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ALLISON MINE
PIMA CO. ARIZONA

Report by:
Guy W. Crane, June 20, 1940.

June 20, 1940.

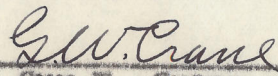
Mr. L. M. Vreeland, President
Tombstone Mining Company
Valley National Building
Tucson, Arizona

Dear Sir:

At your request I have made an examination of the Allison mine located in Pima County, Arizona and herewith respectfully submit to you my report.

In preparation for the writing of this report I spent 23 days on the property which were devoted largely to making geological and mine surveys and to sampling the many ore showings. At all times I had the full cooperation of you and your organization for which I take this opportunity to express my great appreciation.

Yours respectfully,



Guy W. Crane
Consulting Geologist

GWC/FA

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GENERAL REPORT

on the

ALLISON MINE - PIMA CO. ARIZONA

By G. W. Crane, June 1-- 1940.

1. LOCATION: The Allison mine is located in the east central part of Pima County, Arizona, about 21 miles south-east of Sells. It is on the north-west slope of Papago Indian Reservation side of the Baboquivan Mountains and only one mile from the Indian village of Fresnal. The nearest shipping point, Tucson, is reached by a truck haul of about 81 miles.

2. PROPERTY: The property is owned by the Tom Reed Gold Mines Co., but is at present leased to the Tombstone Mining Co. of Tucson, Arizona. It consists of 13 lode mining claims in one contiguous group, a dam and reservoir site, and a fine camp site.

The claims have been surveyed and well staked on the ground but are as yet unpatented. They include: Fourth of July, Fourth of July No. 2, Alto, Santa Margarita, First Chance, Second Chance, Third Chance, Fourth Chance, Oversight, Oversight No. 2, Nesa, Alice Louise No. 1, and Alice Louise No. 2.

The dam and camp sites are about one mile north-east of the mine. A property and claim map will be found in the pocket at the back of this report.

3. EQUIPMENT: The mine is fully equipped with all necessary machinery and tools to mine from 50 to 100 tons of ore per day. This includes a mill, assay office, blacksmith, store house and office, oil house, fuel oil storage tanks, water tanks, diesel engine and electric generator, two air compressors, ample air receiver capacity and a light service truck.

The adit and shaft and hoist station are electrically lighted. The shaft is equipped with an electric hoist and an automatic dumping skip which will handle about 100 tons per 8 hour shift.

Water for camp and mine purposes is obtained from a well about one mile northeast of the mine. There also is a large reservoir for the ponding of flood waters for milling purposes. (For details of equipment see appendix 1)

4. MAPS and ILLUSTRATIONS: Accompanying this report are the following maps and illustrations:

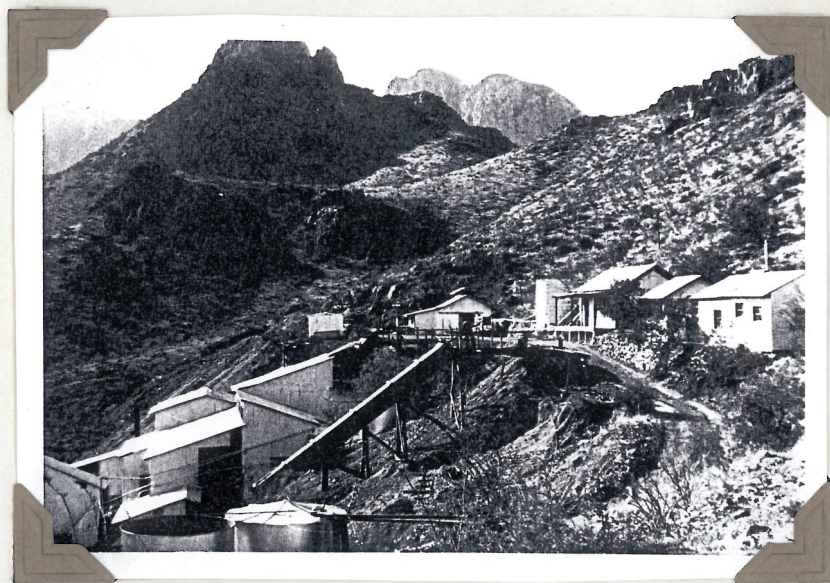
A. General property map on scale of 300 feet to 1 inch, showing claims and general surface geology.

B. Vertical section - S 45° W - through Allison shaft, on scale of 300 feet to 1 inch, showing the vein system and geology at depth.

C. Composit plan map of Allison mine on scale of 30 feet to 1 inch, showing surface and underground workings, and their relation to the



(a) 1. Distant view of Allison Mine and Plant, looking southwesterly.



(a) 2. Near view of Allison Mine and Plant, looking southeasterly.





Allison vein contact.

D. A set of 7 mine level assay maps on scale of 30 feet to 1 inch, showing geology, details of ore occurrence and results of sampling.

E. Four vertical sections of the Allison mine on lines A-B, C-D, E-F and G-H, on scale of 50 feet to 1 inch, showing geology and ore occurrence.

F. Illustrations, including the following photographs:

- (a) Two views of the Allison mine and plant.
- (b) Two views of the dam and reservoir site.
- (c) One view of the well and pumping plant.
- (d) One view of the mine camp.

5. HISTORY: The Allison mine was first worked in 1898 when a 100 foot shaft was sunk and a small production of rich sorted gold ore was made. As the ore appeared to be rather superficial no further work was done until 1923 when a tunnel was driven under the old shaft.

During 1924 and 1925, considerable development work was done which resulted in new ore discoveries. A 10 stamp mill was built and though recoveries were not satisfactory, considerable gold-silver bullion was produced.



(b) 1. Allison Dam and Reservoir, looking southwesterly.



(b) 2. Allison Dam and Reservoir, looking northwesterly.

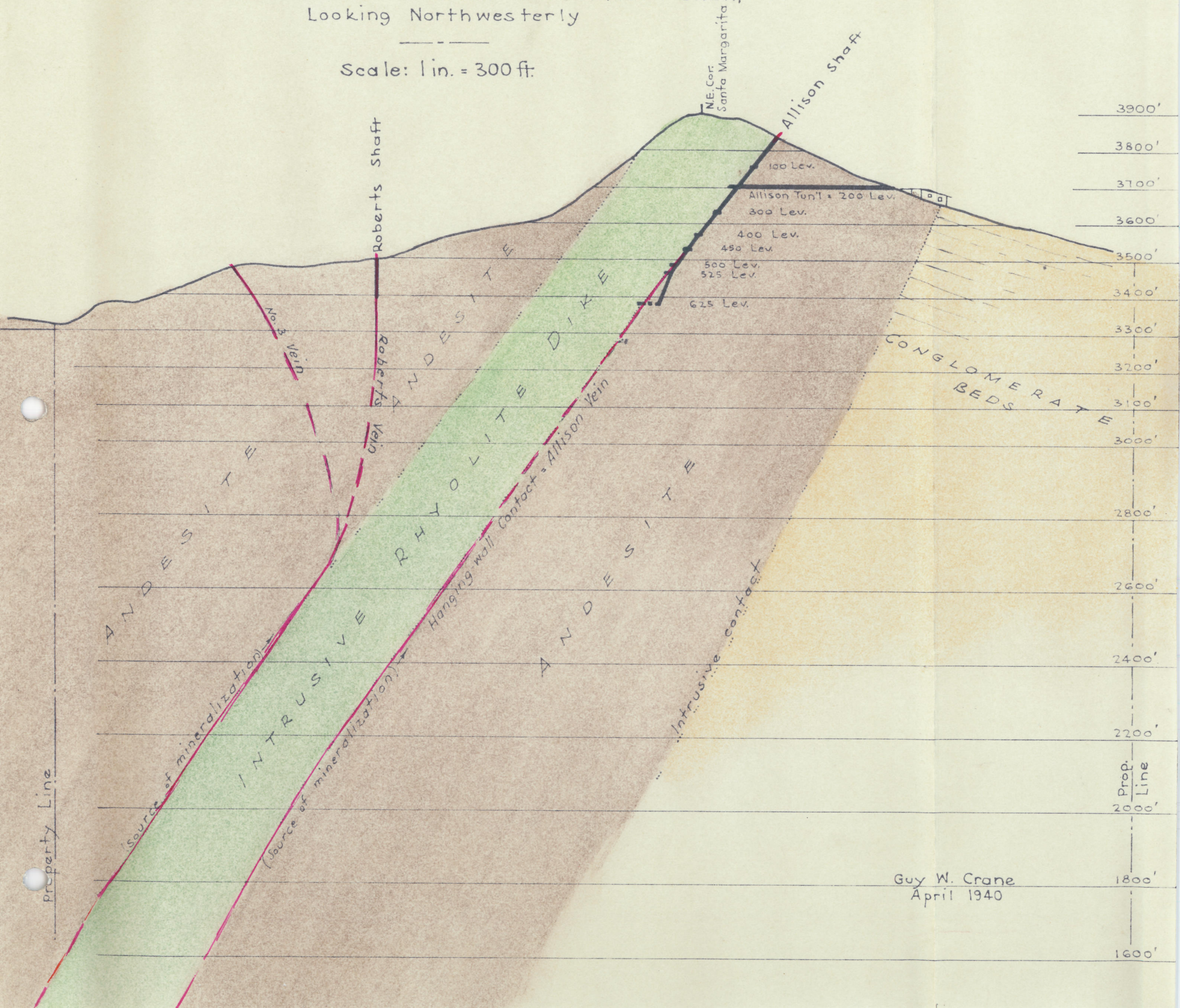




Allison Mine

Vertical Section - S. 45° W. - thru Allison Shaft,
Looking Northwesterly

Scale: 1 in. = 300 ft.



Guy W. Crane
April 1940

In 1926 the property was acquired by the Tom Reed Gold Mines Co. who did considerable underground work and built a small flotation mill to treat a large body of newly developed ore. Due to its high content of manganese oxide the ore proved to be rather refractory and recoveries were not satisfactory.

Production during 1926 and 1927 amounted to 2,176 ozs. gold and 44,705 ozs. silver, which at present metal prices has a gross value of \$109,960.00.

In 1930, the El Oro Mining and Milling Co. leased the property and in 1931 produced a few tons of concentrates and bullion worth about \$5,500.00. Late that year this lease was abruptly canceled and since that time the mine has remained idle until leased by the Tombstone Mining Company in 1939.

6. PRODUCTION: The total production of the district prior to 1934 is reported by the Arizona Bureau of Mines to have been about \$142,000.00, and to have come mainly from the Allison mine. During the last 6 months the mine has shipped 1,300 dry tons of crude ore containing 696.964 ozs. gold and 15,662.6 ozs. silver, having a present gross value of \$35,483.20. Thus the recorded production of the Allison mine to June 8, 1940 is about \$177,483.20.

7. GEOLOGY: The area immediately adjacent to the Allison mine is characterized by tilted beds of coarse, red

conglomerate, which is intruded by large dikes of dark colored andesite, which in turn are intruded by younger and smaller dikes of light colored rhyolite with which are associated ore-bearing quartz veins.

The conglomerate beds are very thick. They consist mostly of rounded pebbles of quartzite and igneous rocks and are considered of Cretaceous age. The andesite and rhyolite intrusive rocks are known to be of Tertiary age. Near the rhyolite intrusives the andesite is highly shattered in preparation for mineralization.

The gold quartz veins occur in the andesite and on or near the contact of the andesite with the rhyolite intrusives, indicating that they were formed as "vein-dike" intrusions and replacements as an after-math of the rhyolite intrusion.

This type of vein has been very productive in Arizona and is credited with almost half of the state's gold output. It includes the highly productive deposits of the Oatman, Katherine, Mammoth and Kofa districts of Arizona and the Magallon district of New Mexico. The veins seldom extend to depths exceeding 1500 feet below the present surface depending much on the present stage of erosion.

Up to 1933, the Katherine mine had produced a total of \$1,087,000, old price, of which 85% was in gold and 15% in silver. Prior to 1912, two mines in the Kofa district had produced gold-silver ores valued at about \$4,600,000, under the old price for gold and an average

of 56% for silver.

The Oatman district, to the end of 1932, produced more than \$34,571,410 worth of gold from veins some of which outcropped very conspicuously but others, like the United Eastern, were scarcely noticable at the surface. Carl Lausen*reports that, "an insignificant stringer at the surface has been found to lead to a solid vein of quartz and calcite 3 feet thick at a depth of only 30 feet on the dip and similar variations in width may be observed along the strike of the vein".

8. MINERAL VEINS: There are three major quartz veins out-cropping on the Allison property which are parallel in strike and convergent in dip indicating that they form a single vein system and have a common origin in the region directly beneath the rhyolite intrusives. (See the S 45° W cross-section of the property accompanying this report.)

The three veins are known as the Allison, the Roberts and the No. 3. Their outcrops are characterized by bold ledges of banded grayish white quartz ranging from 2 feet to 12 feet in width and carrying relatively low values in gold and silver. The vein quartz usually exhibits the leached cavities of primary sulphide minerals which were probably chiefly iron and manganese. Secondary gangue minerals also include some calcite. At depths of 300 feet or more in the Allison mine the solid quartz vein gives place to a strongly mineralized zone containing stringers

*Bulletin 131, Arizona Bureau of Mines, page 56.

of quartz highly stained with iron and manganese oxides which are the products of secondary enrichment due to the leaching and redeposition of the mineral values from the higher portions of the veins. It is in this manner that the bonanza ore shoots characteristic of this type of deposit are formed.

(a) Allison Vein: The Allison vein outcrops on the First Chance and Second Chance claims for a distance of about 1200 feet, with a strike of S 45° E and a dip of 50° to the SW. Its width ranges from 2 to 12 feet and averages about 6 feet. Throughout its length it is a contact vein with a hanging-wall of rhyolite and a foot-wall of crushed andesite. In the Allison mine it has been partially developed for a length of 500 feet on the strike and 625 feet on the dip and is responsible for all production to date from the Allison property.

(b) Roberts Vein: The Roberts vein, ranging from 2 feet to 12 feet in width, outcrops for a length of about 2500 feet on the Fourth of July and Fourth of July No. 2 claims. Its strike varies somewhat but over its entire length averages S 45° E which is parallel to the Allison vein. Its dip is that of a warped plane, ranging from 65° NE to its SE end to 85° SW at its NW end, thus averaging close to vertical. At points nearest the Allison workings the dip is approximately vertical. Over its entire length both the foot and hanging wall of the vein consists of intrusive andesite.

Developments on the Roberts vein are limited to a 100 foot shaft, a 130 foot tunnel and a dozen or more shallow cuts across the outcrop, which when sampled, all showed values in both gold and silver but no ore of commercial value. The vein, however, in all its surface aspects is like the Allison and should prove equally productive.

(c) No. 3 Vein: About 390 feet SW of the Roberts vein, and parallel to it, is a 2 foot ledge of vein quartz which is tracable for 200 feet on the outcrop and dips about 55° northeasterly towards the Roberts vein. This ledge I shall refer to as the No. 3 vein. Developments are limited to a single small surface pit which is partly filled. No samples were taken and the extent of its mineralization is not known but in general character and geological occurrence it is of the same type and age as the Roberts and Allison veins. On its dip it should intersect with the Roberts vein at about the 700 foot level.

9. DEVELOPMENTS: The Allison vein has been explored by an incline shaft to a depth of 625 feet with lateral workings on the vein at the 100, 200, 300, 400, 450, 500, 525, and 625 levels. All told about 3500 feet of development work has been done.

The shaft was sunk on an incline of about 50° following the vein and the hanging-wall contact to the 525 level, thence on an incline of about 68° to the 625 level where it is about 45 feet from the contact.

The mine is operated through a 450 foot adit tunnel which connects with the shaft and underground hoist chamber at the 200 level. The ore is hoisted to pockets above the 200 level and trammed by hand to the surface storage bins, mill, or stock pile. Direct shipping ore is hauled by truck to the railroad at Tucson. The lower grade ore of \$8.00 to \$10.00 per ton value is added to the milling ore stock pile awaiting the development of a satisfactory milling process now being diligently sought.

10. ORE SHOOTS: Pay ore is not found everywhere on the vein, but only at intervals on its strike and dip due to certain structural conditions which have led to its concentration in well defined ore-shoots. Two such major ore shoots have been opened up in the Allison mine, No. 1 to the northwest, and No. 2 to the southeast of the shaft. No ore of importance was found in the shaft below the 100 level except at the 550 level, and the relation of this to either ore shoot has not been determined.

(a) The No. 1 ore shoot has been opened up from the 300 to the 500 foot level and for a length of about 150 feet on the strike. It has produced about 95% of the total ore shipped from the property. Car load shipments have ranged from \$16.00 to \$50.00 per ton. (For list of shipments see appendix 2.)

Only the richest portions of this ore shoot have been mined and it is far from being exhausted. Recent developments on the 500 level have opened up ore assaying as high

as \$384.00 per ton, a reliable indication of further extension at depth.

(b) The No. 2 ore-shoot, southeast of the shaft is still in the initial stage of development, but has been exposed for 100 feet on the dip and for 150 feet on the strike. This work was all done from the 525 foot level where 3 small stopes have been started. Developments directly below on the 625 level indicate the No. 2 shoot to extend to and below that level. The general grade of the ore from the No. 2 shoot is not as good as that from No. 1 shoot. However, the last 155 tons taken from the No. 2 shoot averaged \$19.69 per ton.

(c) There is considerable evidence of a third ore shoot in the vicinity of the old discovery shaft and about 300 feet northwest of the No. 1 ore-shoot, but the vein structure is irregular in that area and considerable new work will need to be done to prove its position and importance. An old map prepared by the El Oro Mining and Milling Company shows ore averaging about \$20.00 per ton near the north end of the 400 level. This portion of the level is now inaccessible and I was not able to check these reports.

11. CHARACTER OF ORE: The mineral composition of the vein consists largely of quartz and calcite with minor quantities of hematite and pyrolusite. Probably due to oxidation, the sulphides are rarely found in the vein.

Gold is the most abundant constituent of the ore, but

is always accompanied with silver at the ratio of about 22 to 1 by weight. The gold, however, constitutes on the average about 70% of the ore values. High-grade ores frequently show free gold occurring in aggregates of small hackly grains or as thin plates which show up plainly in the pan. In the past several attempts have been made to mill this ore, but with little success, particularly as to the recovery of the silver, which is generally attributed to the presence of the iron and manganese always abundant in the better grade ores. However, I am informed that recent mill tests have shown recoveries of 85% to 90% of the combined gold and silver values.

12. OCCURRENCE OF ORE: The Allison ore-shoots are tabular in form and follow the plane of one or more of the foot-wall slips in the brecciated foot-wall andesite. The richer ore bodies range from 3 to 5 feet in width but are generally encased in ore of lower grade, the whole constituting a lode 10 to 15 feet wide for the length of the shoot. The lateral limits of a shoot is usually the result of a pinch in the vein caused by the junction of two foot-wall slips.

The ore generally lies within 15 feet of the hanging-wall contact, but in some instances, as at the double raise, is as much as 30 feet in the foot-wall. It seldom lies directly on the contact but is generally separated from it by a foot or two of nearly barren fault gouge.

Because of their pronounced and often highly slickensided character, the foot-wall slips are very apt to be mistaken for the hanging-wall contact and this has led to confusion in tracing the ore from level to level. As an aid in this particular I have constructed cross-sections A-B, C-D, E-F, and G-H, which show the position of the ore developments on the several levels with reference to the major structural features.

13. BONANZA STOPES: The foot-wall slips are the locus of a series of bonanza ore bodies ranging from 3 to 5 feet in width and extending for 50 feet or more on both strike and dip. This is the result of secondary enrichment due to the leaching of the outcrop and higher portions of the vein and the redeposition of the values in well defined tabular bodies at greater depth, usually below the 300 level.

The No. 1 ore-shoot has provided several fine ore bodies of the bonanza type. Typical of these is the 400 level stope from which, on March 8, 1940, were mined 19 mine cars of ore averaging \$161.08 per ton; the 450 stope producing 15 cars averaging \$61.00 per ton; the 500 stope, 12 cars of \$60.48 per ton, etc. However, to avoid the higher royalty rates, in making lot shipments, the high grade ore is mixed with lower grade material to maintain a gross average of about \$25.00 per ton shipped. The mine's production of shipping ore for the first five

months of 1940, is to be found in appendix 2 at the back of this report.

14. ORE RESERVES: There are three classes of ore reserves at the Allison mine:

1. Ore mined and in stock.
2. Developed ore in place.
3. Prospective ore developments.

As shipping ore I include any product containing gold and silver values exceeding \$15.00 per ton which when mixed with higher grade material can be made to average about \$25.00 per ton. As milling ore I include material ranging from \$5.00 to \$15.00 per ton which, when mined, can be made to average about \$10.00 per ton. Ten dollar ore is considered a minimum profitable mill head when recoveries do not exceed 80%.

All assays on the maps accompanying this report were made at the company's plant. Sample numbers prefixed with the letter "C" were taken by the writer. Those without prefix were taken by or under the supervision of Superintendent R. H. Barnes.

All samples except those representing broken ore, were of the groove type cut across the vein and were measured at right angles to the dip of the vein. Assay values are gross with gold at \$35.00 and silver 71¢ per ounce. In computing the value of the several bodies of proven ore, all assays on a level within the limits of the ore shoot are reduced to an arithmetic foot-cut or ton basis, and

the values obtained for the several levels involved are treated likewise to obtain the average grade of the ore-shoot as a whole.

(a) Ore in Stock: During recent months and in the course of mining the higher grade ores, considerable low-grade material has been added to the mill-head stock pile to await the discovery of a satisfactory milling process. According to the mine operating records, the amount of such ore now in stock is approximately 566 tons which averages about \$8.25 per ton. Present mining operations are adding daily to this tonnage.

(b) Developed Ore: The No. 1 and No. 2 ore-shoots have been worked primarily for the high-grade shipping ore but some low-grade material was also mined and milled. Perhaps all told about 10,000 tons have been removed from the two ore-shoots of which 8,000 tons were shipped direct, and 2,000 tons were milled.

As now developed the No. 1 ore-shoot represents a block of ore 150 feet long on the strike, 200 long on the dip and about 15 feet in average width, which on the basis of 15 cu. ft. of ore in place to the ton, represents an original 30,000 tons. Deducting from this the 9,000 tons of ore earlier mined chiefly from this area, we have a balance of 21,000 tons still in place and now regarded as a very valuable ore reserve.

Although much of the high-grade has been removed, the value of what remains as shown by the arithmetic average

of 86 samples cut across the vein on 3 levels is \$14.25 per ton.

Mining operations on the 450 and 500 levels are reported to be opening daily new ore of a high-grade character from which crude ore shipments will be made, but by this operation, as in the past, further extensions of the body of milling ore will result.

The No. 2 ore-shoot, as earlier mentioned, is only in the initial stages of development and may ultimately reach several times its present size. As now opened up on the 525 level, the shoot has a length of 150 feet on the strike, 100 feet on the dip, and an average stoping width of 5 feet. Its probable present tonnage, after allowing for the 1000 tons already removed, is approximately 4,000 tons. The grade of this 4,000 tons, as shown by the arithmetic average of 19 samples, is about \$12.00 per ton. The last 155 tons of ore mined from the No. 2 shoot had an average assay value of \$19.69 per ton which probably is fairly representative of the shoot as a whole.

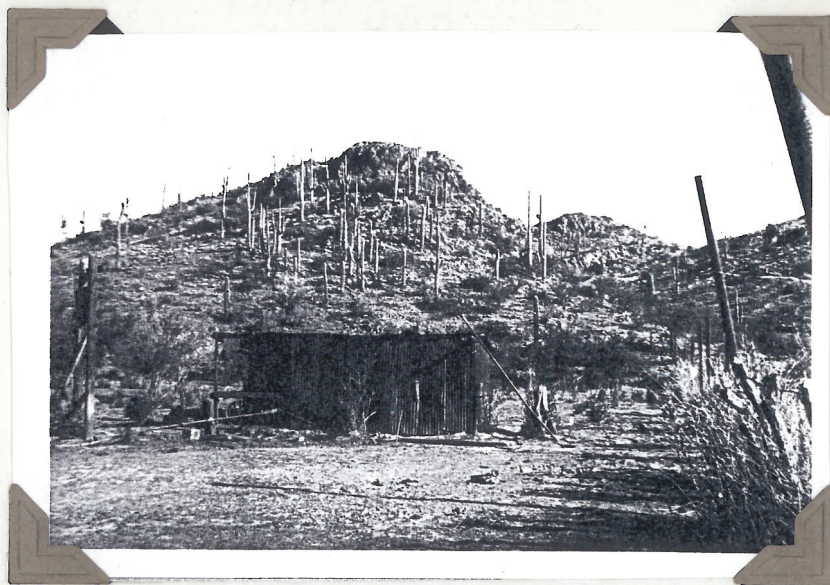
(c) Total Present Reserves: As computed for the two ore-shoots and in stock at the mill, total present ore reserves are as follows:

<u>Source</u>	<u>Wet Tons</u>	<u>Value Per Ton</u>	<u>Gross Value</u>
No. 1 ore-shoot	21,000	\$14.25	\$299,250.00
No. 2 ore-shoot	4,000	12.00	48,000.00
Stock pile at mill	<u>566</u>	<u>8.25</u>	<u>4,669.50</u>
Total assured ore	25,566	\$13.76	\$351,919.50

15. PROSPECTIVE ORE RESERVES: Because of the 3,000 feet or more of mineral vein on the Allison property that is still undeveloped and the splendid production record of what has been developed, I regard the property's prospect for a long life and a profitable operation as excellent.

The Allison vein has been explored for less than half its length so far and the Roberts vein almost not at all. Wherever sampled these veins have shown gold and silver values in quantities sufficient to prove their true mineral character. As mentioned earlier in this report, it is an important fact that this type of gold bearing vein is seldom productive at the outcrop or in its leached upper few hundred feet but mainly at depth where it is enriched by the process of oxidation and redeposition of values leached from near the surface. It has also been pointed out, that here as at Oatman, the absence of pay ore on the outcrop was no indication that this type of vein would not be productive at depth. On the contrary, the experience has been that relatively slight mineralization at the surface is almost unfailing evidence of valuable deposits at depth. This is a very important fact to keep in mind in considering the future exploration of the Allison property.

Exploration on the northwestern half of the Allison vein has shown the existence of two ore-shoots near the shaft with a gross production something like \$177,000.00 and a proven ore reserve of about \$352,000.00, also a



(c) 1. Allison Well and Pump station,
looking northerly.



(d) 1. Allison Mine Camp, looking
northwesterly.





possible third ore-shoot in the largely unexplored area beneath the old discovery shaft.

As a result of my examination of the property, I firmly believe that the development of the as yet unexplored portion of the Allison vein will at least duplicate, possibly trebble, its past production.

What I have said regarding the Allison vein applies with equal force to the Roberts vein which is not only well mineralized but has an outcrop about twice its length and in every other respect, is similar to the Allison vein. Consequently, even in its present state of undevelopment, I think we may expect a production from the Roberts vein equal to that predicted for the Allison vein.

16. WATER SUPPLY: The Allison water project includes a concrete dam and reservoir located about one mile northeast of the mine and about $\frac{1}{2}$ mile northeast of the mine camp. During the rainy season the reservoir is reported to accumulate sufficient flood waters to operate a 50 ton cyanide or flotation mill.

The dam is 35 feet high and 6 feet wide at the top, but due to very favorable topographic conditions is only $43\frac{1}{2}$ feet long. The capacity of the present reservoir is much restricted because of having been filled with silt to within 5 feet of the top of the dam. However, by increasing the height of the dam only 10 feet and its top length to 60 feet, at relatively small cost, the capacity of the reservoir can be increased about five fold which

should be sufficient to meet all prospective milling requirements.

At present the water supply for mine and camp is coming from a well at the damsite. This is a dug well 20 feet deep, of 4'x6' section and cribbed to the bottom. It is reported to be capable of a steady supply of about 15 gallons p. m., which is more than adequate for all mining and camp purposes.

The water is pumped to storage tanks at the camp and mine through a 3 inch pipe line by an electrically driven Worthing triplex pump operated by a 6 H.P. motor, which, at the rate of 40 R.P.M., will deliver 60 gallons p. m.. By sinking this well to bed-rock, or by digging additional wells, it is probable that this source of supply could be greatly increased and that several wells in conjunction with the reservoir will furnish a supply of water adequate for all future mining and milling needs.

17. PROPOSED DEVELOPMENTS: In all mining operations it is advisable to keep ore developments well ahead of production, and this is particularly so where the project depends upon milling operations. In order to assure a continuous supply of good milling ore for the Allison mill when and if a satisfactory treatment for the ore is found, and I understand that recently very encouraging metallurgical results have been obtained, I propose that as soon as practical the following line of developments be undertaken.

1. On the 625 level of the Allison mine, work should

be done to trace the No. 1 ore-shoot to that level in the foot-wall to the hanging-wall contact where there is a large area that has not been prospected.

2. On the 400 level S. E. drift, work should be done farther in the foot-wall to locate the No. 2 ore-shoot in the foot-wall of the major slip.

3. On the 625 level S. E. drift, work should be done in the foot-wall of the present workings to make other contacts with the No. 2 ore-shoot.

4. On the 400 level N. W. drift, the inaccessible portion of this drift should be opened up and some cross-cutting done where ore is reported in an effort to open up a third ore-shoot, both above and below that level.

5. On the 525 level, the S. E. heading should be extended southeasterly on the ore horizon for several hundred feet as a general prospect for a fourth ore-shoot in the area below the good ore showings at tunnel C.

6. The above proposed developments represent the more immediate and less costly projects for which a large part of the work is already done, and from which quick returns can be expected. As a more ambitious and extended campaign of development to be undertaken after adequate financing, I propose the exploration of the Roberts vein at a depth of about 400 feet beneath the collar of the Roberts shaft. This can be done by sinking a shaft on the Roberts vein to a depth of 300 or 400 feet and by drifting on the vein from that shaft. Or it can be done from the

Allison workings by sinking the Allison shaft on the contact to the 900 level from where a cross-cut driven in a S. W. direction should tap the Roberts vein at a distance of about 540 feet.

7. The No. 3 vein is important also, but its exploration at this time would be premature, and should await the development of the Roberts vein as outlined above.

18. DEVELOPMENT COSTS: The developments proposed for the Allison vein and in the Allison mine, paragraphs 1 to 5 inclusive, should not cost more than \$3,000, and as it is probable that considerable good ore will be opened up in the process, it is not unlikely that much of it can be paid for by current production.

The two plans of development proposed for the Roberts vein, paragraph 6, are of a long-range character and contemplates some outside financing. A shaft could be sunk 300 feet on the Roberts vein for approximately \$4,000, but to do the work proposed from the Allison shaft would cost at least \$12,000.00. This plan, however, would facilitate deeper development on the Allison vein and when completed would make an ideal operating unit for the development of the whole property.

19. CONCLUSIONS: The three veins on the Allison property were formed at the same time by the same geologic processes and are all mineral bearing at depth. They belong to the type of deposit found in the Oatman, Katherine, Mammoth

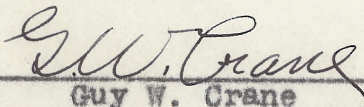
and Kofa districts of Arizona, which are characterized by bonanza ore-shoots and have produced nearly one-half the gold output of the state. While the outcrops of these veins are seldom profitable due to leaching, they become so at depths of 200 to 300 feet and below to about the 1000 level due to redeposition of the leached values.

The ore has proved refractory but I believe a satisfactory milling process will be found which will make possible the mining of these ore bodies as a whole and at a handsome profit due to a low mining cost thus obtainable.

Ore reserves at the Allison mine are now approximately 26,000 tons of an average grade of \$13.76 per ton. The No. 1 ore-shoot will be found to extend to greater depth and the No. 2 shoot will develop to several times its present size.

By intelligent development the production of the Allison vein can be greatly increased, and that of the Roberts vein should equal the Allison's, assuring the property of a long and profitable operation.

Respectfully submitted,


Guy W. Crane
Consulting Geologist

June 20, 1940
Salt Lake City, Utah

APPENDIX 1

EQUIPMENT: The larger units of mine and mill equipment are as follows:

The power plant includes:

One 100 H.P. semi-diesel V type Fairbanks Morse engine.

One 80 K.V.A. 60 cycle, three-phase generator.

One 210 cu. ft. Chicago pneumatic, hot head, compressor.

One 210 cu. ft. portable compressor.

Two fuel-oil storage tanks of 12,000 gals. total capacity. (Fuel-oil used is 27 plus and costs $8\frac{1}{2}$ per gal. f.o.b. mine.)

The assay office equipment includes:

One Braun Corp. 10 crucible gasoline furnace, an electrically driven crusher and pulverizer, a balance, and a full stock of supplies. The plant's capacity is 60 samples in 8 hours.

The mill equipment includes:

A crusher, two batteries of 5 stamps each, two large amalgam plates, a ball mill, one ^{Dorr} Door classifier, two Diester tables, a dewatering tank, several water and leaching tanks and two storage bins for concentrates. Each mechanical unit is individually motorized.

The well is equipped with one Worthing triplex pump, driven by a 6 H.P. motor, capacity 60 gal. p.m. at 40 R.P.M.

Mine equipment includes an electrically driven hoist and five mine cars of .61 tons capacity.

APPENDIX 2

SIX MONTHS PRODUCTION

<u>Date</u>	<u>Lot</u>	<u>Dry Tons</u>	<u>Ozs. Au.</u>	<u>Ozs. Ag.</u>	<u>Gross Value</u>	<u>Net Value Per Ton</u>	<u>Total Net Value Lot</u>
12/28/39	1	47.888	.365	9.96	18.34	\$ 15.84	\$ 758.55
1/2/40	2	53.815	.435	11.80	21.81	18.63	1,002.58
1/4/40	3	32.020	.38	11.37	19.75	16.77	541.42
1/9/40	4	42.0485	.375	11.13	19.43	16.49	693.38
1/25/40	5	48.021	.455	13.8	23.76	21.26	1,002.29
1/25/40	6	53.664	.29	11.35	16.82	14.32	794.76
1/29/40	7	39.127	.182	7.22	10.53	8.03	324.36
1/31/40	8	50.759	.313	8.90	15.93	13.43	681.70
2/10/40	9	53.3925	.54	11.80	25.20	22.68	1,210.94
2/10/40	10	57.7955	.686	16.25	32.84	29.56	1,714.79
2/19/40	11	54.1085	.858	19.34	40.43	36.39	1,971.71
2/26/40	12	58.199	.65	13.50	29.88	26.89	1,573.12
3/19/40	13	56.703	1.044	23.88	49.42	44.48	2,541.43
3/27/40	14	53.7615	.835	15.65	37.27	33.54	1,803.16
4/2/40	15	56.5495	.62	12.00	27.92	25.13	1,421.09
4/8/40	16	55.993	.61	11.35	27.16	24.44	1,368.47
4/15/40	17	58.469	.536	10.05	23.92	21.42	1,252.41
4/17/40	18	57.125	.402	8.55	18.55	16.05	916.86
4/24/40	19	58.8665	.488	10.40	22.60	20.10	1,183.22
5/1/40	20	60.035	.496	9.70	22.39	19.89	1,194.10
5/6/40	21	60.9015	.40	9.25	18.98	16.48	1,003.66
5/7/40	22	59.159	.441	10.30	21.01	18.51	1,095.03
5/14/40	23	61.3175	.394	9.15	18.71	16.21	993.96
6/7/40	24	14.814	.907	11.2	36.66	32.99	488.72
6/8/40	25	55.290	.605	7.90	24.67	22.17	1,225.78
TOTALS	25	1299.819	.536	12.05	24.96	\$22.07	\$28,757.49

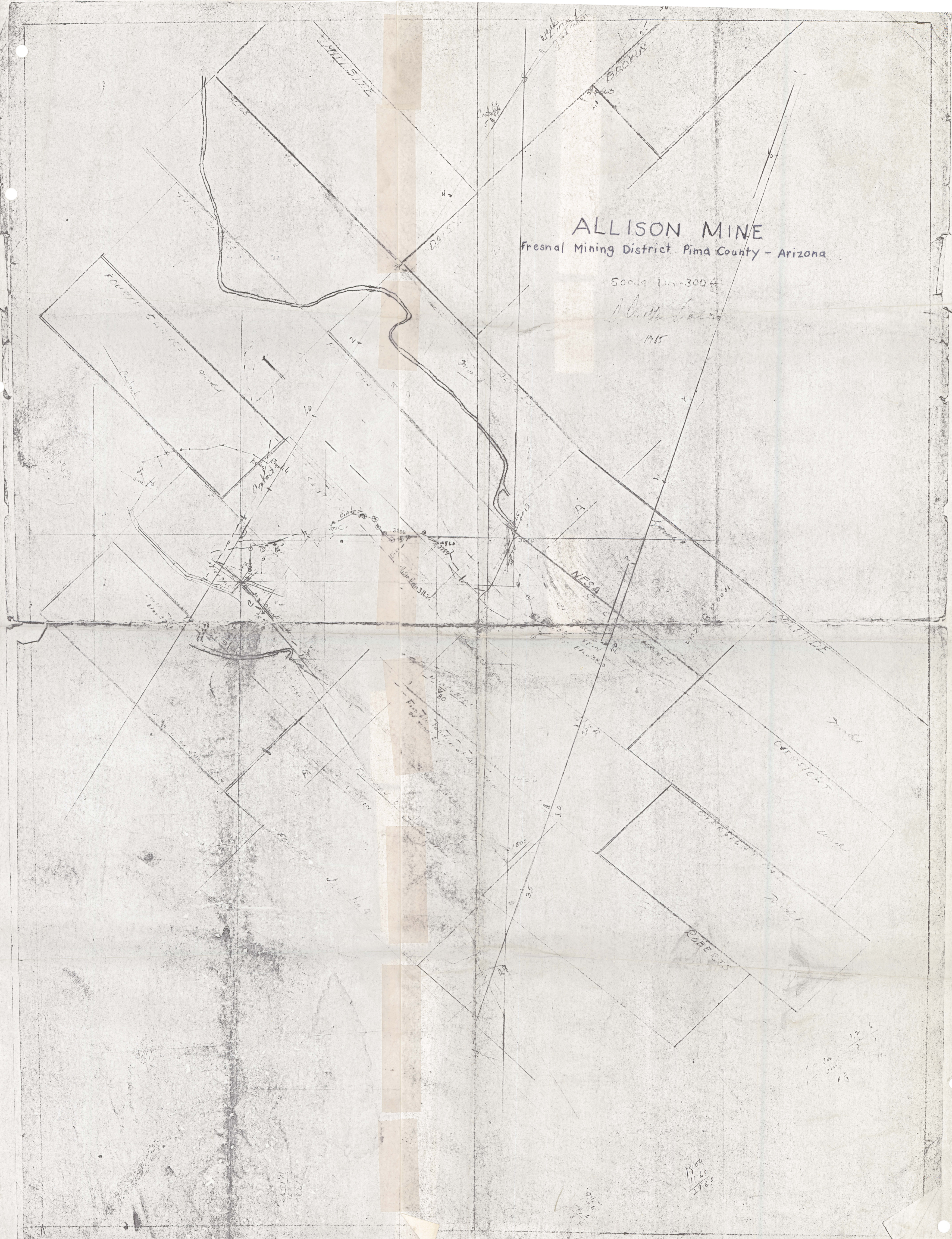
ALLISON MINE

Fresnal Mining District - Pima County - Arizona

Scale 1 in = 300 ft

J. Allison

1915



12 1/2
10 3/4
10 1/2
10 1/4

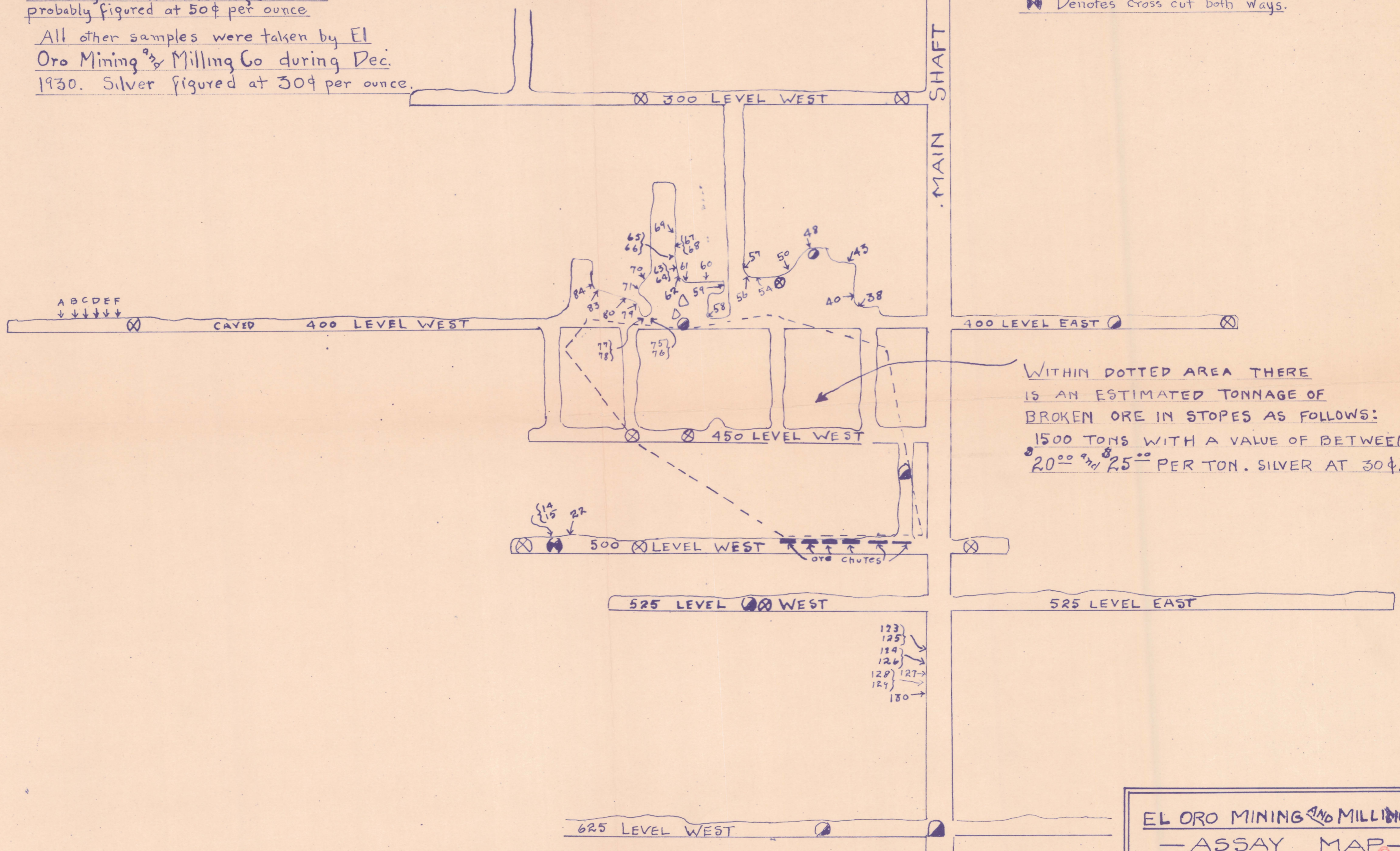
1100
1160
1200

1100
1160
1200

NUMBER	WIDTH	Location	GOLD OUNCES	SILVER OUNCES	VALUE
A	50				1203
B	44				1087
C	46				1296
D	46				1210
E	43				2631
F	37				1256
14	50	Vein	60	740	1422
15	15	F.W.	92	1200	2240
22	30	F.W.	64	600	1460
38	15	Vein	56	740	1342
40	10	Vein	200	840	4252
43	15	Vein	208	1380	4574
48	26	H.W.	110	1760	2548
50	06	H.W.	456	6360	11028
54	06	H.W.	60	2240	1872
56	06	H.W.	72	2600	2220
57	13	H.W.	296	5040	7432
58	40	Vein	32	860	898
59	14	Vein	340	7080	8924
60	04	Vein	180	7160	5748
61	18	Vein	106	4000	3320
62	18	Vein	164	6240	5152
63	10	H.W.	170	8340	5902
64	20	F.W.	48	1010	1263
65	10	H.W.	102	5880	3804
66	20	F.W.	40	1340	1202
67	15	H.W.	148	5340	4562
68	15	F.W.	50	440	1132
69	25	Vein	74	4860	2938
70	12	Vein	66	4360	2628
71	20	Vein	36	920	996
75	11	H.W.	268	9600	8240
76	10	F.W.	06	220	286
77	18	H.W.	156	2940	4002
78	15	F.W.	14	360	389
79	14	Vein	100	3800	3140
80	14	Vein	256	2740	5942
83	15	Vein	94	1960	2462
84	25	Vein	132	3680	3744
123	20	F.W.	140	1300	3190
124	20	F.W.	68	1700	1870
125	40	H.W.	90	1720	2316
126	30	H.W.	28	1440	992
127	40	Vein	80	880	1864
128	30	H.W.	08	240	232
129	20	F.W.	20	500	490
130	10	F.W.			

NOTE: Samples A, B, C, D, E & F were taken by Tom Reed Mining Co. silver probably figured at 50¢ per ounce.

All other samples were taken by El Oro Mining & Milling Co during Dec. 1930. Silver figured at 30¢ per ounce.



- ⊗ Denotes cross cut towards Foot wall.
- ⊙ Denotes cross cut towards Hanging wall.
- ⊕ Denotes cross cut both ways.

WITHIN DOTTED AREA THERE IS AN ESTIMATED TONNAGE OF BROKEN ORE IN STOPES AS FOLLOWS:
 1500 TONS WITH A VALUE OF BETWEEN \$20.00 and \$25.00 PER TON. SILVER AT 30¢.

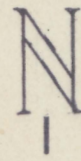
EL ORO MINING & MILLING CO.

— ASSAY MAP —
 — OF —
 — ALLISON MINE —

SCALE — 1 INCH = 40 FEET

DRAWN BY — AW Worcester
 mining engineer

JANUARY 3rd 1931 DRAWING NO



PROPERTY MAP SHOWING SURFACE GEOLOGY

ALLISON MINE

Fresnal Mining District - Pima County - Arizona

Scale: 1 in. = 300 ft.

Accompanying Report by
Guy W. Crane,
April 1940

The position of these claims and the relationship between claims and workings are taken from old prints in possession of the Tombstone Mining Company.

- Rhyolite
- Andesite
- Conglomerate
- Mineral Veins



SAMP. No.	Cut WIDTH	Au oz.	Ag oz.	TOTAL VALUE	DESCRIPTION
C-1	6"	0.07	0.93	\$ 3.11	6" Qtz. & Fe 4' from contact in 12' Cut at 'B' - Roberts Vein.
C-2	Fines	.05	.31	1.97	Fines on dump at Cut 'D'. Roberts Vein
C-3		.06	.34	2.34	Fe & Qtz. on dump at Cut 'D'. "
C-4		.02	.32	.92	Patch of Qtz. & Fe at face of Roberts Tun'l. Roberts Vein.
C-5	Grab	.02	.28	.90	On Roberts Tunnel dump.
C-6		.08	.57	3.20	Qtz. & Fe, Roberts Shaft.
C-7	2'	.60	12.50	29.87	Allison vein, N.W. face of Dft. 6' below level of open cut in old Disc. shaft.

ore values are gross, gold at \$35.00, silver at 71¢. Samples taken by G.W. Crane.

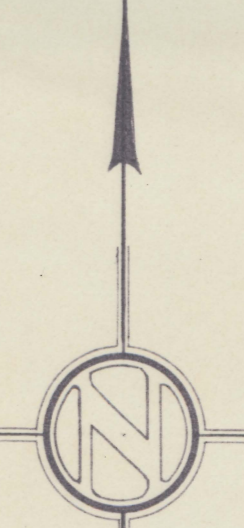
- below \$ 500
- \$ 500 to 1000
- 1000 " 2000
- above \$ 2000

COMPOSITE PLAN OF WORKINGS
ALLISON MINE
 FRESNAL MNG. DIST. - PIMA CO., ARIZONA

Scale: 1 inch = 30 feet

Brunton Compass Survey

Accompanying Report by
 Guy W. Crane,
 April 1940.



Assays along Allison Vein

SAMP No.	DEPTH	WT.	VALUE	DESCRIPTION
C1	0.71	0.10	825.39	"C" Tunn. - cut from open cut 2' below Rhyolite contact
C2	"	0.11	4.57	"C" Tunn. - cut in dump
C3	Grab	0.02	1.13	"B" Tunn. - stack pile in open cut
C4	"	0.02	4.6	"B" Tunn. - east side of dump
C5	F.V.M.	0.05	2.04	"B" Tunn. - east side S.N.E. of sh.
C6		0.35	552	16.17 near Sta. G. ave. of 6 sacks of ore from cut in 24 NW. F.G.
C7		0.60	12.50	29.81 Allison disc. Sh., NW face 6' below open cut
C8	Grab	0.11	1.09	4.62 "D" Cut - Fe stained material on dump.

Ore values are gross, gold at \$35⁰⁰ - silver at 71¢.

— below \$ 5%
— 5% to 10%
— 10% to 20%
— 20% to 30%
— above \$ 30%