 at Wells, Nevada, for 51 miles on Highway 93. The Union Pacific connects Contact with the Garfield smelter of American Smelting and Refining at Salt Lake City.

The property consists of 8 and a fraction claims. The Delano No. 1 and Allen No. 2 cover the mineralization along the north granite-limestone contact. The Bellevue, Copper King No. 1, Copper King No. 2, and Delano No. 2 cover the Main and 3rd North as well as several minor veins. The Lincoln, Western Union, and Arkansas fractions cover the Western Union vein and a part of the Arkansas vein. The claims are patented.

There is enough water from a spring in the wash below the mine to account for light domestic needs, but would not be sufficient for a camp of any size. There is plenty of water for camp and small mill, however, in the Salmon Falls Creek at Contact. There is no timber in the vicinity but used railroad ties are bought and other timber is available from Idaho. All power must be generated by the mining company.

The history of the camp is brief. Discovered in the early seventies it was first worked for gold and then for copper. Since 1876 it has been worked intermittently over several periods of five years separated by slack years. There is said to have been produced 300,000 tons by 1930. Periods of activity were 1905-1910, 1914-1919, and 1925-1930.

In the group under consideration there was probably little production prior to 1913 and from then to 1930 $250,000 is said to have been shipped. An attempt at leaching the ore in place with a three per cent sulphuric acid solution was not successful due to loss of solution in the fractured ground and the refractory nature of the chrysocolla.

GENERAL GEOLOGY

Rocks

A granodiorite batholith or possibly a laccolith 7 miles

wide by 25 miles long was intruded into Paleozoic sediments in probably Cretaceous time. Abundant (15%) biotite makes the rock dark and in places it is rather coarsely crystalline. Roughly the granodiorite contact parallels the bedding, but actually where seen in the mine it seems to cut acutely across it. The contact between the sediments and granodiorite dips to the south on surface but must steepen with depth. On the Ilo tunnel the contact strikes northwest and dips 80 northeast and the bedding dips 60 degrees north northeast.

The oldest rocks of the area are the sediments. In large part they are limestone, but on the surface of the Marshall mine near the Main Vein slate predominates. Underground on the Ilo tunnel slate and silicified limestone make up the sediments. The silicified limestone has been called quartzite but it has the appearance of altered limestone and some recrystallized limestone was seen in the silicified material.

Alaskite and andesite dike rocks occur but only the alaskite was seen in the Marshall ground. It occurs as fine-grained white dikes cutting both sediments and granodiorite.

Structure

The granodiorite has intruded the sediments and bowed them up so that, according to F. C.Schrader, Bulletin 847A U.S.G.S., they dip away from the intrusion everywhere except in the area of the Ilo tunnel. At this point too the strike of the contact swings from practically east-west on the east side of the Ilo crosscut to northwest and then back to west again by the time it reaches the Brooklyn claim. It is at this embayment of the contact that the Main Vein crosses it and enters the sediments from the granite. The pushing up of the sediments has been used as an indication that the intrusive body is a laccolith, but many apparent batholiths have bowed up the sediments around them as they came into place.

ECONOMIC GEOLOGY

Veins and Oreshoots

This report is principally concerned with the Main Vein and the nearby split and parallel veins in the Copper King No. 2, Copper King No. 1, and Delano No. 2 claims. The vein system in this section strikes N 60 E and dips 50 to 70 degrees southeast.

Beginning in the Bellevue claim on the west the outcrop of the Main Vein can be traced from the Bellevue shaft east through

the two Copper King claims almost to the Nevada Bellevue shaft. There are a few minor fault offsets, west side north, but generally the vein outcrops as 1 to 10 feet of quartz and chrysocolla with lesser amounts of copper carbonate. In Copper King No. 1 claim the vein shows a tendency to send splits into the footwall and at the same time to turn more easterly in strike. Most of the workings in this claim are inaccessible, but one short tunnel was passable and showed a wide, strong quartz vein with copper staining. The tunnel ended in a caved stope which connected to surface, a matter of probably not more than 25 feet.

The veins, including the 3rd North Vein, can be traced east as far as a gully just west of the Nevada-Bellevue shaft; and beyond or east of this gully the mineralization seems to be concentrated in the Main Vein which, however, has been offset to the south by a fault which must exist in the gully.

Up to this point the mineralization has been completely in the granodiorite. Just east and up the hill from the collar of the Nevada-Bellevue shaft, however, the sedimentary contact cuts across the vein as it swings from its east-west strike into the northwest toward the Allen No. 2 orebody, one of the orebodies formed on the contact in the limestone. Near the contact, both in the granodiorite and in the sediments, the vein has very largely been extracted by surface stopes and beyond that has been exposed by trenching for some distance out into the slate. East of the gully which separates Delano No. 2 from Palo Alto the vein is difficult to trace and there is reason to doubt that the Palo Alto workings are on the same vein.

In the claims of the Marshall Mining Company most of the production has come from the Main Vein in the Copper King No. 1 and Delano No. 2 claims near the contact of the granodiorite and the sediments. Little of this work is now accessible with the exception of the Ilo tunnel from which all recent production has come. This tunnel is about 450 feet down the dip of the vein from the highest point on the outcrop or about 325 feet vertically. The tunnel has followed the vein for 1250 feet and has shown it to consist of a series of lenticular orebodies, sometimes separated by right throw faults and sometimes having en echelon relation to each other.

A short distance to the north of the Main Vein in the Copper King No. 1 and No. 2 claims is a parallel vein known as the 3rd North Vein. Where seen it was not very strong but was the same sort of quartz chrysocolla mineralization as the Main Vein.

About 600 feet north of the Main Vein is the mineralization which forms in the limestone on the granodiorite contact. These orebodies as a rule are small irregular replacements of high grade ore on a generally low grade contact. Such have been the Allen and Brooklyn orebodies.

Mineralization

The Ilo tunnel is almost the bottom of the workings. There is one 10 foot winze below it at chute 1A and a winze was sunk from the 200 to the 300 level which connected with the Ilo tunnel 20 feet west of station 40. On the 300 level 130 feet of drifting are shown on the map and the north end is said to have had some 15 per cent copper ore three feet wide. The Nevada-Bellevue shaft also went down to the 300 level and a drift north for 170 feet is said to have found some 8 per cent copper ore three feet wide. F. C. Schrader calls this chalcocite ore.(Page 26, U.S.G.S.Bulletin 847A.)

The mineralization seen on the Ilo level and above it in the stopes consisted of quartz with chrysocolla, malachite, azurite, and cuprite. Only a very rare speck of sulphide was evident, though there were occasional specks of chalcocite and chalcopyrite.

When the 10 foot winze was sunk below the Ilo level water seeped slowly into it and it filled almost to the level. This means of course that the water level is just below the Ilo tunnel at this point which is almost on the granodiorite-sediment contact. It also means that the secondary copper zone should be coming in shortly below the Ilo level. Possibly the 15 per cent copper ore found on the 300 level was from this zone.

Secondary Copper Zone

It is very encouraging to feel that the secondary zone is close below the Ilo tunnel but there is reason to believe that this zone in the Marshall Mine will not be extensive. While there is ample indication of secondary action in the kaolinization of the feldspars of the granodiorite by the acid formed during the oxidation of the sulphides, the presence of so much copper fixed in the oxidized zone as silicate (chrysocolla) means that it could not go down to enrich the secondary zone. Also part of the cause of the failure of the attempt to leach the ore in place was said to be that the footwall of the vein was so fractured that the solutions could not be caught on the Ilo level but escaped into the footwall. Therefore they would not be available to enrich the mineralization in the vein and would even tend to dissipate some of the copper into the footwall. Probably the secondary copper zone will not be very extensive unless the original primary ore was richer than the oxidized ore.

Primary Copper Zone

While this may prove to be the case there is no indication of it at the moment. From what can be seen the primary ore is a chalcopyrite-quartz ore as far as the important minerals are con-

cerned. The fact that limonite is not an important constituent of the oxidized zone and that much, if not all, of the copper was fixed there as chrysocolla, malachite, azurite, and cuprite points to the existence of little pyrite in the original ore. Had much pyrite existed in the veins there would be porous, limonite-stained outcrops with little copper. Pyrite on oxidation produces sulphuric acid, which in turn would have carried most of the iron and copper down in solution, the copper to be reprecipitated in the secondary zone as chalcocite. Some residual chalcopyrite was seen in specimens.

MINE WORKINGS

Main Vein Workings

The Nevada-Bellevue Company sank the Bellevue shaft 200 feet and did 1000 feet of drifting on the 100 and 200 levels and from an 120 foot crosscut tunnel. An engineer by the name of Dunkel drove a crosscut tunnel 300 feet into the vein in the ground east of the Bellevue, about in the middle of Copper King No. 1 claim, and is said to have shipped 150 tons of high grade. Other small workings, most of which are inaccessible, have explored this western section of the Main Vein.

The Nevada-Bellevue shaft was sunk 100 feet vertically to the vein and then turned on the vein and followed it down for 200 feet. The 100, 200, and 300 levels were driven east 400 to 450 feet each. Existing maps only show stoping above the 100 level to have been done at this time except for two very small stopes which were started from the Ilo tunnel which was driven in 1926 under this regime. East of the shaft collar, however, there is the Zero tunnel from which considerable stoping has been carried to surface.

Under a DMEA loan the Marshall Mining Company rehabilitated the Ilo tunnel to the shaft, which is caved, and began mining. All stoping was done from the Ilo tunnel. In 1953 the following ore was shipped:

Month	Dry Tons	% Cu	Lbs.Cu	Gross Value	Gross Value /Ton	Value/ Ton at Mine
January	153.095	13.44	41,152	$ 9,258.10	$60.47	$46.15
February	157.592	10.07	31,988	7,305.37	46.36	33.60
March	153.638	6.22	21,458	5,224.57	34.01	23.72
April	680.942	3.98	54,975	12,924.52	18.98	10.33
May	869.633	3.92	68,330	15,369.69	17.67	10.06
June	794.263	4.21	66,807	15,367.30	19.35	10.63
July	728.006	4.03	58,547	13,596.28	18.68	10.18
August	578.958	2.71	31,396	6,145.09	10.61	2.28
September	101.881	3.85	7,850	1,801.25	17.68	9.93
October	372.537	3.06	22,819	4,793.24	12.87	4.42
November	327.036	4.36	28,496	6,635.02	20.29	11.76
December	374.726	4.74	35,556	8,524.28	22.75	14.05

	Dry Tons	% Cu	Lbs.Cu	Gross Value	Gross Value /Ton	Value/ Ton at Mine
Total	5292.307	4.43	469,374	$106,944.71	$20.21	$11.41
Total Last 9 mos.	4827.982	3.88	374,776	85,156.67	17.64	9.19

In 1954 the grade of ore has fallen off badly due to sloughing in of the granodiorite hanging wall of the largest stope. This difficulty may be the principal reason for wishing to sell the property.

3rd North Vein

Workings on this vein consist only of pits and short tunnels.

Contact Vein

The mineralization on the granodiorite contact with the limestone in the Allen No. 2 claim consisted of a small chimney of high grade which was extracted by a 40 foot stope to the bottom of which a tunnel 100 feet long connected. Other smaller bodies of ore were extracted by small stopes and shafts such as the Delano Shaft. To the west in the Brooklyn claim a shaft was sunk 200 feet and a tunnel at 80 feet below the collar of the shaft connected to the shaft by a winze and drift on the vein and a 276 foot crosscut from the shaft on the 186 level. Schrader says good sulphide ore was encountered but he gives no widths except to say that the "lode over a width of 16 feet, including the high-grade seam, is reported to average 4 per cent copper and 1.5 ounces of silver and 0.01 ounces of gold to the ton". He says the ore consisted of pyrite, bornite, and chalcopyrite.

COSTS

No detailed cost information is available but Mr. Maurice M. Marshall gave the following data for 1953:

	Total 1953	Cost/ton
Operating cost at Contact (wages, supplies, insurance, etc.)	$42,509.29	$8.03
Freight Charges	26,448.82	5.00
Smelter Charges	20,674.76	3.91
Total Cost	89,632.87	16.94
Tons shipped 1953	5,292.307	
Gross Value	$106,944.71	
Gross Value per ton	$20.21	
Profit per ton	$ 3.27	
Profit 1953	$ 17,311.84	

During this period the wage scale for miners was $14.00 and for the foreman $18.00. The base smelter rate has been $3.50 and is now to be $2.50 per ton. The rail freight is to be $2.92 plus 12% plus 3%, or $3.37 instead of $4.48 as in the past. The savings in costs amount to $2.11 per ton.

MINING METHOD

The present operators are practical miners and are mining the ore shoots by the usual "leaser", high grading methods. Consequently the largest ore shoot has been badly handled and some ore will be lost. The last ore taken from there was so diluted with sloughed granodiorite hanging wall that it was shipped at a loss and the stope has been shut down, in fact the entire mine has been shut down.

Theore shoots in the Main Vein will have to be mined by flat back, "cut and fill" methods, and where the vein is narrow but high grade it may have to be resued if shipping ore is being mined. Even with "cut and fill" methods costs should not be over $8.00 with tonnage increased to 100 tons per day over a 5 day week of oxidized shipping ore. If the grade can be kept at the average for 1953, 4.43% Cu, there would be a profit of $3.27 plus $2.11, or $5.38 per ton. If it can be kept only at the average for the last 9 months of 1953, the profit would be $.70 plus $2.11, or $2.81. From this royalty must be paid.

MILLING

When the mine is sampled a proper sample should be made up of the rejects of all the ore samples. This composite sample should be sent to Mr. Albert Hahn at an address which he will designate. He will have the proper metallurgical tests run: first, to ascertain extraction and costs of a leaching method; and second, to determine whether the ore can be floated more economically. Should the ore be milled some calculations will have to be made to determine whether milling costs plus higher freight rates plus higher smelter rates plus metallurgical losses will be less than the advantages gained.

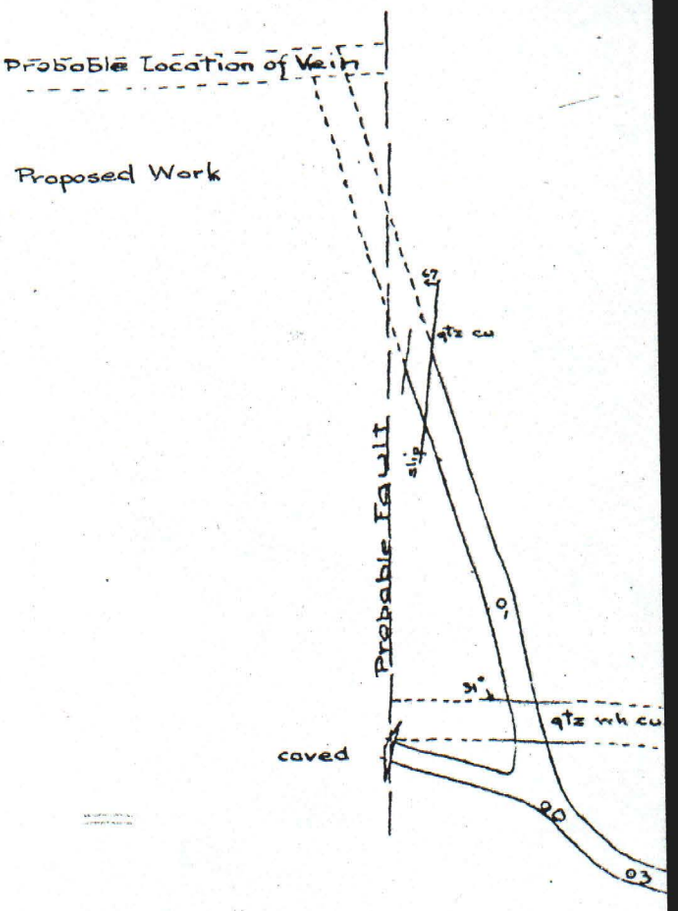
When development has blocked out sulphide ore tests will have to be made to determine the best type of flotation mill for this ore.

ORE RESERVES

Formally speaking, there are no ore reserves. Ore shoots have not been blocked out by raising before stoping. Stopes merely have been started on higher grade assays in the back of the Ilo tunnel and the ore has been followed until it pinches out, is faulted off, or the back begins to slough.

There are ten short stretches of ore on the tunnel level which add up to 365 feet of ore. Time was not taken for sampling for two reasons: one, the LMEA has sampled wherever possible if

ROGERS REALE


Probable Location of Vein
Proposed Work
Probable Fault
qtz cu
slip
qtz wh cu
caved

ore is exposed; and two, since the property is to be acquired by lease-option little money is to change hands immediately and sampling can be done later at less expense. Three samples were cut, however, two of them merely to check the DMEA samples. The assays checked well but discrepancies were found in the measurement of the width of vein represented. The results follow:

Sample No.	DMEA No.	Width	DMEA Width	% Cu	DMEA % Cu
1	-	94"	-	3.64	-
2	398	47"	48"	2.93	2.91
3	390	60"	75"	4.78	4.38

The assays of the DMEA samples show that it is not safe to assume that the grade of this ore will be better than the 3.88 per cent copper which was the average for the last nine months of 1953. The assays and average calculations follow. It will be seen that two samples, which were abnormally high in the gold assay, have had that assay reduced. The true assay is crossed out and 0.02 put in its place in each case.

Stope No.	Width Ft.	% Cu	Oz. Ag	Oz. Au			
8, 9, 10	(3.0	2.71	0.5	~~0.08~~ 0.02	8.13	1.5	0.06
	(3.3	2.49	0.3	0.01	8.22	9.9	0.033
	(3.0	5.82	0.7	0.01	17.46	2.1	.03
6 and 7	(2.9	4.18	1.2	0.01	12.12	3.48	.029
	(2.4	3.47	0.7	0.02	8.33	1.68	.048
4 and 5	(2.3	7.30	2.95	0.01	1.68	6.78	.023
	(1.6	3.13	0.80	0.01	5.01	1.28	.016
	(4.7	4.90	1.70	0.02	23.03	7.99	.094
2, 3 and	(3.5	3.04	0.70	0.005	10.64	2.45	.017
3A	(3.7	4.98	1.40	~~0.07~~ 0.02	18.43	5.18	.074
1A	(4.0	2.35	1.10	0.01	9.40	4.40	.040
	(4.5	2.50	1.40	0.005	11.25	6.30	.022
	38.9				133.70	40.89	.486
	3.2'	3.44	1.05	0.012			

In view of these figures, 365 feet of ore 3.2 feet wide in 1000 feet of drift, tonnage calculations must be reduced. For 100 feet vertically below the Ilo tunnel:

$$\frac{365 \times 130 \times 3.2}{12} = 12{,}650 \text{ tons}$$ and probably an equal amount may be expected above the stopes above the Ilo tunnel.

West of the Nevada-Bellevue shaft in Copper King No. 2 additional ore will be developed by the DMEA financed drive on the Ilo tunnel level. It will also be oxidized ore. In these two areas of oxidized ore there is a reasonable expectation of 50,000 tons of ore which may be shipped under present prices. Only further sampling and metallurgical testing will indicate how much oxidized milling ore there may be.

Below the 350 level in the secondary and primary zones of sulphide mineralization is the real hope of the mine. This ore should be easily concentrated by flotation in a mill which should not cost over $350,000 for a new mill with a capacity of 150 tons per day. This cost includes a power plant. What the tonnage of sulphide ore may be cannot be foretold, but the quartz-chalcopyrite mineralization with possibly some bornite and pyrite is not in itself indicative of a shallow seated mineralization. There seems to be a tendency for the ore to form shoots in the vein near where the vein passes from granodiorite into the sediments. Should this critical igneous contact turn over in dip or change in strike it might have a deleterious effect on the grade of ore. Such structural changes, however, cannot be seen in advance.

POSSIBILITIES OF NEW ORE

In the Main Vein there are three areas which need development: 1, above the Ilo tunnel and east of the old levels from the Nevada-Bellevue shaft; 2, below the Ilo level in the same area; and 3, the section of vein between the Nevada-Bellevue shaft and the Bellevue shaft.

The first two should be developed by an underground shaft raised and sunk vertically from the Ilo tunnel where the 10 foot winze is on the granodiorite contact. A vertical shaft will be much cheaper to maintain but, of course, means long crosscuts on the levels to reach the vein. Should it be found that the granodiorite is fresher below water level it may be wise in the future to sink an inclined shaft paralleling the intersection of the vein with the contact. From the vertical shaft a level should be driven 100 feet vertically above and 100 feet vertically below the Ilo tunnel. Above the level it might be more economical at least to drive the level from a raise out of the 2 to 5 stope. The waste from the development could then be used as fill in the stope. The sulphide zone below the 350 level can well be tested by diamond drilling from surface.

The western area is separated from the area east of the Nevada-Bellevue shaft by what appears on surface to be a fault which has thrown the western block to the north. To explore the third area, therefore, the DMEA has made a loan which is being considered for an extension. The drift was driven around the shaft, which was caved,

west to a point 110 feet west of the shaft. Here the drift was very wet, heavy, and finally caved. It is probably the fault which was expected. A crosscut was then driven 93 feet N 42 W on the east side of the fault. If continued it may cross the fault and encounter the vein at 160 feet from the starting point of the crosscut. If neither the fault nor the vein are encountered by that point the crosscut should be stopped and the drive S 60 W started to cross the fault.

Other areas of lesser importance are the Allen vein, 3rd North vein, and the Western Union vein. Development of these veins can be left to the future when the district has been better studied.

RECOMMENDATION

If it were necessary to make a large down payment, or even if it were necessary to make one in the near future, the writer would be inclined to recommend that the mine should not be considered until more favorable terms could be negotiated. When it is realized that the owners have mined all of the ore in sight and are turning over a mine which has to be made by the purchaser, $300,000 seems to be dear. If no better oxidized ore is found than that now in sight, a sum of $425,000 will probably have to be spent to build a plant to treat the ore which is too low grade to ship. This cost includes power plant. To warrant such a plant a much greater tonnage of oxidized ore will be necessary.

As already expressed the hope of the mine is in the sulphide zone, both secondary and primary. Leaching plants or roasting plus flotation plants are sure to be expensive per ton of ore treated, for small capacities especially. Development of relatively large tonnages of oxidized ore is necessary before such a plant should be built.

The development of the western section of the vein between the Bellevue and the Nevada-Bellevue shafts will open a section of vein which is practically virgin. It will probably be oxidized ore above the Ilo tunnel. The development of the area above the Ilo tunnel east of the Nevada-Bellevue shaft workings will also be in oxidized ore. Both of these pieces of work should be done for the moment, with the object of developing shipping ore, but with the longer term outlook of developing sufficient tonnage of oxidized ore for a plant. It must be realized that all oxidized zones are rather limited because of the sulphides below. Such a plant, however, might draw some ore from other small operators in the district.

The development of the sulphide zones below the Ilo tunnel should be accomplished by a vertical shaft at the point on the contact where the 10 foot winze now is. The shaft should be sunk 100

feet and then a crosscut run out to the vein, a matter of 84 feet. The vein should then be followed for 300 feet west of the contact and 200 feet east of it. With favorable results of course the drifts should continue. Further depth, assuming this level to be profitable, may well be tested by diamond drilling from surface until sufficient tonnage is in sight to warrant a flotation plant.

COST OF DEVELOPMENT

Development Western Section	
700 feet drift and crosscut	$21,000
Development Area above Ilo Tunnel	
100 foot shaft	10,000
500 foot drift	12,500
85 foot crosscut	2,125
Development Below Ilo Tunnel	
100 foot shaft	10,000
85 foot crosscut	2,550
500 foot drift	15,000
5000 feet of Diamond Drilling	20,000
Total Cost of Development	$93,175

If 35 per cent of the drifting is in ore, the ratio for the Ilo tunnel, 560 feet of vein 3 feet wide will give 1100 tons of ore. Since all operating costs at the mine have been charged out to development, this ore should show a profit of $13.41 per ton, or $14,751 less royalty. The net cost of the development campaign up to the diamond drilling point will be $60,000. For this sum there is an expectancy of developing 30,000 tons of shipping ore, which should give a profit of $121,200. ($5.38 per ton less $1.34 royalty)

Rodgers Peale

June 9, 1954

REPORT OF ASSAY

ABBOT A. HANKS, INC.

ASSAYERS, CHEMISTS, ENGINEERS
624 SACRAMENTO STREET
SAN FRANCISCO.

May 28, 1954

DEPOSITED BY Rodgers Peale
315 Montgomery Street
San Francisco, California

SAMPLE OF ORE

Labty. No.	Mark	GOLD, per ton of 2,000 lbs. Troy Ounces	GOLD, Value @ $35.00 oz.	SILVER, per ton of 2,000 lbs. Troy Ounces	SILVER, Value @ $	Percentages COPPER
68314	Contact #1 94"	9' cut station		19,96	Tunnel	3.64 %
15	Contact #2 47"	at station		35	" (cut #398)	2.93
16	Contact #3 60"			cut #390		4.78
17	Composite Contact #1 - #2 - #3	.015	.52	.90	.81	

ABBOT A. HANKS, INC.

bob

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET NO. 67X

EXPLANATION

SHALE

QUARTZITE

GRANODIORITE

COPPER BEARING QUARTZ VEIN

COPPER BEARING WALL ROCK

77

CONTACT SHOWING DIP (DASHED WHERE APPROXIMATELY LOCATED)

33

FAULT OR FISSURE SHOWING DIP (DASHED WHERE APPROX. LOCATED)

SHAFT GOING ABOVE AND BELOW LEVELS

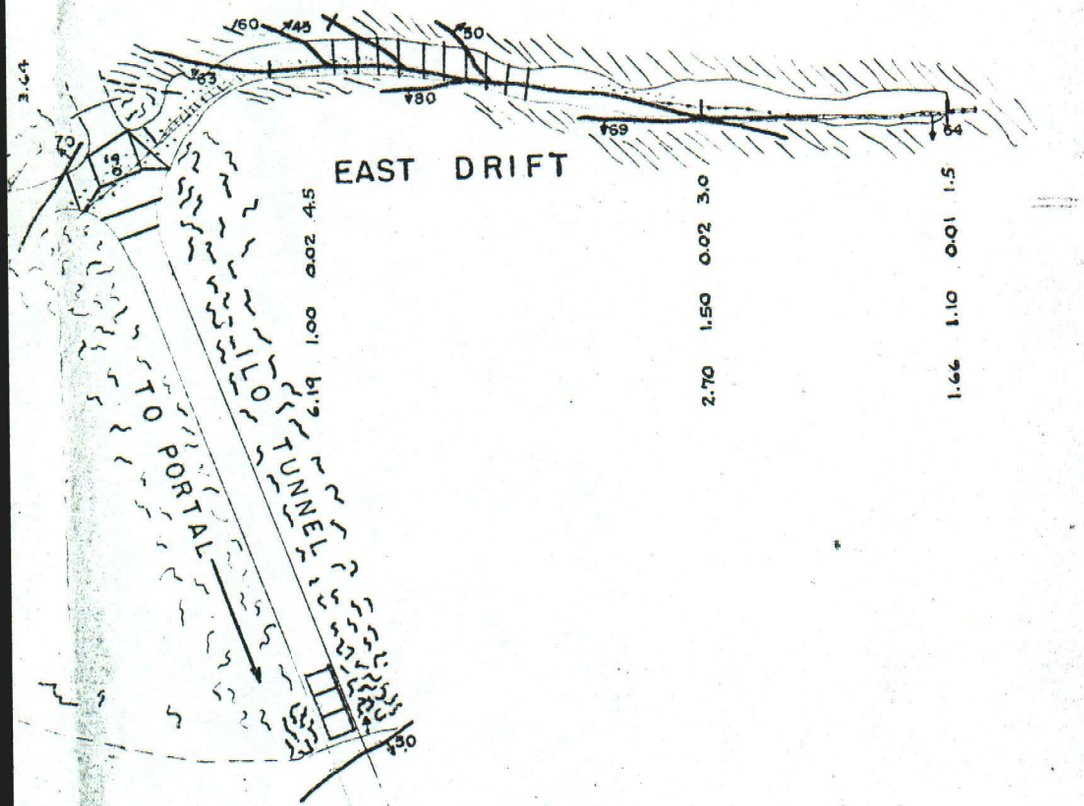
INCLINED WORKINGS (CHEVRONS POINT DOWN)

ORE CHUTE

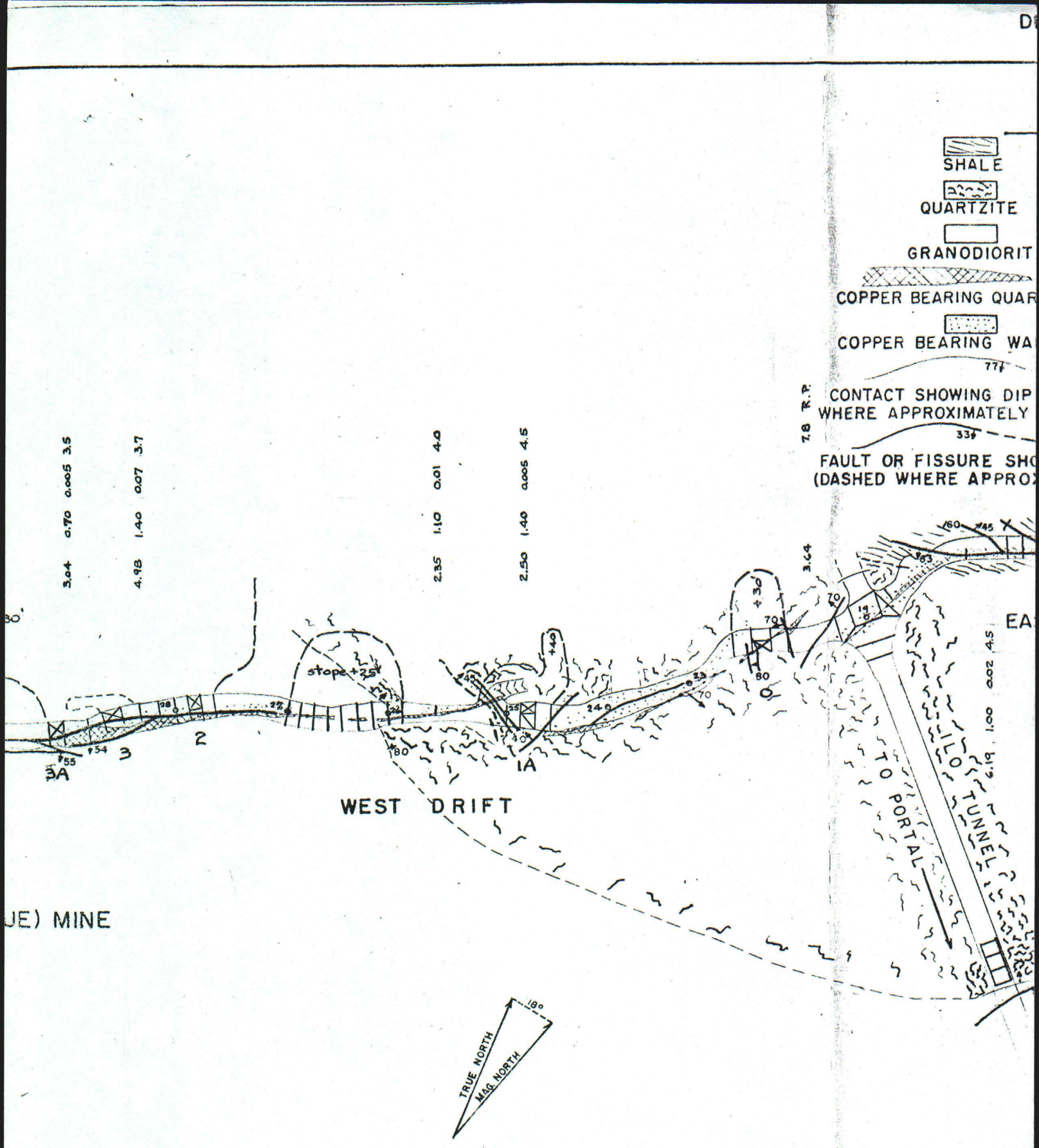
STOPE

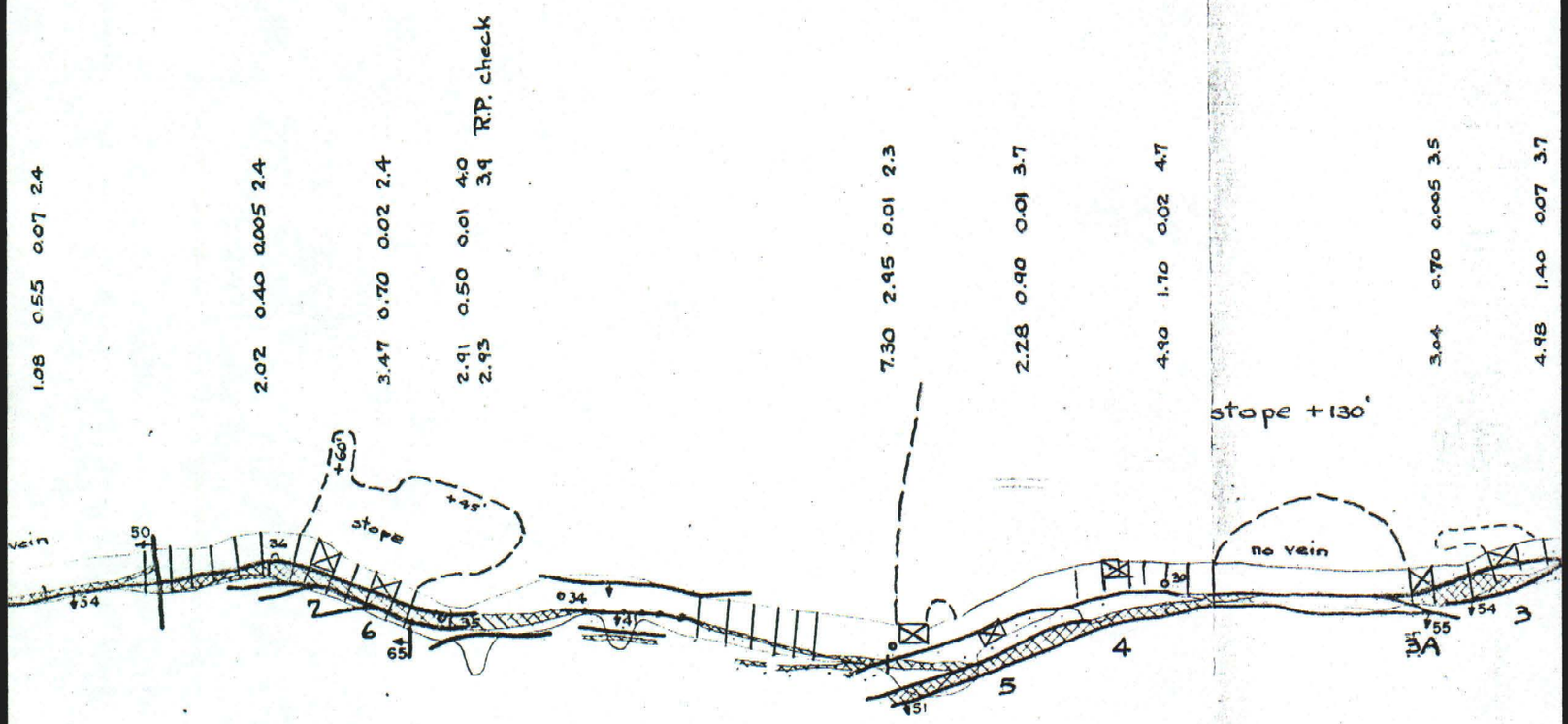
CAVED WORKINGS

TIMBERED WORKINGS



GEOLOGY BY R. M. SMITH, 1952
BASE BY U. S. BUREAU OF MINES, 1952


SHALE
QUARTZITE
GRANODIORIT
COPPER BEARING QUAR
COPPER BEARING WA
CONTACT SHOWING DIP
WHERE APPROXIMATELY
FAULT OR FISSURE SH
(DASHED WHERE APPRO
7.8 R.P.
3.04 0.70 0.005 3.5
4.98 1.40 0.07 3.7
2.35 1.10 0.01 4.0
2.50 1.40 0.005 4.5
3.64
stope +25'
3A
3
2
1A
WEST DRIFT
TO PORTAL
TUNNEL
EA
UE) MINE
TRUE NORTH
MAG. NORTH
180°



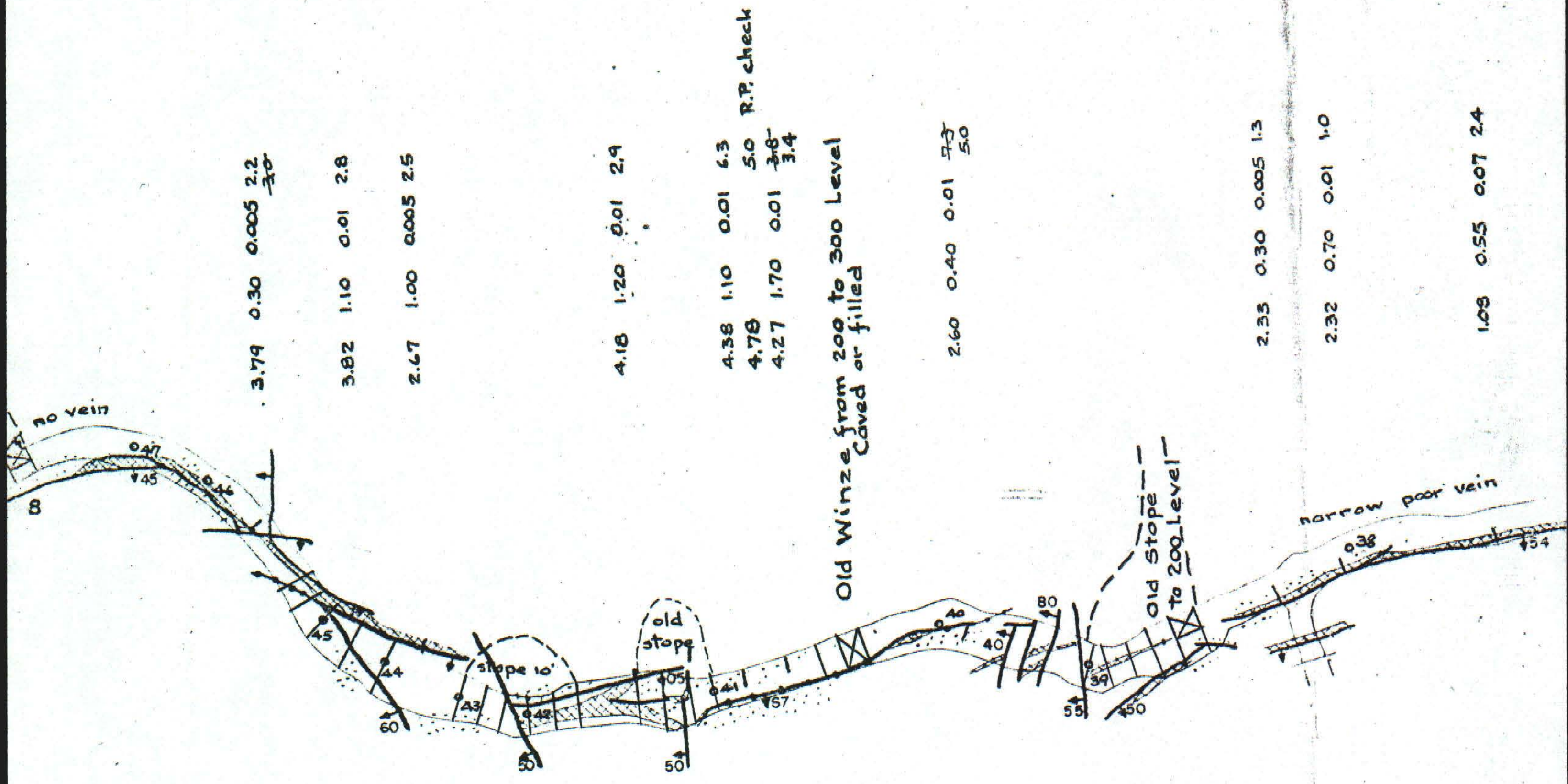
ETCH MAP OF THE ILO TUNNEL LEVEL, MARSHALL (NEVADA–BELLEVUE) MINE

CONTACT, ELKO COUNTY, NEVADA

0 40 80 120 FT.

SCALE

Additions and Changes by R.P. June 10, 1954.



GEOLOGIC SKETCH

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

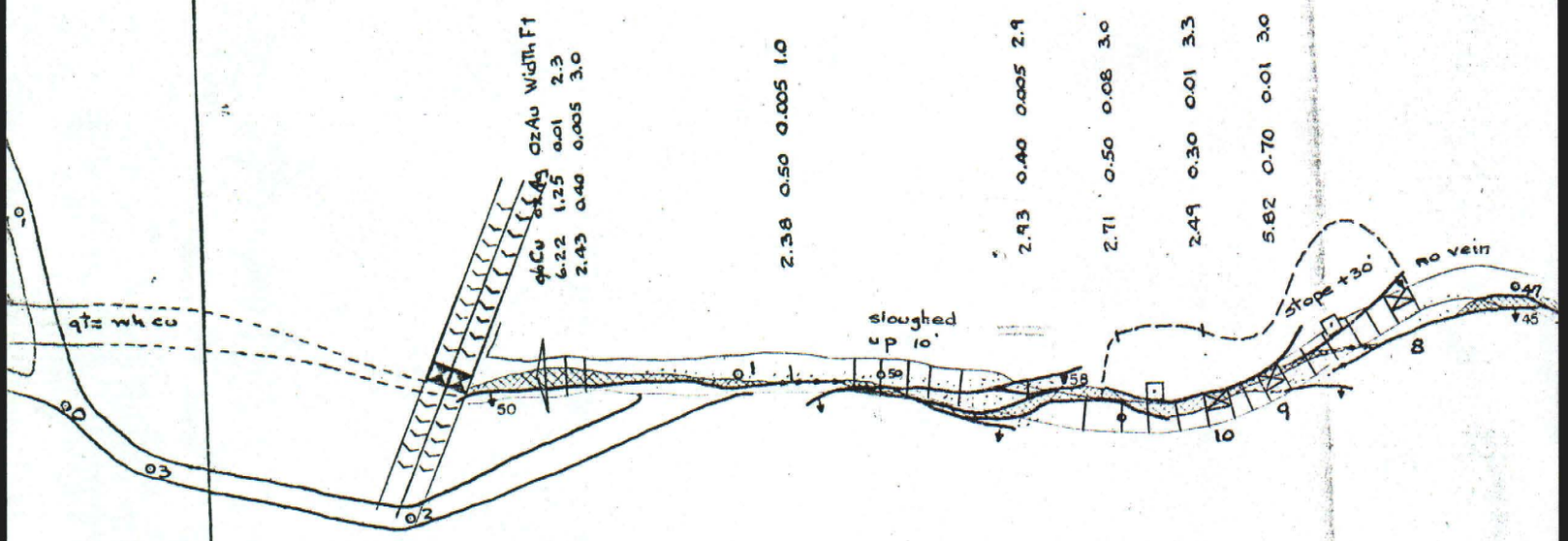
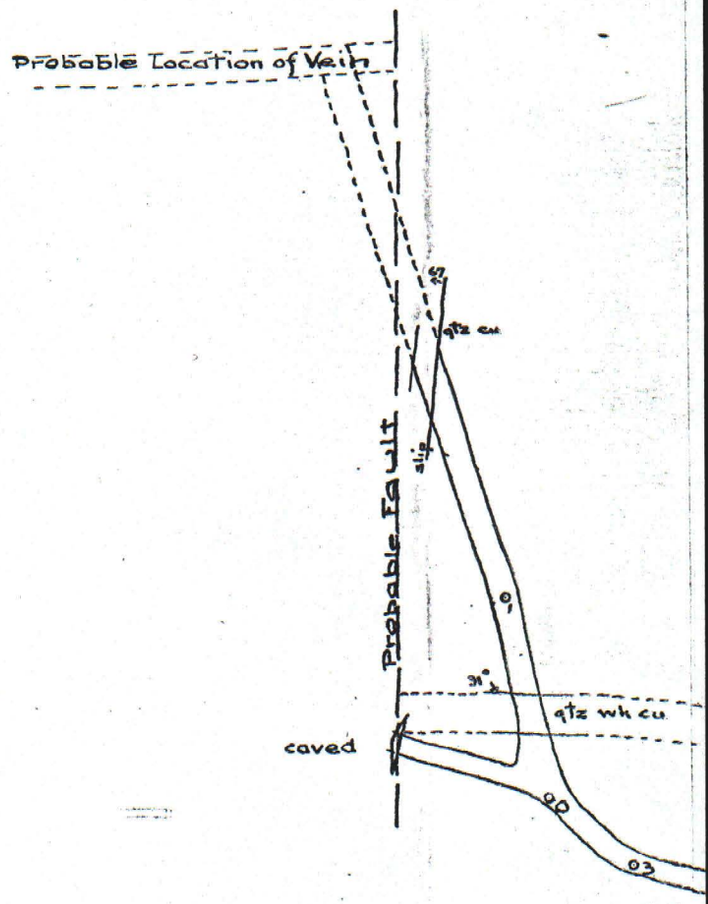


FIGURE 3.


Probable Location of Vein
Probable Fault
qtz cu
slip
25°
30°
qtz wh cu
caved
03

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET NO. 67X

EXPLANATION

SHALE

QUARTZITE

GRANODIORITE

COPPER BEARING QUARTZ VEIN

COPPER BEARING WALL ROCK

77↓ CONTACT SHOWING DIP (DASHED WHERE APPROXIMATELY LOCATED)

33↓ FAULT OR FISSURE SHOWING DIP (DASHED WHERE APPROX. LOCATED)

SHAFT GOING ABOVE AND BELOW LEVELS

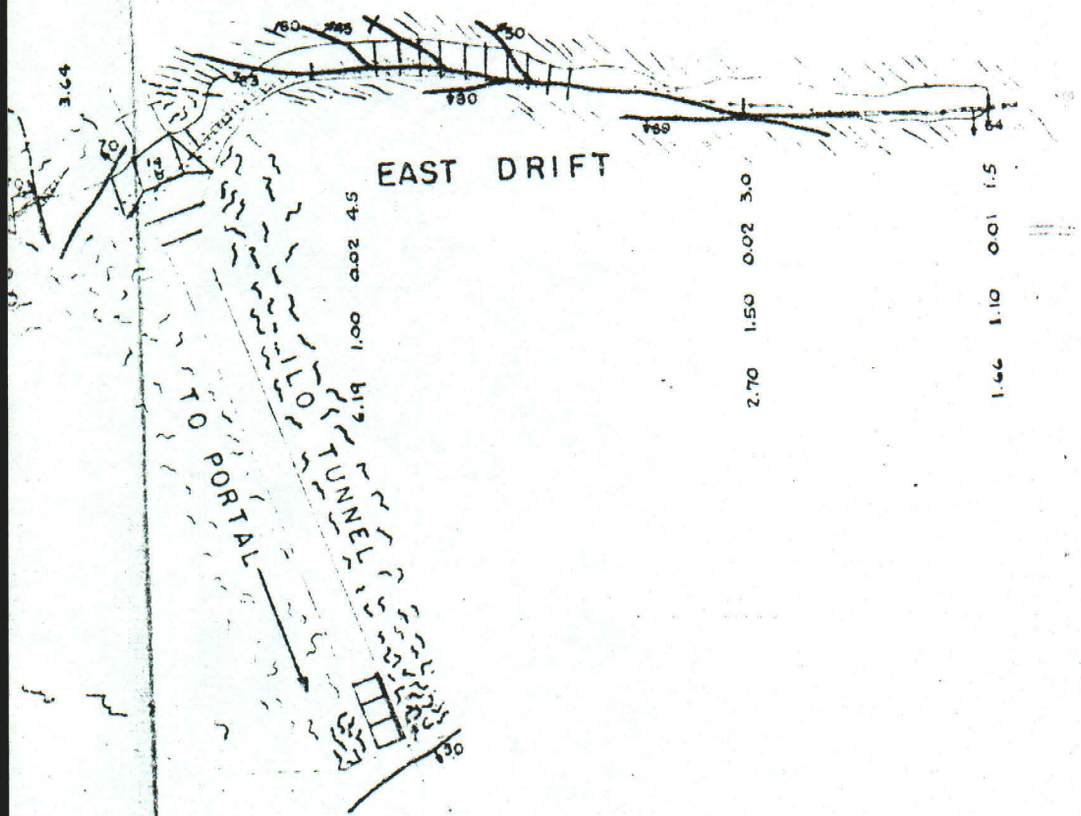
INCLINED WORKINGS (CHEVRONS POINT DOWN)

ORE CHUTE

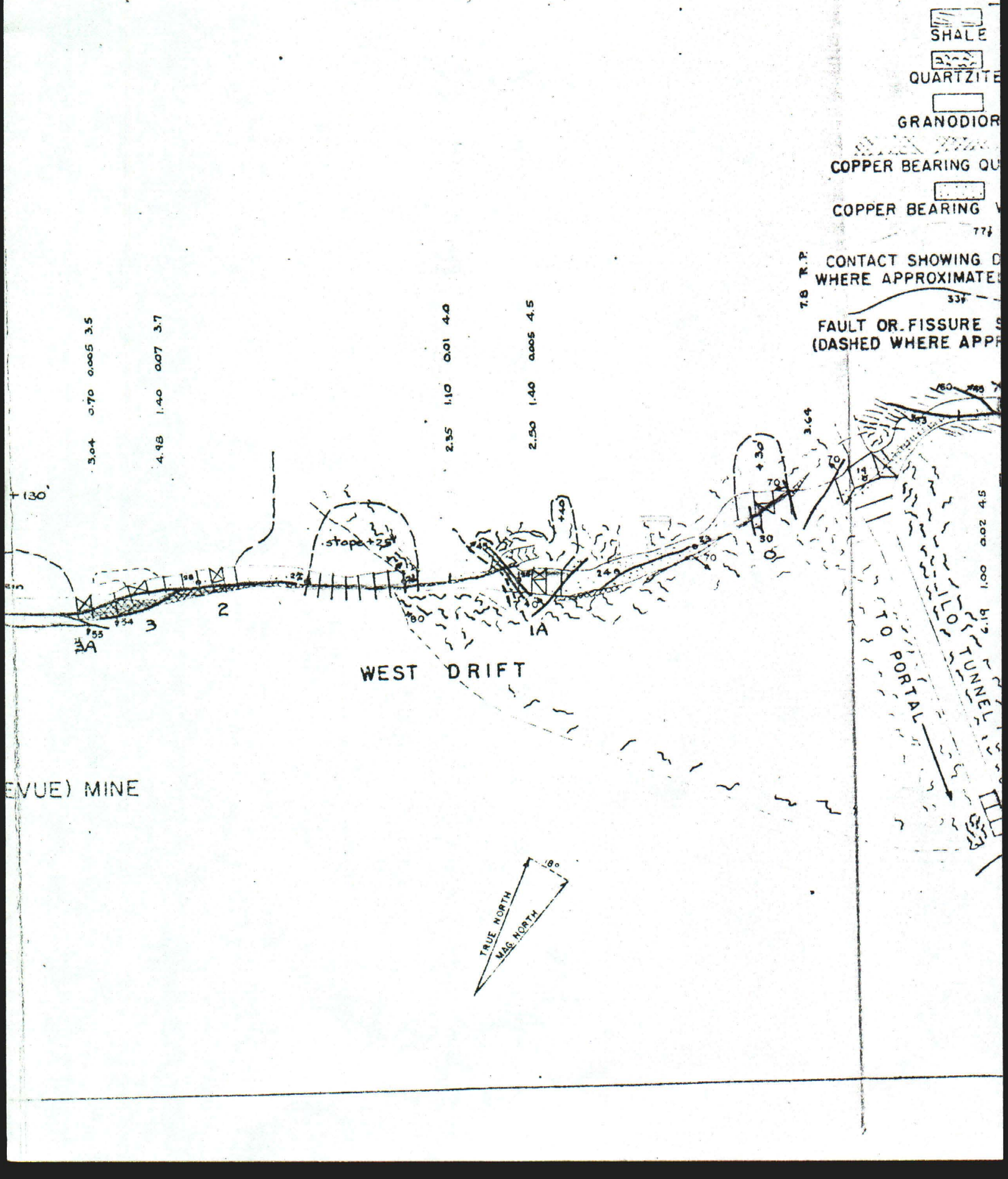
STOPE

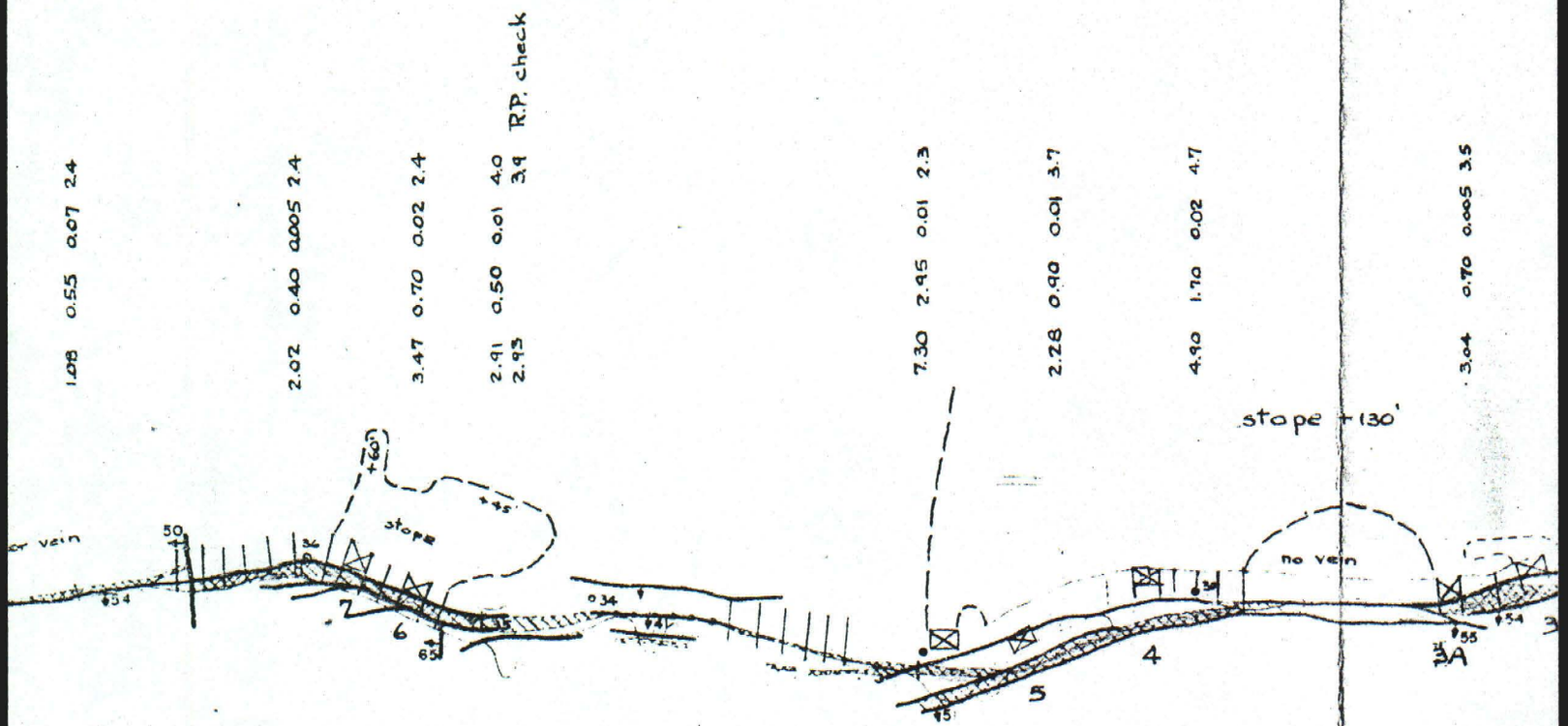
CAVED WORKINGS

TIMBERED WORKINGS



GEOLOGY BY R M SMITH, 1952
BASE BY U S BUREAU OF MINES, 1952


SHALE
QUARTZITE
GRANODIOR
COPPER BEARING QU
COPPER BEARING
CONTACT SHOWING D
WHERE APPROXIMATE
FAULT OR FISSURE S
(DASHED WHERE APPR
7.8 R.P.
3.04 0.70 0.005 3.5
4.98 1.40 0.07 3.7
2.35 1.10 0.01 4.0
2.50 1.40 0.05 4.5
3.64
+130'
stope +25'
3A
3
2
1A
WEST DRIFT
TO PORTAL
ILO TUNNEL
EVUE) MINE
TRUE NORTH
MAG. NORTH



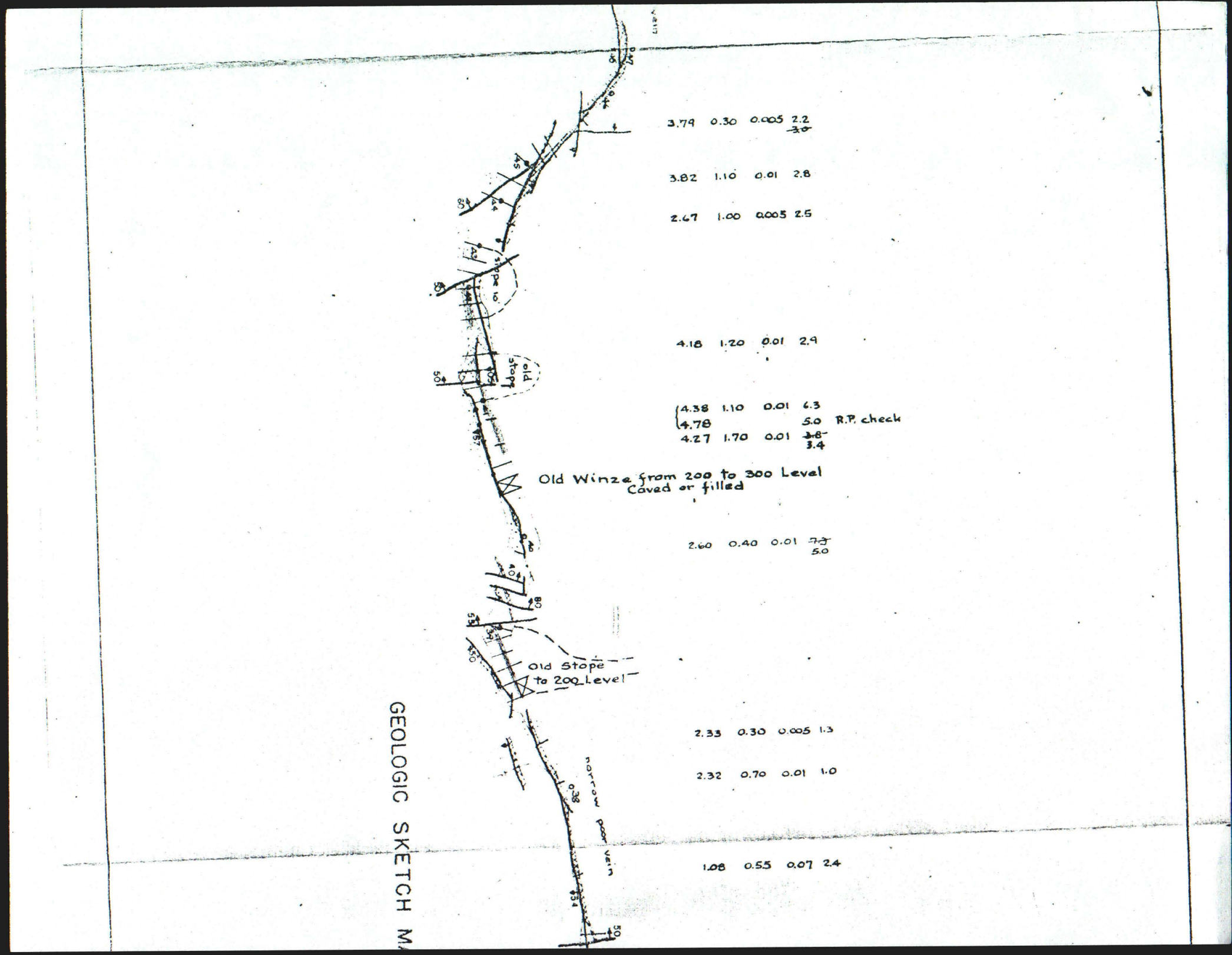
KETCH MAP OF THE ILO TUNNEL LEVEL, MARSHALL (NEVADA–BELLEVUE) MINE

CONTACT, ELKO COUNTY, NEVADA

0 40 80 120 FT.

SCALE

Additions and Changes by R.P. June 10, 1954.


3.79 0.30 0.005 2.2
3.82 1.10 0.01 2.8
2.47 1.00 0.005 2.5
4.18 1.20 0.01 2.9
4.38 1.10 0.01 6.3
4.78 5.0 R.P. check
4.27 1.70 0.01 3.4
Old Winze from 200 to 300 Level
Caved or filled
2.60 0.40 0.01 5.0
Old Stope
to 200 Level
2.33 0.30 0.005 1.3
2.32 0.70 0.01 1.0
narrow poor vein
1.08 0.55 0.07 2.4
GEOLOGIC SKETCH M

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

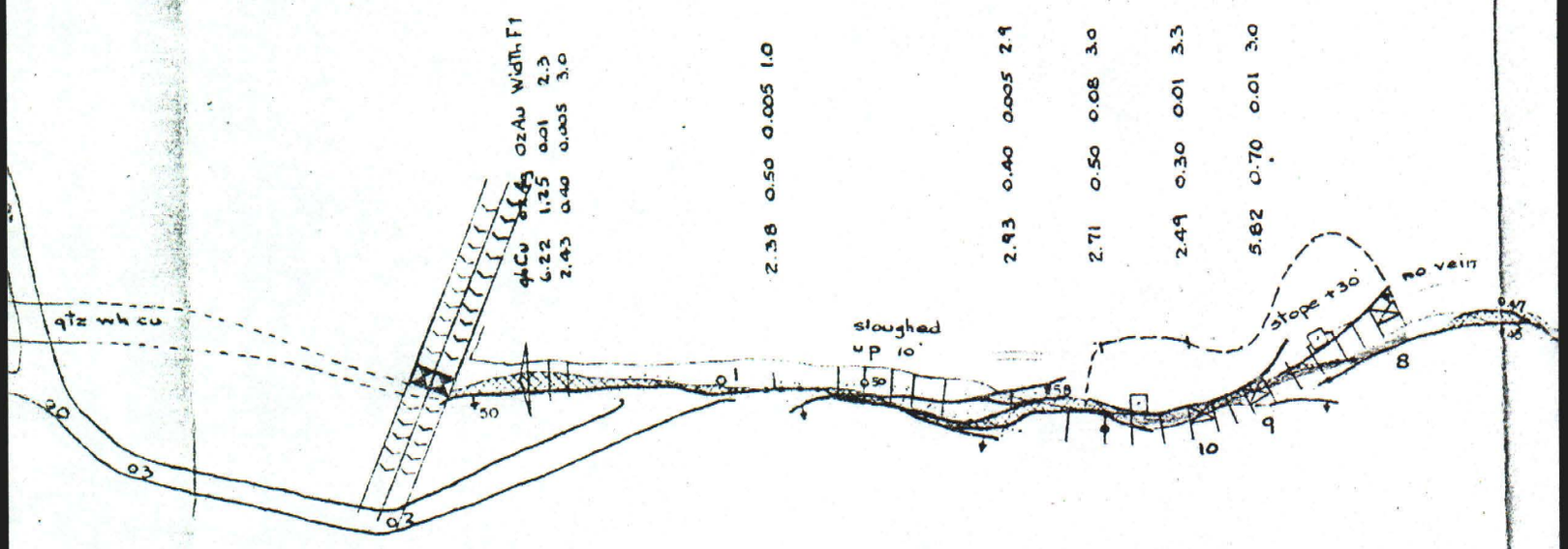


FIGURE 3

OUTCROP OF MAIN

CONTACT AT SURFACE

3 1/2 TO 4% WASTE

QUARTZITE
GRANITE

TOPE

O' LEVEL.

O' LEVEL.

8' CU 39.4

7 %

3' CU 33%. AG 1.7

7' CU 5.5

CU, 10.14
Ag 8.4

Cu 6.03
Ag 2,0

20 Ag 1.3

Ag 1,30

TOP OF MAIN VEIN

50'

3'CU 3,12 AG 1.6

3'CU 339. AG 1.7

12'CU 374

50'

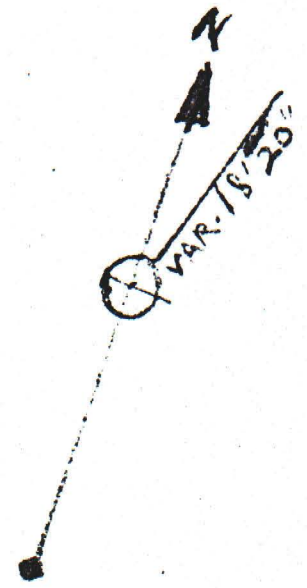
CONTACT ONLOT LEVEL

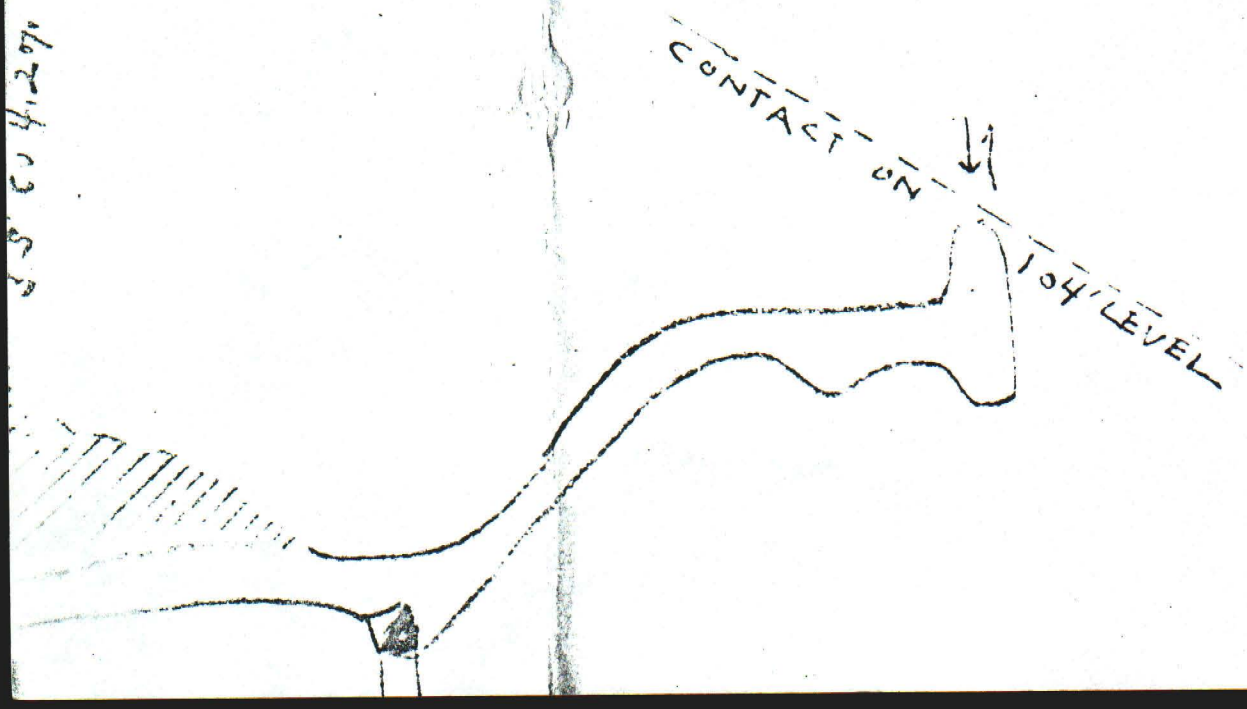
3'CU 4,27. AG. 2,60

7% WASTE

3% WASTE

5% WASTE


VAR. 15° 20"


CONTACT ON
104' LEVEL

8'Cu 6.3

PORTAL

8' Cu 1.10%

SHAFT

ABOUT 600

4' Cu 1.8

PORTAL

8'CU 3.36

8'CU 6.3

2'CU 10.4

2'CU 6.66

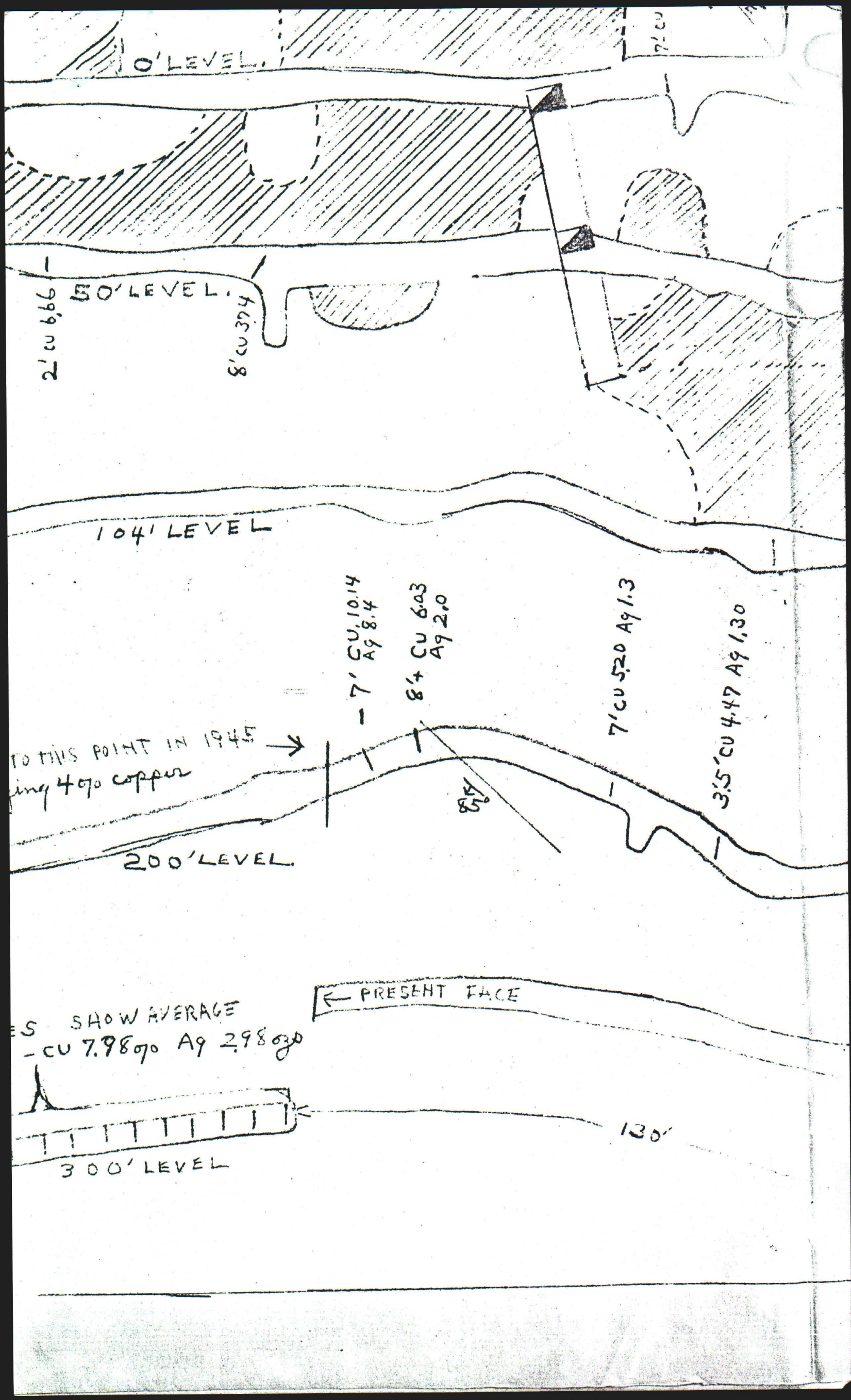
4' CU. 1.8

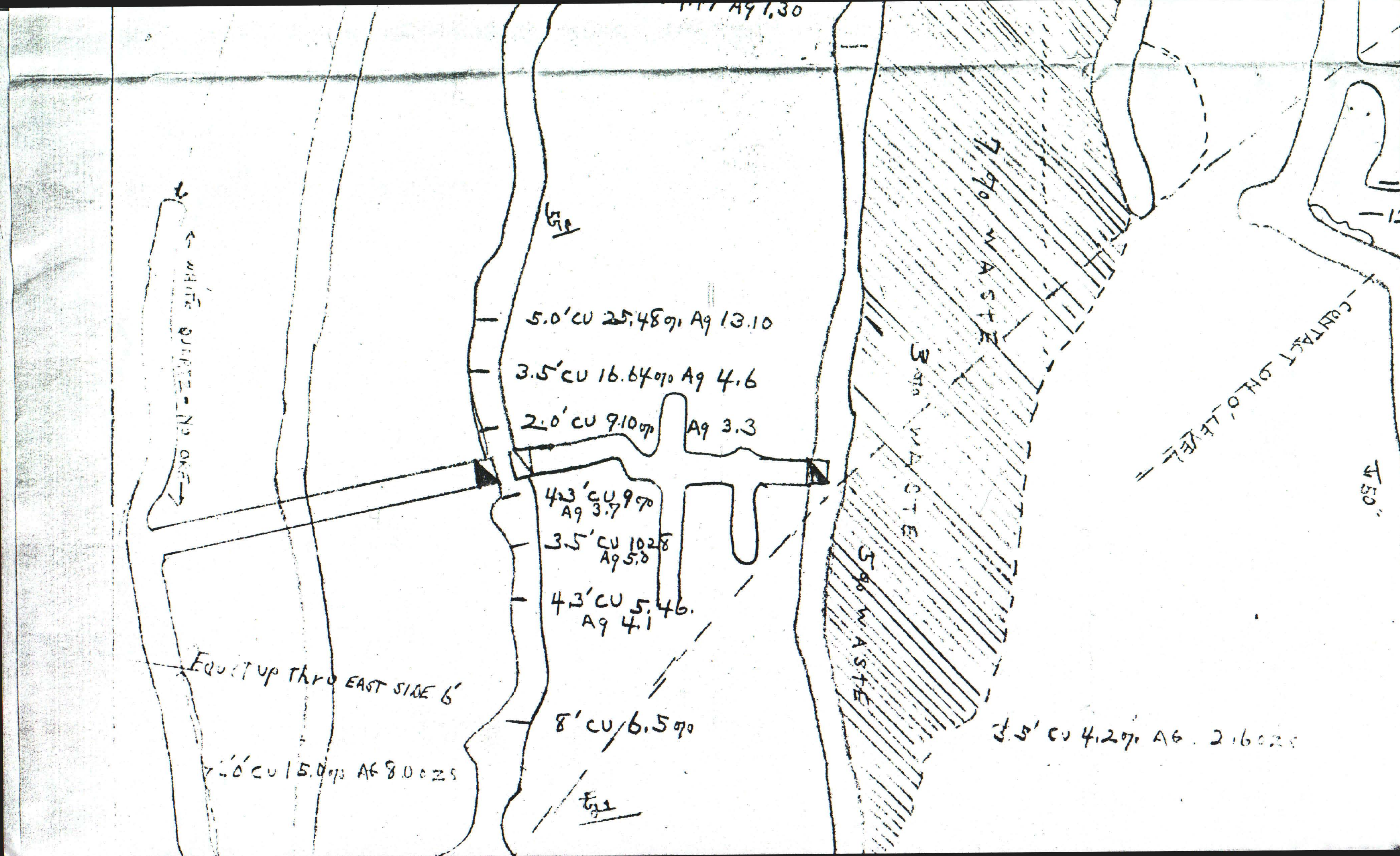
8'CU 1.10%

SHAFT

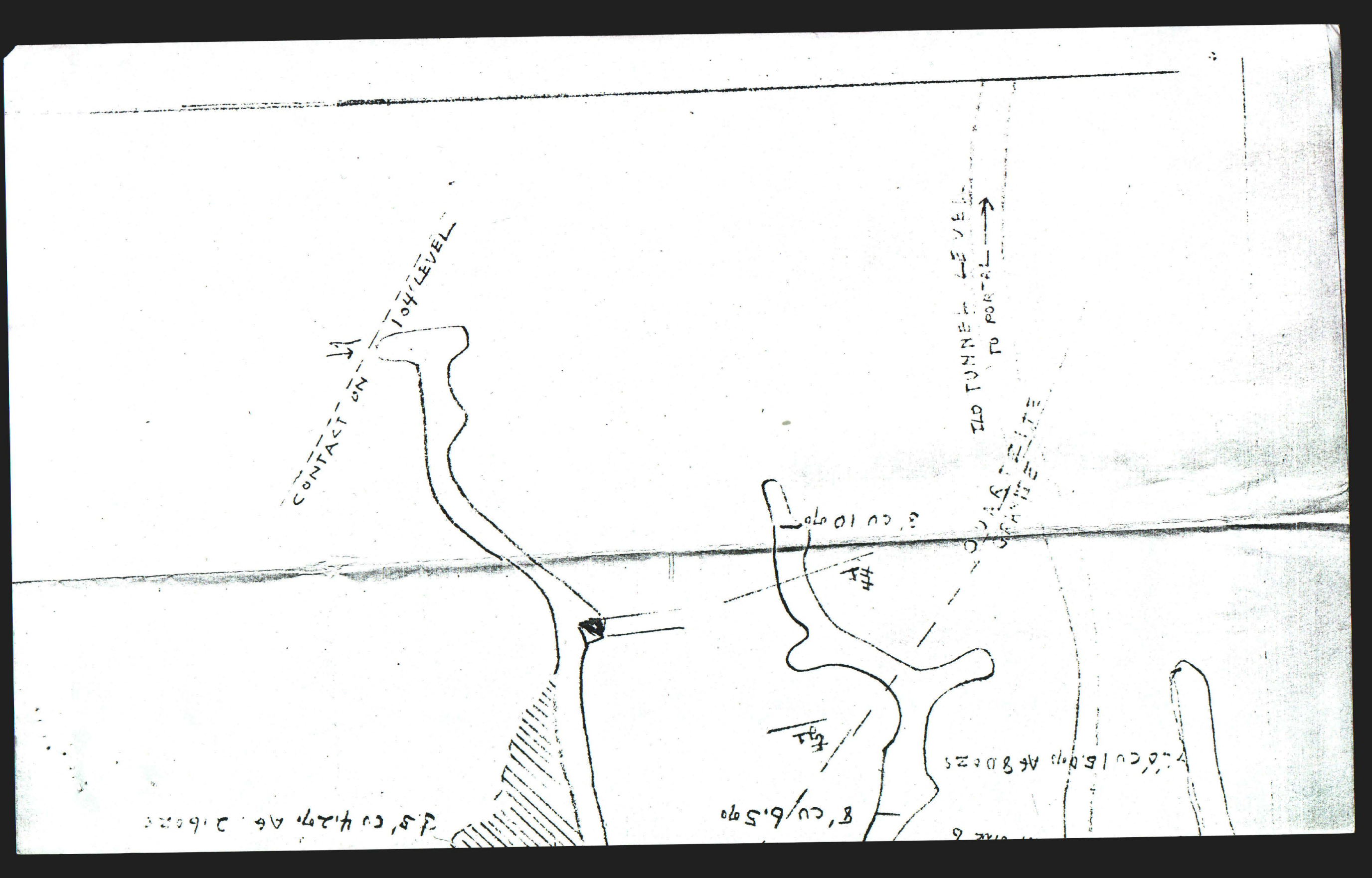
200' LEVEL REOPENED TO THIS PO
ABOUT 800 Ton of ore averaging 4% C
was removed.

16 SAMPLES SHO
3.1' WIDTH - CU 7.9


O' LEVEL.
50' LEVEL.
2' cu 6.66
8' cu 37.4
104' LEVEL
7' CU, 10.14
Ag 8.4
8'+ CU 6.03
Ag 2.0
7' cu 5.20 Ag 1.3
3.5' cu 4.47 Ag 1,30
TO THIS POINT IN 1945
ing 4% copper
200' LEVEL
PRESENT FACE
SHOW AVERAGE
- CU 7.98% Ag 2.98 oz
130'
300' LEVEL



Ag 1.30
5.0' CU 25.48%, Ag 13.10
3.5' CU 16.64% Ag 4.6
2.0' CU 9.10% Ag 3.3
4.3' CU 9%
Ag 3.7
3.5' CU 10.28
Ag 5.8
4.3' CU 5.46.
Ag 4.1
8' CU 6.5%
3.5' CU 4.2% AG. 2.6 OZS
CU 15.0% AG 8.0 OZS
Equit up thru EAST SIDE 6'
7% WASTE
3% WASTE
5% WASTE
CONTACT ON O' LEVEL
WHITE QUARTZ - NO ORE
50°


CONTACT ON 104' LEVEL
TO PORTAL

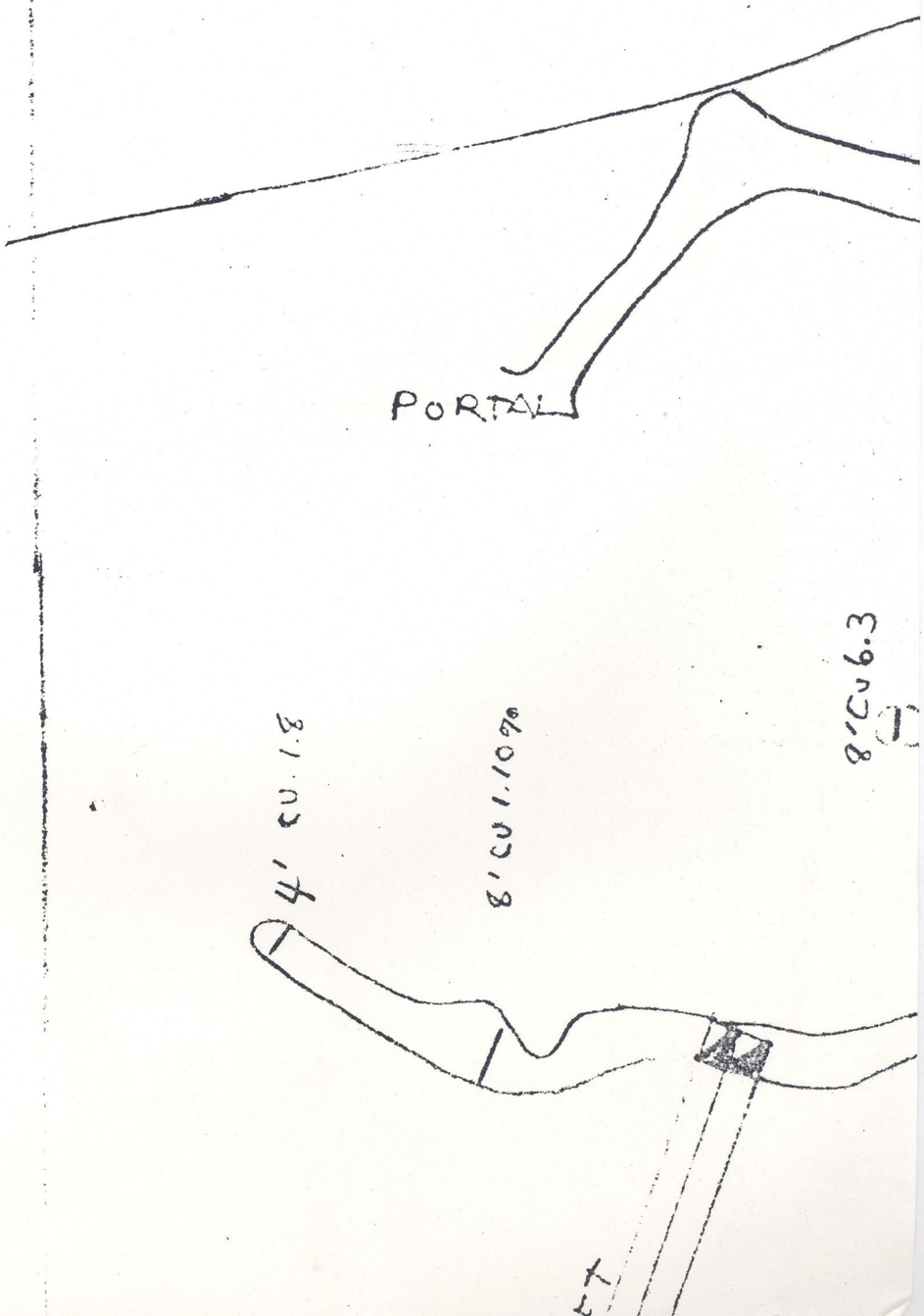
12100069

COMPOSITE MAP OF PRINCIPLE DEVELOPED AREA

MARSHALL MINING CO

CONTACT - NEVADA

SCALE 1" = 20' - PREPARED SEPT



SITE MAP OF
E DEVELOPED AREA

ALL MINING CO.

TACT - NEVADA

20' - PREPARED SEPT 1950