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05/15/92

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: COPPER QUEEN

ALTERNATE NAMES:

LA PAZ COUNTY MILS NUMBER: 255

LOCATION: TOWNSHIP 3 N RANGE 16 W SECTION 6 QUARTER S2
LATITUDE: N 33DEG 37MIN 29SEC LONGITUDE: W 113DEG 56MIN 37SEC
TOPO MAP NAME: VICKSBURG - 15 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:
COPPER OXIDE

BIBLIOGRAPHY:
AZBM FILE DATA
ADMMR COPPER QUEEN FILE

COPPER QUEEN GROUP

YUMA COUNTY
PLOMOSA DIST.

RRB WR 4/10/81 - Pat O'Hara and Fred Jenkins, 625 N. 3rd St., Prescott, were in to investigate the Moore Group and Copper Queen Group in Yuma Co. They made some copies but preferred not to say who for.

COPPER QUEEN MINE YUMA COUNTY

James Thompson reported that Bunker Hill had acquired the Copper Queen Mine in the Plomosa District on a part stock - part cash basis. He stated that the deal involves $5,200,000 over a thirty-three year period. The long time was stipulated to minimize the tax load. A date was made with him to visit the Cram Mountain Mine in Cave Creek. LAS WR 10-2-59

James Thompson reported that two more drills had been moved to the Copper Queen (Plomosa) by Bunker Hill. Results of previous holes were unavailable, except that a considerable column of ore was encountered in the first hole. LAS WR 12-11-59

Mark Cockrill stated by phone that the Copper Queen mine, Plomosa District, had been released by Bunker Hill. Harmon Keyes is examining it for future leach possibilities for Cockrill. LAS WR 1-15-60

UNIVERSITY OF ARIZONA
Arizona Bureau of Mines
Ore Testing Service

October 8, 1958

Mr. Theodore A. Hehm
P. O. Box 367, Rt. 4,
Scottsdale, Arizona.

Four samples of Copper Queen assayed as follows:

Sample No. 1,	Copper Queen No. 1 -	7.73 per cent copper
2,	Salome Copper Queen No.9 -	2.71 per cent copper
3,	More No. 20 -	2.01 per cent copper
4,	Salome Copper Queen No.41 -	4.98 per cent copper
5,	Copper Queen No. 14 -	Not assayed

The samples were roll crushed, set at 1/4 inch opening and the material leached in glass cylinders with 5 per cent sulphuric acid and the solution taken off each day and new solution added. Sample No. 5 was not carried to completion as there was too much limestone or calcite in the sample which consumed the acid. The results are given in the following table:

Sample No.	Leaching time,days	per cent Copper Recovered	Acid used Per ton-Per lb.of copper
1	8	89.0	1.67
2	4	96.1	2.43
3	4	96.6	2.19
4	8	91.3	2.51
5	1 day		

The samples 1, 2, 3, and 4 leached very well and the copper dissolved varied from 89.0 to 96.6 per cent of the total copper. Sample No. 5 contained calcite and it consumed acid. Each pound of calcite will consume about one pound of acid and if much calcite is present it is not economical to acid leach.

Iron required to precipitate the copper from the leach solution is about one and one-half per pound of copper.

Sincerely yours

(signed) G. H. Moseveare
Metallurgist

COPY COPY COPY

UNIVERSITY OF ARIZONA
ARIZONA BUREAU OF MINES
ORE TESTING SERVICE

Ore No. 1500

Test No. 1

Solutions added:

No. 1 2.5 per cent acid

No. 2 2.55 " " "

No. 3 5.00 " " "

Ferric leach

2.5 per cent Ferric Sulphate
0.5 per cent Sulphuric Acid

Solutions taken off leach

Table No. 1

Metallurgical Products

Product	Tons in 100 Tons Feed	Assays					% of Total				
		Copper		Sulphuric Acid			Copper				
Heads	100.0										
Solution #1	93.3	0.73		0.04			100.0				
#2	109.7	0.71		0.16			17.1				
#3	97.2	1.94		0.84			19.6				
Washes	73.9	0.22		0.13			4.1				
Ferric	111.1	0.10		---			2.8				
Tailing	95.0	0.375					9.0				

Remarks:

METALLURGICAL RESULTS OBTAINED ABOVE SHOULD BE CONSIDERED AS ONLY APPLICABLE TO MATERIAL CONFORMING TO THE CHARACTER OF THE SAMPLE UPON WHICH THE TESTS WERE MADE.

UNIVERSITY OF ARIZONA
Arizona Bureau of Mines
Ore Testing Service

Ore No. 1500 Test No. 1

Solutions added:

No. 1 2.50 per cent acid

No. 2 2.55 per cent acid

No. 3 5.00 per cent acid

Ferric leach

2.5 per cent Ferric Sulphate
0.5 per cent Sulphuric Acid

Solutions taken off leach

Metallurgical Products

Table No. 1

Product	Tons in 100 Tons Feed	Assays Copper	Assays Sulphuric Acid	% of Total Copper
Heads	100.0			100.0
Solution #1	93.3	0.73	0.04	18.1
#2	109.7	0.71	0.16	19.6
#3	97.2	1.94	0.84	47.4
Washes	73.9	0.22	0.13	4.1
Ferric	111.1	0.10	-	2.8
Tailing	95.0	0.375		9.0

CHARLES H. DUNNING
MINING ENGINEER
PHOENIX. ARIZONA

OFFICE
817 W. MADISON ST.
PHONE ALPINE 3-6272

RESIDENCE
1635 W. EARLL DR.
PHONE AMHERST 5-1132

June 26, 1956.

To: Mr. Mark Cockrill,
Phoenix. Ariz.

Following my first examination and report of May 19 on the Hovatter Claims, south of Brenda, Yuma County, I have made a second and third examination.

The area is unsurveyed, and the second trip was made to pin point the location with sufficient accuracy to determine, after search of the Land Office records, whether the locations were in conflict with patented ground. Such conflict was found and a patent map obtained.

The third trip was to determine the details, and the damage to your holdings presented by the old patent.

Almost all of the Hovatter claims, as originally located are covered by Moore patent # 3207 of 23 claims. The attached sketch map shows the outline of the 23 Moore patented claims, together with a general outline of the mineralized area, and an outline, blocked into claims within the mineralized area, not covered by Moore patent, but which has subsequently been covered by additional Hovatter claims.

It is unlikely that a small workable mine exists or could be developed within this general mineralized area. While a car or two of selected ore might be shipped such an operation could not be long sustained. The value of the area lies in its potential as a big low grade mine, and as such the only persons who would be sonstructively interested would be the large mining companies or their well financed competitors.

The large companies are usually reluctant to take over prospects - and this is a prospect. However if the owner will develop his group to prove a reasonable tonnage of commercial ore, and the situation is geologically spund, they are then generally interested in entering into a deal, which if successful, would net the claim owners a very large amount of money.

In this particular case I am quite certain that

CHARLES H. DUNNING
MINING ENGINEER

no large company, nor Government loaning agency, would entertain a deal on this mineralized terrain as long as it were divided between two ownerships, unless an agreement could be made with both. While the Moore patent covers the heart of the mineralization your own outlying claims are also essential. You thus each have the other stymied.

I would therefore advise that efforts be made to throw both the Moore patented claims and your own outlying claims into a unified group. Then apply to the Government for aid in a general development (drilling) program. And then, dependant on the results of such program, present the situation to one of the large companies for further development and final purchase.

In making any such deal I must advise against any heavy outlay or committment of cash. These situations are precarious and invaribly take a great deal of time. So dont commit yourselves to financial program requiring set payments to buy the other fellow out. You are as essential to them as they are to you, and if they will not cooperate let them go ahead and develop their own ground. In doing so they will automatically develop yours.

The outlying claims as mentioned, and as shown on the sketch, lie mostly to the south and west of the "peak". This peak is about 1200 feet vertically above the valley floor and these claims are very inaccessable. I have not examined them and could only do so via a helicopter. But I have been told that the same copper stained formation outcrops there, and such is indicated geologically.

I understand that this area has been located by Hovatter but that the claims have not yet been perfected. In perfecting the claims it would be well if some patent corners could be found and the claims tied to them. It is very easy to get far off on ground dimensions in such rough country, and if the new claims are monumented larger than the legal limits of a claim, and someone discovers same, it would mean that there were open gaps in your group.

REGISTERED MINING ENGINEER
CERTIFICATE EXPIRES
CHARLES H. DUNNING
DEC. 31, 19--
ARIZONA U.S.A.

While we all like action, your best course may well be to: (1) perfect your locations (2) make reasonable tendures to the Moore owners; (3) play a waiting game.

Respectfully Submitted,

Chas H Dunning

University of Arizona
TUCSON 25, ARIZONA

COLLEGE OF MINES
ARIZONA BUREAU OF MINES

June 15, 1956

Mr. Charles H. Dunning
817 West Madison Street
Phoenix, Arizona

Dear Mr. Dunning: Ore test No. 1500

The sample which you sent to the Arizona Bureau of Mines was leached in a glass cylinder for seven days. The last day a 2.5 per cent ferric sulphate and [illegible] per cent sulphuric acid was used instead of sulphuric acid only. The reason that the ferric sulphate was used was because the recovery was low. The results are given in Table No. 1.

The total copper dissolved amounted to 91.0 per cent of the total copper in the heads. The acid consumption amounted to 201.5 pounds per ton of heads. The tailing assayed 0.375 per cent copper.

The leach copper leached without ferric sulphate amounted to 88.2 per cent of the total.

The assay head did not check too good with the calculated head or 4.6 against 3.98 per cent copper.

Yours very truly,

George Roseveare
Metallurgist
Arizona Bureau of Mines

jn

ARIZONA TESTING LABORATORIES
A DIVISION OF CLAUDE E. McLEAN & SON LABORATORIES, INC.
PHONE AL 3-6272 817 WEST MADISON ST. P O. BOX 1888 PHOENIX
Chemists . . . Engineers

For Mr. C. H. Dunning
817 West Madison
Phoenix, Arizona

Date May 18, 1956

Sample of ore

Received: -

Submitted by: same

ASSAY CERTIFICATE

Gold figured at $ 35.00 per ounce. Silver figured at $ 0.90 per ounce.

Lab. No.	Identification	Gold		Silver		Percentages
		Oz. per Ton	Value	Oz. per Ton	Value	COPPER (Cu)
126843	C.Q.-15	Trace		0.20	$0.18	4.50

REGISTERED ASSAYER CERTIFICATE EXPIRES CLAUDE E. McLEAN DEC. 31, 19 56 ARIZONA, U.S.A.

Respectfully submitted,
ARIZONA TESTING LABORATORIES
Claude E. McLean

Charges: $ 3.50

10M 3-56 AMPCO 95591

CHEMICAL . RESEARCH . ASSAY . ORE TESTING . PHYSICAL TESTING

C & Cr Queen
(Mine file)
Yuma County

Salome Copper Property

1. Moore - 23 Claims (Patented)
2. Copper Queen - 31 Claims
3 Salome Copper Queen - 51 Claims

Total - 105 Claims

Salome, Arizona
Oct. 18, 1957

TO WHOM IT MAY CONCERN:

In regards to the estimate of 200,000,000 tons of copper ore on the Salome Copper Queen and Copper Queen property; the estimate is based on the continuous exposures of ore, and the elevations from the deep channeled washes which have cut through in various places on the property, and from old gold mine shafts of 3 to 400 feet in depth. Some of these are located at the base of the mountain which extends 15 to 1800 feet elevation above the opening of the shaft, with continuous oxidized ore showing.

Very truly yours,

(signed)

Ray D. Hovetter,
Mining Engineer.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Copper Queen Mine Date 5-7-59

District E. Plomosa District, Yuma County Engineer Lewis A. Smith

Subject: Mine Visit

Claims: 23 Patented 82 unpatented

Location: 4½ miles SW of Brenda and 1½ miles from the Old Ramsey Mine. Mainly SW ¼, T3N, R16W NW ¼, T2N, R16W See map

Owner: Ray D. Hovatter et al, Salome, Arizona

Agent: Mark Cockrill, 222 Hinton Road, Scottsdale (WH 5-2072)

Minerals: Chrysocolla in acid rocks, limonite in andesites.

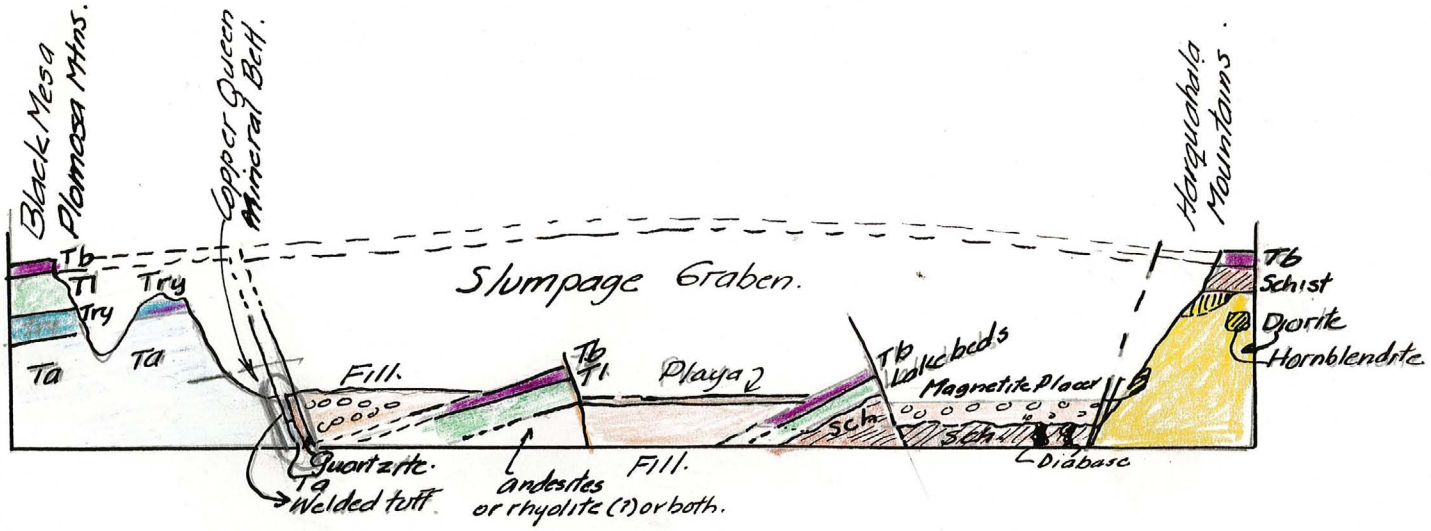
Work: There are several shafts scattered over a length of more than 4 miles and a width of 1/2 mile. The deepest shaft, in the southeast part of the property, is 435 feet in depth and the present water level is within 40-50 feet of the surface. This opening is bordered by andesite on one side and quartzite on the other. The quartzite is mineralized by chrysocolla in specks and veinlets and ~~carries~~ is said to carry between 1½% and 2.2% of copper, where sampled. There is a 40 foot inclined shaft on a prominent fault near the north end of the area. This shows 4½ feet of gouge and 6 inches to 1 foot of chrysocolla mineralization. The wall rocks are composed of andesite. Two thousand feet southwest of this shaft is a 75 foot shaft on the same fracture. This shows 1 foot of mineralized andesite and 3 feet of gouge which shows fair limonite. One mile further SW, a wide band of welded rhyolitic tuff is mineralized with chrysocolla to varying degrees. Openings in the form of cuts and pits show that local chrysocolla concentrations are more prominent where transverse fractures cross the main fault line. The welded tuff is bordered by a wide band of epidotized andesite. This area has two 70 foot shafts in it, which are partly filled by water. Numerous cuts and shallow pits in the welded tuff show chrysocolla mineralization within a few feet of the surface. The composite samples taken from these openings by Hovatter and Roseveare[1] (Arizona Bureau of Mines) show an average of more than 1.5% copper, according to Hovatter. The pits and cuts indicate an area of chrysocolla mineralization which is 1/4 mile wide and 2 1/4 miles long. Further exploration by drilling is indicated in order to determine the thickness of the welded tuff and bordering andesite, as well as to determine the average grade and the depth to sulphides.

Geology: The mineralized area lies within a thick (possibly 800 feet) series of andesites and tuffs and breccia, which appear in some 20 or more flows. The upper half of this series, and above the mineralized area, shows considerably less mineralization than the lower part. The andesites have been extensively epidotized adjacent to the welded tuff band and have been extremely thinly sheared parallel to the main fault zone (Basin Range type) (See Figure I). The fracture planes show some indigenous limonite and closely parallel halo bands of limonite. These limonites indicate a iron:copper ratio of 5:1. No chrysocolla seems to have been held up in the andesite. Similar halos are present in the welded tuff but there is little indigenous limonite except in the cross fractures or main shear planes. The depth of the welded tuff is indeterminate without drilling. The topography and structural relationships elsewhere in the area indicated that the welded tuff is underlain by andesites. The flows SW of the Basin and Range fault dip flatly to the southwest with local flexures. The entire andesite series appears to be capped by soda rhyolites as indicated by buttes to the southwest

[1] See Roseveare's accompanying report.

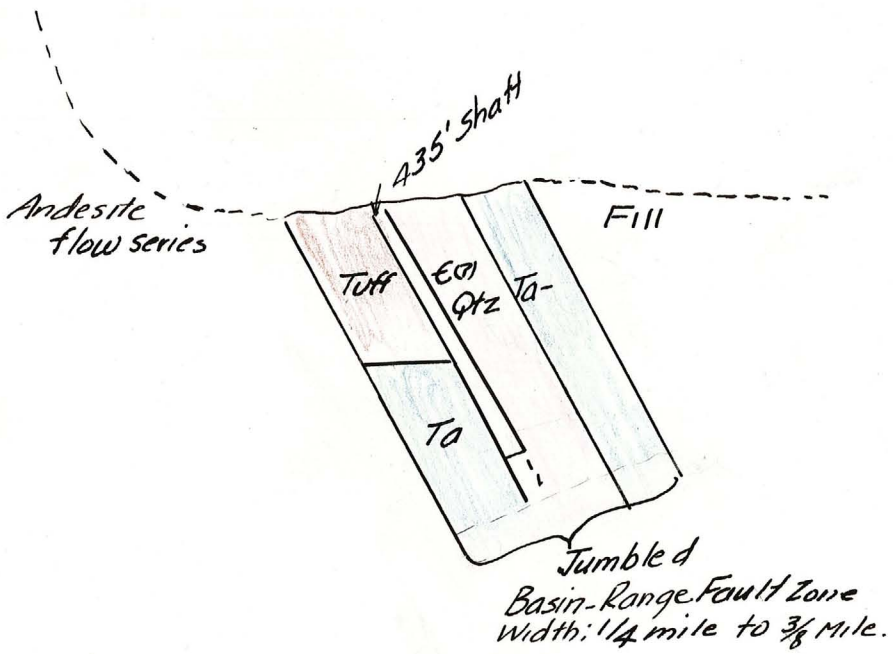
of the area. Further west these formations appear to be overlain by lake deposits which in turn are capped by late Tertiary basalts (Black Mesa). To the east of the main fault zone some 2½ or 3 miles, lake beds are capped by similar basalt to that on Black Mesa. This basalt pitches gently (15-20°) into the Basin and Range fault at the mine. Should this pitch continue to the fault without deviation, the throw of the Basin and Range fault would be in excess of 2000 feet. Within the fault zone (Fig. II) a mass of quartzite (probably of Cambrian age) is uplifted by the fault at least 450 feet. On each side of the quartzite is andesite and welded tuff. The andesite is down dropped, thus creating a horst within the jumbled fault zone of at least 1/4 mile in width. The Basin and Range fault extends for many miles to the NW and SE of the mineralized area forming a great fault and erosional escarpment at least 1200 feet in height above the country to the NE. Fig. III shows the generalized cross-section from Black Mesa to the Harquahala Mountains. The west slope of the Harquahala follows a second Basin and Range fault which is upthrown to the east. A large throw, similar to that in the Plomosa Basin Range fault, is indicated. A second outlier range of low hills project upward through the valley fill at a distance of two miles or so, west of the Harquahala fault. Here basalt overlying lake deposits and deeper schistose rocks, dips flatly to the SW. The two Basin and Range Faults form a slumpage basin, or graben, 25 miles wide. Between the two outlier ridges are more recent lake deposits of unknown depth. These lake beds have been observed for 25 miles of length and 5-8 miles of width and may be superimposed upon the Pleistocene-Quarternary lake beds which underlie the more recent playa. (See Fig. III)

The primary mineralization possibly was introduced with the initiation of the Basin Range fault and has been disrupted during the oxidation period by later spurts of fault activity. The major part of mineralization probably was of Laramide Age (possibly Middle Laramide).



Generalized Cross-Section from Black Mesa (Plomosa Mtns) to the Harquahala Mountains (25 miles (±))

Fig. III.



Indicated Section Through Old Shaft and Fault.

Fig. II

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine | Date

District | Engineer

Subject:

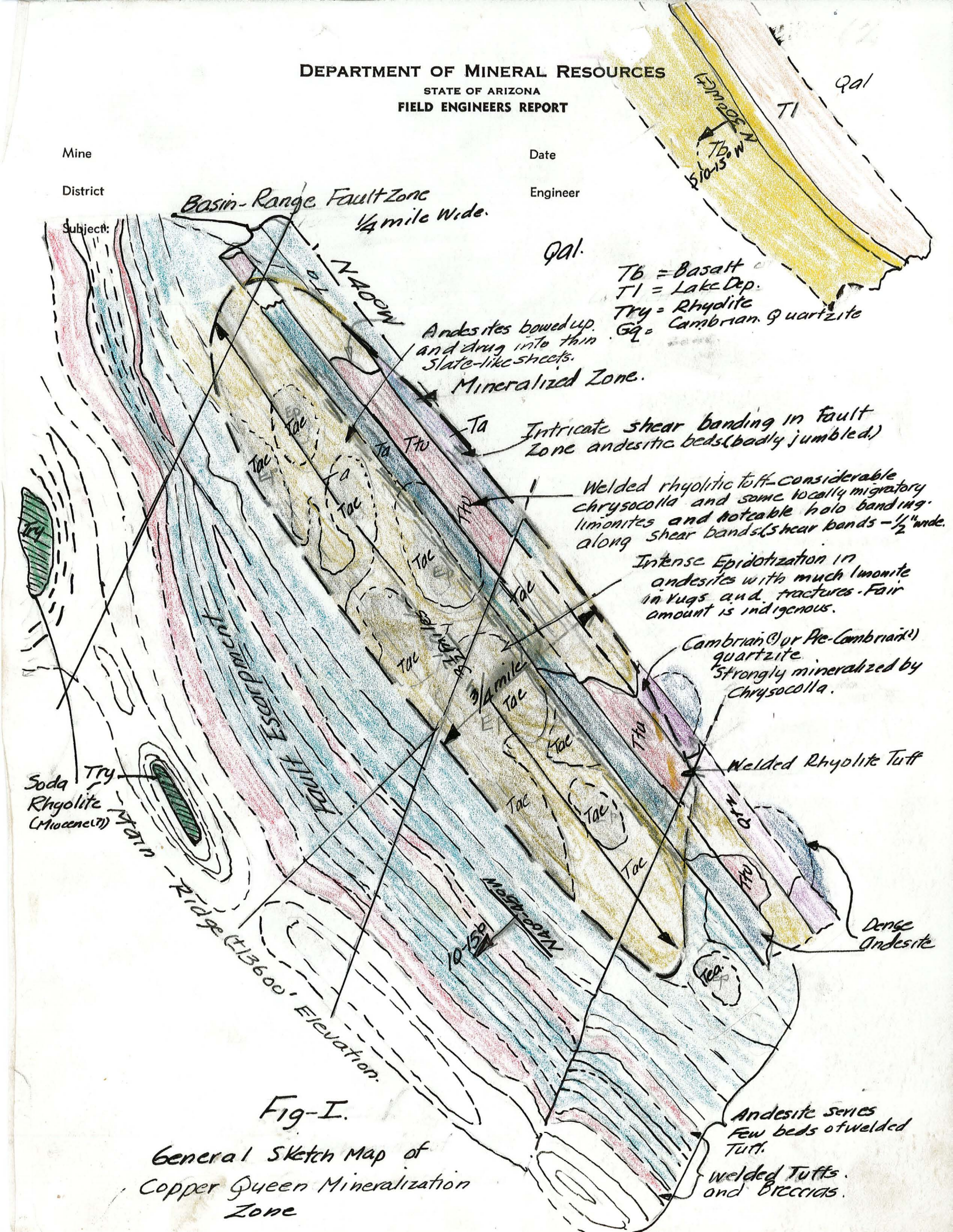


Fig-I.

General Sketch Map of Copper Queen Mineralization Zone

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine | Date

District | Engineer

Subject:

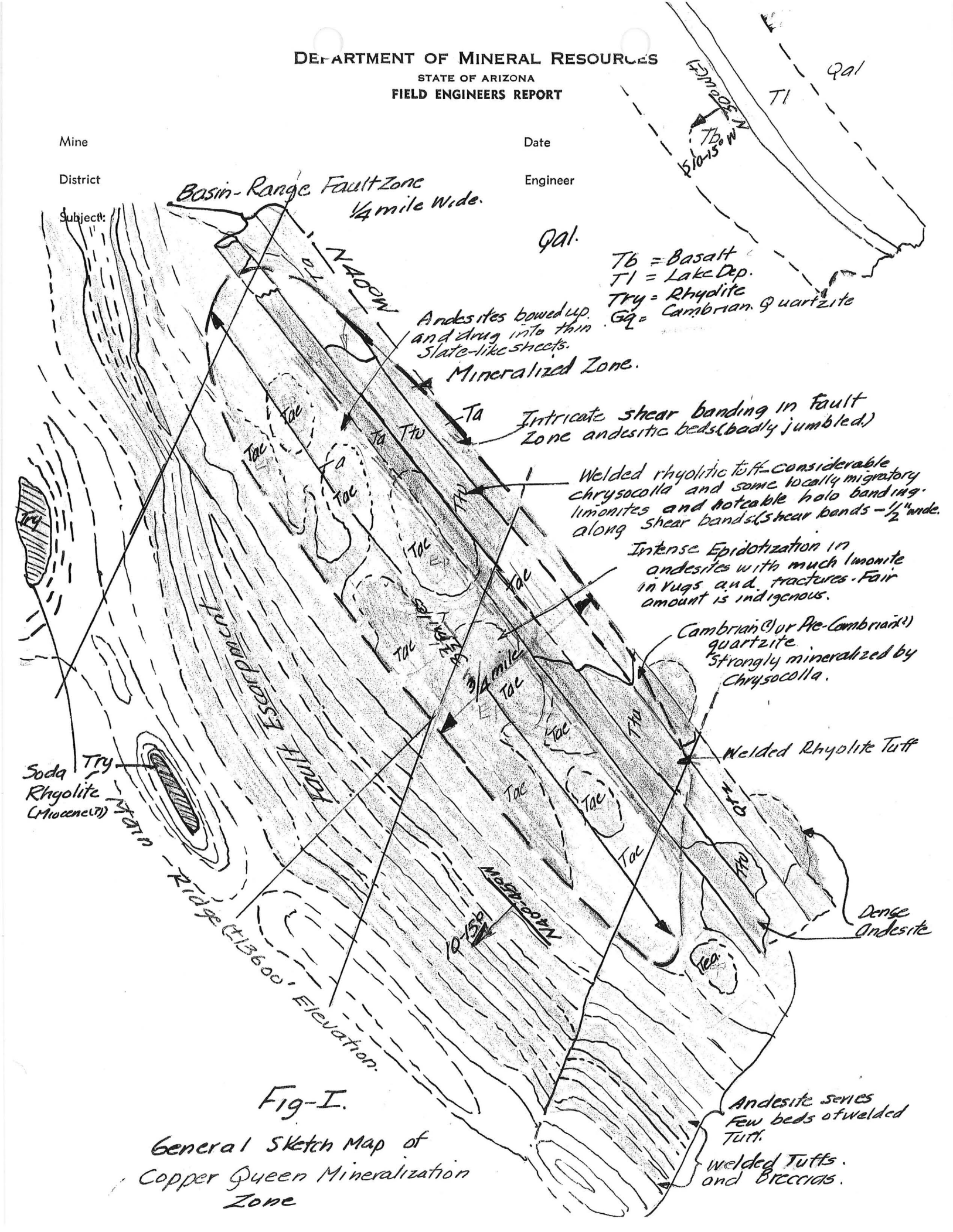


Fig-I.

General Sketch Map of Copper Queen Mineralization Zone

May 19, 1956.

To: Mr. Mark Cockrill,
Phoenix, Arizona.

Report on Hovatter Claims.

Pursuant to your request I have made an examination of a group of mining claims, presumably owned by Mr. Ray Hovatter of Salome, Ariz., and located southwest of Salome.

Location.

The group comprises 15 unpatented mining claims of approximately 20 acres each and is situated in desert hills 15 miles south of the village of Brenda, which is 20 miles west of Salome on highway 60. The side road south to the mine is rough and passable only for a Jeep or other high clearance car. The attached sketch shows the general outline of the claims, with their numbers, as will be further described in this text.

Geology.

The general geology is a series of old volcanic flows, mostly andesite, together with some old sediments (now quartzite) and probably some old intrusives, that have been highly faulted, and metamorphosed in places.

At one spot on the CQ#15 claim a nearly vertical and narrow later intrusive dyke cuts through to the surface. This is of the rhyolite or monzonite type as distinct of the more basic terrain. This type of intrusive is often responsible for our copper orebodies in the southwest, as such intrusions were often accompanied by mineral bearing solutions.

As a rule andesite formations have not contained important copper orebodies in Arizona, but that is because most andesite (or basaltic) flows occurred later than that period of activity which brought copper bearing solutions.

In this case however the andesites are very old and were laid down before the copper bearing activity, and constituted an excellent host rock.

Surface Outcrops.

Claims # 7,8,&9 have meagre mineral showings. Here there is a narrow vein (2" to 12") carrying copper minerals, along a nearly vertical fault with a north-south strike. The copper mineralization is probably due to infiltration and precipitation along the fault as a channel of circulation, rather than emanating from magmatic sources. Such ore would probably be found to be very spotty, and might well disappear entirely in any direction.

On Claim # 10 there is an old, deep, vertical shaft. The dump indicates that it should be 400 to 500 feet deep. History of the shaft is unknown, but the dump is entirely of barren andesite.

Just east of the collar of the shaft there is a 4 ft vein of copper bearing breccia that dips about 80° to the east. The shaft would have gotten further and further away from the vein as it attained depth, and whether or not any crosscuts were run to the vein is unknown. The shaft seems in fair repair but without ladders.

This situation is not very intriguing but if no great expense is involved it would be worthwhile to repair the sahft sufficiently, and see if crosscuts were run to the vein. If not, it would be feasible to explore the projected vein with drill holes from the shaft. This entire situation on #10 however, smacks more of the infiltration type of deposit, than of the magmatic type.

On Claim # 15 the situation has changed entirely. Here we have a north-west south-east trending wide mineralized zone consisting of andesite breccia with copper minerals in the cementing material, and filling the seams and crevices.

A cut about 60 ft long has been run across this zone exposing at its north end a rhyolitic or monzonitic intrusive dyke, with a width of about 3 ft, a north-west, south-west strike and a dip to the south-west. There is some ore on the north-east side of the dyke, and on the south-west side the cut shows a width of 40 feet of andesite breccia splashed throughout with pockets, seams, and stringers of oxidized copper minerals (mostly chrysocolla).

This width would be difficult to sample accurately by hand, but I did take about 5 lbs of material for test purposes that was somewhat better grade than the average. This sample assayed: Copper 4.60%; silver .20 oz; gold tr. I would judge that the entire cut would assay at least half as well as the sample.

Still further toward the opening of this cut (southwest) there is a band of about 10 ft of barren andesite and then 5 ft of ore fully as good as the 40 ft. The barren strand could be the result of faulting, or could simply be a block that was not receptive to mineralization.

In any event here is a wide zone of tentative copper or that has a sensible reason for being there, that could well be the top expression of an important commercial ore body. I was informed that some GI's had worked over the dump material from the cut and shipped a quantity of ore. This is reasonable to believe but probably would not pay on a sustained basis.

From Claim #15 it was necessary to go back and around som high ridges to Claims #2 & #4. In the general vicinity of Claims #2, 1,12,&4 there is a massive mineralized zone or area that appears to be as large as 1000 by 2000 feet - perhaps larger. Elevations vary from a narrow floor on claim 4 to about 600 ft higher as one progresses west. And layer upon layer of the flow rocks outcrop along the ascent, each showing copper. Near the top is a layer of quartzite, boulders from which have fallen down the canyon, and they also show copper impregnation.

The presence of the quartzite (necessarily very old) on top of the andesite flows, indicates that the flows belong to a very old series. While no mineralizing type of intrusive was apparent in the very brief examination, such could be there, or perhaps such an intrusive did not reach through to the present surface.

It is natural to assume, and it is my opinion, that this massive copper mineralization was caused by ascending solutions under deep-seated conditions, and that the rather impervious quartzite cap, while receiving some solutions, acted as a dam, and caused the spreading out and concentration of the minerlizing solutions below it.

No estimate can be made of the average content of copper in the entire mass except that it appears to be as well or better stained as similar zones in our large open pit mines.

Nor is there any indication as to the depth or thickness of the oxidized or leached zones.

As a general rule in deposits such as this we have a stained zone near the surface where downward percolating waters have not acquired enough acid to cause complete leaching. Below this will be a leached zone showing the voids of a leachable mineral, and secondary minerals indicating the previcus presence of copper. Below that a secondary enriched zone where the descending waters have dropped their load. Still below that would be the primary or unaltered zone as originally deposited by the ascending solutions.

Some mines are entirely dependant on the secondary enriched zone for commercial grade ore. Others have successfully the capping by the leaching process. Others have been able to successfully mine down into the primary, although it is usually lower grade than the secondary. Many factors effect these relationships and only development or drilling will tell the complete story.

We do know that this area appears to have the "earmarks" and could develop into either or all of three types of mine; (a) a surface orebody of leachable ore; (b) a secondary zone of higher grade ore; (c) a primary zone of deep commercial ore.

Mining Facilities.

If an open pit sized mine can be proved in the vicinity of claim #2 a very large tonnage of ore would be available above the valley floor level, and the proportion of ore to waste that must be removed, would be very high. This indicates an unusually economical pit operation.

Water would be a problem but by no means impossible. It is merely a matter of finances which are in turn a matter of proved tonnage and values.

Transportation facilities are fair. A good road to highway 60, or on to the railroad at Vicksburg, would not be unduly expensive. A rail spur from Vicksburg is feasible if necessary.

Recommendations.

The most economic and feasible first procedure would be exploratory diamond drilling. At least 5000 feet of such drilling should be planned as an initial step. The average cost should be in the neighborhood of $5.00 per foot.

There are a great many pre-mineral and post-mineral faults, as well as changes in the characteristics of the host rocks, that could well effect the location and direction of the drill holes. Before spotting these holes in detail a further study should be made by a trained geologist experienced in large south-west copper deposits.

As a general idea however, there should be two angle holes on #15 - one to cut the ore zone at moderate depth, and one deeper. And about four holes on #2 cutting the mineralized formation at various depths and angles.

Metallurgical tests to determine the leaching characteristics of the surface ores will be made. Such tests will show the percentage of the copper that may be extracted by leaching, and the consumption of acid per pound of copper. It is possible that a small leaching operation might be carried on, during a development period, by selecting better grade areas, of which there are many. The ore might even be hauled to available water. This matter can be further considered after the results of the leaching tests are available.

The location of the group should be pin-pointed on a map to determine the sections in which located, and a search made at the U.S.Land Office to make sure there are no conflicting patented claims

More claims should be located west of #1,2, & 3 if possible. While this area was not examined it is possible that the massive mineralization may extend there. As soon as any constructive plans regarding your property are known others will try to capitalize on same, and locations by others there could at least constitute a bad nuisance value.

I do not believe that attempts to selectively mine and ship ore direct to a smelter would be successful.

Conclusion.

The surface showings fully justify an initial exploratory program as outlined.

If such a program is as successful as I anticipate a very large amount of financing would be needed to fully develop - block out large tonnages- and equip the mine for large production.

But if the preliminary drilling semi-proves the existance of large bodies of commercial ore you should have no difficulty in obtaining any desired amount of financial help.

The more you prove, the better deal you can obtain. The first step is the most speculative but brings the highest reward.

Respectfully Submitted,

May 19, 1956.

CHARLES H. DUNNING
MINING ENGINEER

SKETCH LAYOUT OF CLAIMS.

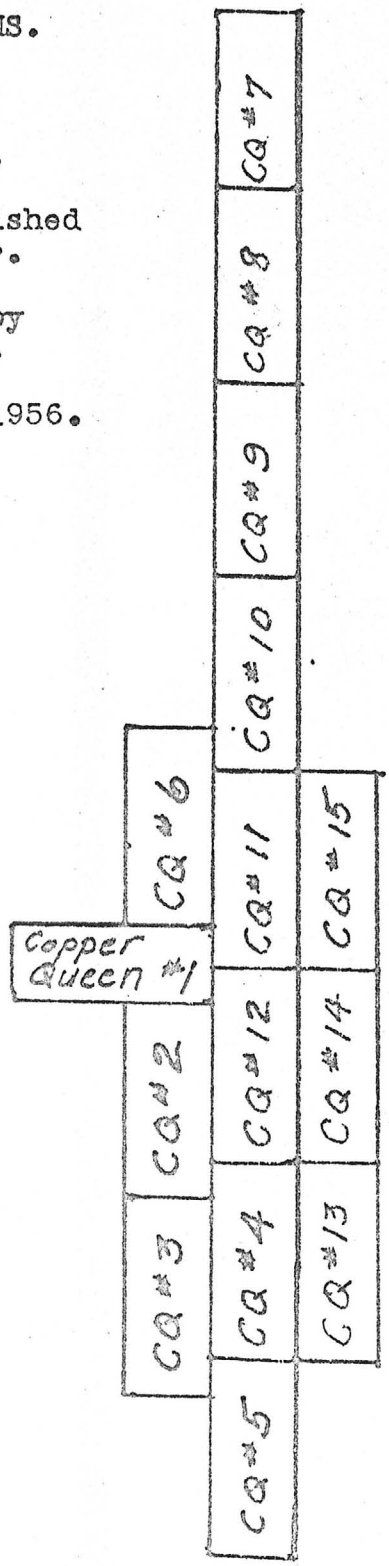
HOVATTER GROUP.

Yuma County, Arizona.

From Information furnished by Mr. Ray Hovatter.

To Accompany Report by Chas. H. Dunning.

Scale 1"=1500'. May, 1956.



Department of Mineral Resources

State of Arizona

Field Engineers Report

Mine: Copper Queen Mine — Date: 5-7-54

District: E. Plomosa Dist., Yuma County — Engineer: Lewis G. Smith

Subject: Mine Visit

Claims: 23 patented
32 unpatented

Location: 4½ miles SW of Dranda and 1½ miles from the Old Ramsey Mine.

Owner: Ray D. Novatter et al, Salome, Arizona

Agent: Mark Cochrill, 222 Hinton Road, Scottsdale (WA 5-2072)

Minerals: Chrysocolla in acid rocks, limonite in andesites.

Work: There are several shafts scattered over a length of more than 4 miles and a width of 1/2 mile. The deepest shaft, in the southeast part of the property, is 435 feet in depth and the present water level is within 40-50 feet of the surface. This opening is bordered by andesite on one side and quartzite on the other. The quartzite is mineralized by chrysocolla in shocks and veinlets and is said to carry between 1½% and 2.2% of copper, where sampled. There is a 40 foot inclined shaft on a prominent fault near the north end of the area. This shows 4½ feet of gouge and 6 inches to 1 foot of chrysocolla mineralization. The wall rocks are composed of andesite. Two thousand feet southwest of this shaft is a 75 foot shaft on the same fracture. This shows 1 foot of mineralized andesite and 3 feet of gouge which shows fair limonite. 6/10 mile further SW, a wide band of welded rhyolitic tuff is mineralized with chrysocolla to varying degrees. Openings in the form of cuts and pits show that local chrysocolla concentrations are more prominent where transverse fractures cross the main fault line. The welded tuff is bordered by a wide band of epidotized andesite. This area has two 70 foot shafts in it, which are partly filled by water. Numerous cuts and shallow pits in the welded tuff show chrysocolla mineralization within a few feet of the surface. The composite samples taken from these openings by Novatter and Rosecrans (Arizona Bureau of Mines) show an average of more than 1.5% copper, according to Novatter. The pits and cuts indicate an area of chrysocolla mineralization which is 1/4 mile wide and 2 1/4 miles long. Further exploration by drilling is indicated in order to determine the thickness of the welded tuff and bordering andesite, as well as to determine the average grade and the depth of sulphides.

Geology: The mineralized area lies within a thick (possibly 2000 feet)

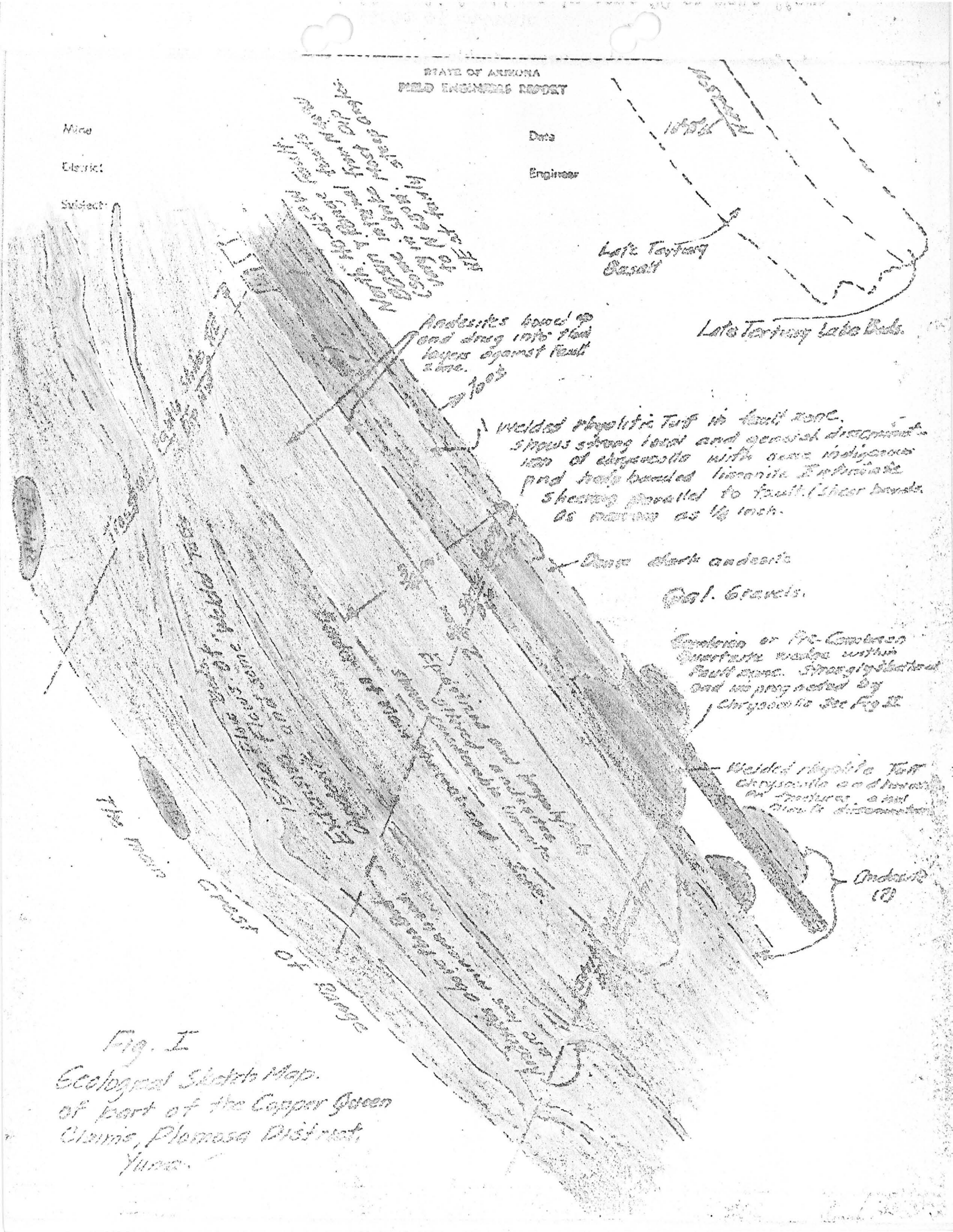
series of andesites and tuffs, which appear in some 20 or more flows. The upper half of this series, and above the mineralized area, shows considerably less mineralization than the lower part. The andesites have been extensively epidotized adjacent to the welded tuff band and have been extremely thinly sheared parallel to the main fault zone (Basin Range type) (See Figure 1). The fracture planes show some indigenous limonite and closely parallel halo bands of limonite. These limonites indicate a copper:iron ratio of 5:1. No chrysocolla seems to have been held up in the andesite. Similar halos are present in the welded tuff but there is little indigenous limonite except in the cross fractures or main shear planes. The depth of the welded tuff is indeterminate without drilling. The topography and structural relationships elsewhere in the area indicated that the welded tuff is underlain by andesites. The flows SW of the Basin and Range fault dip flatly to the southwest with local flexures. The entire andesite series appears to be capped by soda rhyolites as indicated by buttes to the Southwest of the area. Further west these formations appear to be overlain by lake deposits which in turn are capped by late Tertiary basalts (Black Mesa). To the east of the main fault zone some 2½ or 3 miles, lake beds are capped by similar basalt to that on Black Mesa. This basalt pitches gently (15-20 degrees) into the Basin and Range fault at the mine. Should this pitch continue to the fault without deviation, the throw of the Basin and Range fault would be in excess of 2000 feet. Within the fault zone (Fig. 11) a mass of quartzite (probably of Cambrian age) is uplifted by the fault at least 450 feet. On each side of the quartzite is andesite and welded tuff. The andesite is down dropped, thus creating a horst within the jumbled fault zone of at least 1/4 mile in width. The Basin and Range fault extends for many miles to the NW and SE of the mineralized area forming a great fault and erosional escarpment at least 1200 feet in height above the country to the NE. Fig. 111 shows the generalized cross-section from Black Mesa to the Harquahala Mountains. The west slope of the Harquahala follows a second Basin and Range fault which is upthrown to the east. A large throw, similar to that in the Florosa Basin Range fault, is indicated. A second outlier range of low hills project upward through the valley fill at a distance of two miles or so, west of the Harquahala fault. Here basalt overlying lake deposits and deeper schistose rocks, dips flatly to the SW. The two Basin and Range faults form a structure basin, or graben, 25 miles wide. Between the two outlier ridges are more recent lake deposits of unknown depth. These lake beds have been observed for 25 miles of length and 5-6 miles of width and may be superimposed upon the Pleistocene-Tertiary lake beds which underlie the more recent playa. (See Fig. 111)

The primary mineralization possibly was introduced with the initiation of the Basin Range fault and has been disrupted during the oxidation period by later shocks of fault activity. The major part of the primary mineralization was probably of Laramide age (possibly middle Laramide).

STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine
District
Subject

Date
Engineer



FIELD ENGINEERS REPORT

Mine: Copper Queen.

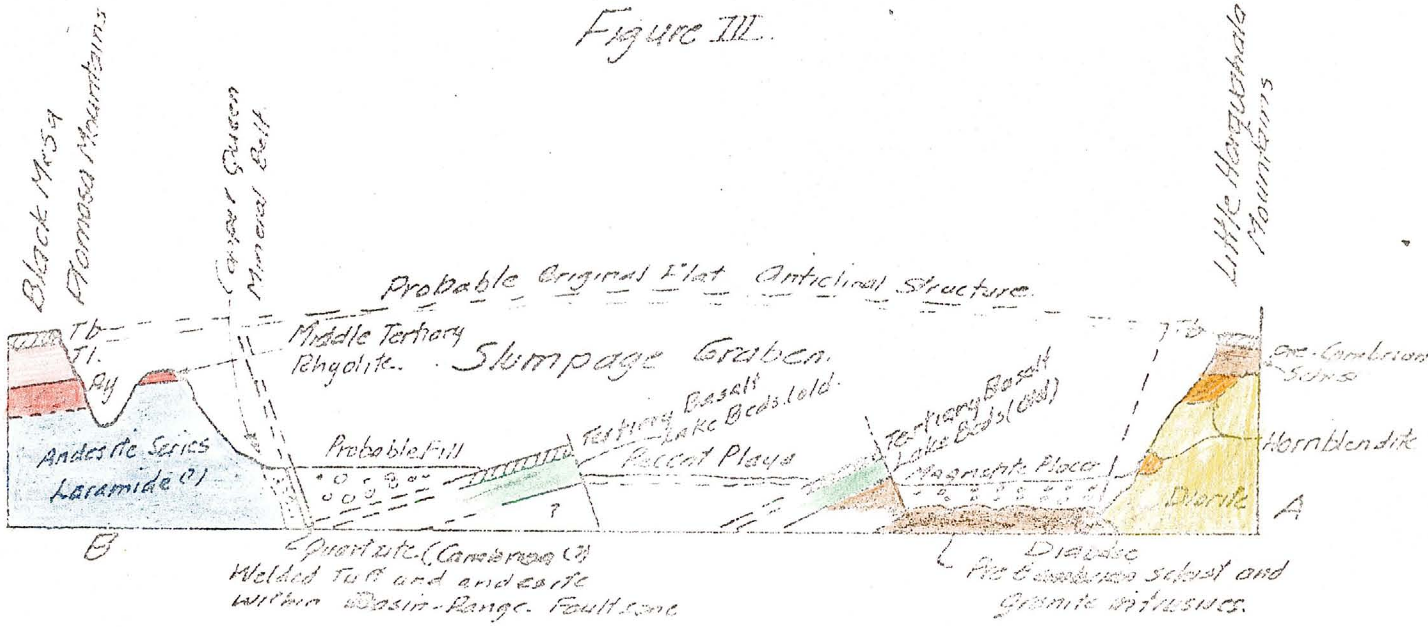
District: Plomosa Dist, Yuma Co.

Subject: Cross Sections (Hypothetical)

Date:

Engineer: Lewis A Smith

Figure III.



Generalized Hypothetical Cross-Section from the Little Harquahala Mts to the Plomosa Mountains showing Elevated blocks A & B and intervening slumpage Graben.

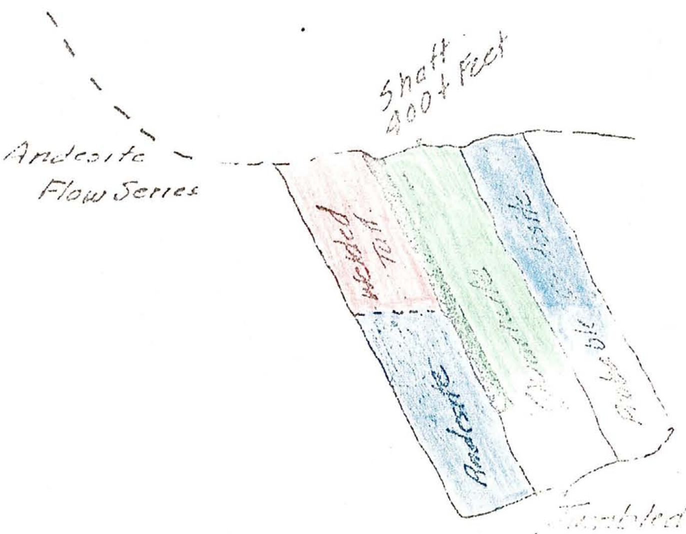


Figure II

Mineralized Section as composed from Roy Hassther's description. Largely full of water well to shaft bottom.

Tumbled Fault ... Basin and Range ... Faults ... Shaft bottom ...

UNIVERSITY OF ARIZONA
ARIZONA BUREAU OF MINES
ORE TESTING SERVICE

January 8, 1959.

Mr. Mark Cockrill
222 Hinton St.
Scottsdale, Arizona

Dear Mr. Cockrill:

A sample of copper ore from the property southwest of Hope was taken by the writer from an open cut about one-half mile from the old cabin beyond which ore had been previously shipped. This sample assayed 1.90 per cent copper and was taken to represent the average type of ore in the open cut rather than the average grade, and was in the form of chrysocolla mostly in cleavage planes.

The sample was crushed by rolls set at 1/4 inch opening. The material tended to crush in slabs and some of the larger pieces had a dimension of 3/4 inch in length. The crushed ore did not slime and the rate of percolation was fast on the material which was leached for eight days with charge of 5 per cent sulphuric acid.

The solution taken off the leach assayed as follows:

Product	Tons per 100 tons of Head	Assay: Per cent copper	Assay: Per cent acid	Distribution per cent copper
Solution #1:	100.0	1.9%*		100.0
1:	42.6	1.99	1.00	42.9
2:	29.2	1.15	1.50	29.1
3:	19.2	.37	3.59	9.4
(4 days) 4:	23.3	.41	1.70	4.3
Washes	36.9	.14	.15	2.8
Tailing	96.1	.22		10.9

*Calculated from Product

The acid treatment for eight days dissolved 89.1 per cent of the total copper and the acid consumption was 1.7 pounds per pound of copper.

A sample taken from the extreme northwest end of the property near the Fish and Game Commission's watering tank is high in calcite and therefore the acid consumption would be too high for leaching commercially. However, the ore upon which the leaching test was made with good results was low in calcite and the area from which the sample was taken showed strong mineralization.

Very truly yours,

Carl Roseveare, Metallurgist

CR:b

UNIVERSITY OF ARIZONA
Arizona Bureau of Mines
Ore Testing Service

January 6, 1954.

Mr. Hank Cochrill
222 E. Hinton St.,
Scottsdale, Arizona

Dear Mr. Cochrill:

A sample of copper ore from the property southwest of Hope was taken by the writer from an open cut about one-half mile from the old cabin beyond which ore had been previously shipped. This sample assayed 1.90 per cent copper and was taken to represent the average type of ore in the open cut rather than the average grade, and was in the form of chrysocolla mostly in cleavage planes.

The sample was crushed by rolls and at 1/4 inch opening. The material tended to crush in slabs and some of the larger pieces had a dimension of 3/4 inch in length. The crushed ore did not slime and eight days with charge of 5 per cent sulphuric acid.

The solution taken off the leach assayed as follows:

Product		Tons per 100 tons of Head	Assay per cent Copper	per cent Acid	Distribution Per cent Copper
Solution	1	100.0	1.91*		100.0
	1	43.8	1.95-	1.00	42.9
	2	49.2	1.15	1.50	29.1
	3	49.2	.37	3.59	9.4
(4 days)	4	22.9	.41	1.70	4.9
Washes		33.9	.14	.15	2.5
Tailing		96.1	.22		10.9

*Calculated from Product

The acid treatment for eight days dissolved 89.1 per cent of the total copper and the acid consumption was 1.9 pounds per pound of copper.

A sample taken from the extreme northwest end of the property near the Fish and Game Commission's watering tank is high in calcite and therefore the acid consumption would be too high for leaching commercially. However, the ore upon which the leaching test was made with good results was low in calcite and the area from which the sample was taken showed strong mineralization.

Very truly yours,
(signed)
Geo. Roseveare, Metallurgist

Red Gap

Report of Mark Cockrell

CHARLES H. DUNNING
Mining Engineer

Geology

The general geology is a series of old volcanic flows, mostly andesite together with some old sediments (now quartzite) and probably some old intrusives, that have been highly faulted, and metamorphosed in places.

At one spot on the CQ#15 claim a nearly vertical and narrow later intrusive dyke cuts through to the surface. This is of the rhyolite or monzonite type as distinct of the more basic terrain. This type of intrusive is often responsible for our copper ore bodies in the southwest, as such intrusions were often accompanied by mineral bearing solutions.

As a rule andesite formations have not contained important copper orebodies in Arizona, but that is because most andesite (or basaltic) flows occurred later than that period of activity which brought copper bearing solutions.

In this case however, the andesites are very old and were laid down before the copper bearing activity, and constituted an excellent host rock.

Surface Outcrops

Claims #7, 8 & 9 have meagre mineral showings. Here there is a narrow vien (2" to 12") carrying copper minerals, along a nearly vertical fault with a north-south strike. The copper mineralization is probably due to infiltration and precipitation along the fault as a channel of circulation, rather than emanating from magmatic sources. Such ore would probably be found to be very spotty, and might well disappear entirely in any direction.

On Claim #10 there is an old, deep, vertical shaft. The dump indicates that it should be 400 to 500 feet deep. History of the shaft is unknown, but the dump is entirely of barren andesite.

Just east of the collar of the shaft there is a 4 ft. vein of copper bearing breccia, that dips about 80 degrees to the east. The shaft would have gotten further and further away from the vein as it attained depth, and whether or not any crosscuts were run to the vein is unknown. The shaft seems in fair repair but without ladders.

This situation is not very intriguing but if no great expense is involved, it would be worthwhile to repair the shaft sufficiently, and see if crosscuts were run to the vein with drill holes from the shaft. This entire situation on #10 however, smacks more of the infiltration type of deposit, than of the magmatic type.

On Claim #15 the situation has changed entirely. Here we have a north-west east-south trending wide mineralized zone consisting of andesite breccia with copper minerals in the cementing material, and filling the seams and crevices.

A cut about 60 ft. long has been run across this zone exposing at its north end a rhyolitic or monzonitic intrusive dyke, with a width of about 3 ft., a north-west, south-west strike and a dip to the south-west. There is some ore on the north-east side of the dyke, and on the south-west side the cut shows a width of 40 feet of andesite breccia splashed throughout with pockets, seams, and stringers of oxidized copper minerals (mostly chrysocolla).

This width would be difficult to sample accurately by hand, but I did take about 5 lbs. of material for test purposes that was somewhat better grade than the average. This sample assayed: Copper 4.60%; silver .20 oz; gold tr. I would judge that the entire cut would assay at least half as well as the sample.

Still further toward the opening of this cut (south-west) there is a band of about 10 ft. of barren andesite and then 5 ft. of ore fully as good as the 40 ft. The barren strand could be the result of faulting, or could simply be a block that was not receptive to mineralization.

In any event here is a wide zone of tentative copper ore that has a sensible reason for being there, that could well be the top expression of an important commercial ore body. I was informed that some GI's had worked over the dump material from the cut and shipped a quantity of ore. This is reasonable to believe but probably would not pay on a sustained basis.

From Claim #15 it was necessary to go back and around some high ridges to Claims #2 & #4. In the general vicinity of Claims #2, 1, 12 & 4 there is a massive mineralized zone or area that appears to be as large as 1000 by 2000 feet, perhaps larger. Elevations vary from a narrow floor on claim 4 to about 600 ft. higher as one progresses west. And layer upon layer of the flow rocks outcrop along the ascent, each showing copper. Near the top is a layer of quartzite, boulders from which have fallen down the canyon, and they also show copper impregnation.

The presence of the quartzite (necessarily very old) on top of the andesite flows, indicates that the flows belong to a very old series. While no mineralizing type of intrusive was apparent in the very brief examination, such could be there, or perhaps such an intrusive did not reach through to the present surface.

It is natural to assume, and it is my opinion, that this massive copper mineralization was caused by ascending solutions under deep-seated conditions, and that the rather impervious quartzite cap, while receiving some solutions, acted as a dam, and caused the spreading out and concentration of the mineralizing solutions below it.

No estimate can be made of the average content of copper in the entire mass except that it appears to be as well or better stained as similar zones in our large open pit mines.

Nor is there any indication as to the depth or thickness of the oxidized or leached zones.

As a general rule in deposits such as this we have a stained zone near the surface where downward percolating waters have not acquired enough acid to cause complete leaching. Below this will be a leached zone showing the voids of a leachable mineral, and secondary minerals indicating the previous presence of copper. Below that a secondary enriched zone where the descending waters have dropped their load. Still below that would be the primary or unaltered zone as originally deposited by the ascending solutions.

Some mines are entirely dependant on the secondary enriched zone for commercial grade ore. Others have successfully treated the capping by the leaching process. Others have been able to successfully mine down into the primary, although it is usually lower grade than the secondary. Many factors effect these relationships and only development or drilling will tell the complete story.

We do know that this area appears to have the "earmarks" and could develop into either or all of three types of mine: (a) a surface orebody of leachable ore; (b) a secondary zone of higher grade ore; (c) a primary zone of deep commercial ore.

Mining Facilities

If an open pit sized mine can be proved in the vicinity of claim #2 a very large tonnage of ore would be available above the valley floor level, and the proportion of ore, to waste that must be removed, would be very high. This indicates an unusually economical pit operation.

Water would be a problem but by no means impossible. It is merely a matter of finances, which are in turn a matter of proved tonnage and values.

Railroad available within 13 miles.

Recommendations

The most economic and feasible first procedure would be exploratory diamond drilling. At least 5000 feet of such drilling should be planned as an initial step. The average cost should be in the neighborhood of $5.00 per foot.

There are a great many pre-mineral and post-mineral faults, as well as changes in the characteristics of the host rocks, that could well effect the location and direction of the drill holes. Before spotting these holes in detail a further study should be made by a trained geologist experienced in large south-west copper deposits.

As a general idea however, there should be two angle holes on #15 - one to cut the ore zone at a moderate depth, and one deeper. And about four holes on #2 cutting the mineralized formation at various depths and angles.

Metallurgical tests to determine the leaching characteristics of the surface ores will be made. Such tests will show the percentage of the copper that may be extracted by leaching, and the consumption of acid per pound of copper. It is possible that a small leaching operation might be carried on, during a development period, by selecting better grade areas,

of which there are many. The ore might even be hauled to available water. This matter can be further considered after the results of the leaching tests are available.

The location of the group should be pin-pointed on a map to determine the sections in which located, and a search made at the U. S. Land Office to make sure there are no conflicting patented claims.

More claims should be located west of #1, 2, & 3 if possible. While this area was not examined, it is possible that the massive mineralization may extend there. As soon as any constructive plans regarding your property are known others will try to capitalize on same, and locations by others there could at least constitute a bad nuisance value.

Id do not believe that attempts to selectively mine and ship ore direct to a smelter would be successful.

Conclusion

The surface showings fully justify an initial exploratory program as outlined.

If such a program is as successful as I anticipate a very large amount of financing would be needed to fully develop - block out large tonnages - and equip the mine for large production.

But if the preliminary drilling semi-proves the existance of large bodies of commercial ore, you should have no difficulty in obtaining any desired amounts of financial help.

The more you prove, the better deal you can obtain. The first step is the most speculative but brings the highest reward.

Respectfully Submitted,

(Signed) Chas. H. Dunning

May 19, 1956

(SEAL)
(Registered Mining Engineer)

RESUME OF OPERATION OF SIMILAR PROPERTIES IN ARIZONA

Name of Mine	Ore Removed	Copper Content of Ore	Investment	Estimated Profit	Gross Value Ore Mined
Ray Mine	107,000,000 Tons	2.0%	$15,600,000.	$70,000,000.	$85,000,000.
Miami	150,000,000 Tons	1.54%			$425,000,000.
Castle Dome	41,000,000 Tons	0.72%			$101,000,000.
New Cornelia	200,000,000 Tons			$94,000,000	625,000,000.
Morenci	207,000,000 Tons		$76,000,000.		
San Manuel		0.77%			

(The above figures are copied from State publications.)

PROPERTY WHICH WE OFFER

Est. Ore Available	Copper Content of Ore
200,000,000 Tons	1.75% to 3.50%

Re: COpper Queen and
Salome Copper Queen

THIS IS TO CERTIFY that the survey of the Hovatter - Cockrill properties, also known as Copper Queen and Salome Copper Queen Claims was made under my direction during July and August, 1956, and that the following proceedures were followed.

1. The original survey monument for U. S. Mineral Survey #3207 was located, and its location confirmed by the original notes on file.

2. Enough of said Survey #3207 was retraced, and original corners found to determine its location.

3. Certain corners of the Hovatter-Cockrill claims were pointed out to us and these corners were located with reference to U. S. M. S. #3207.

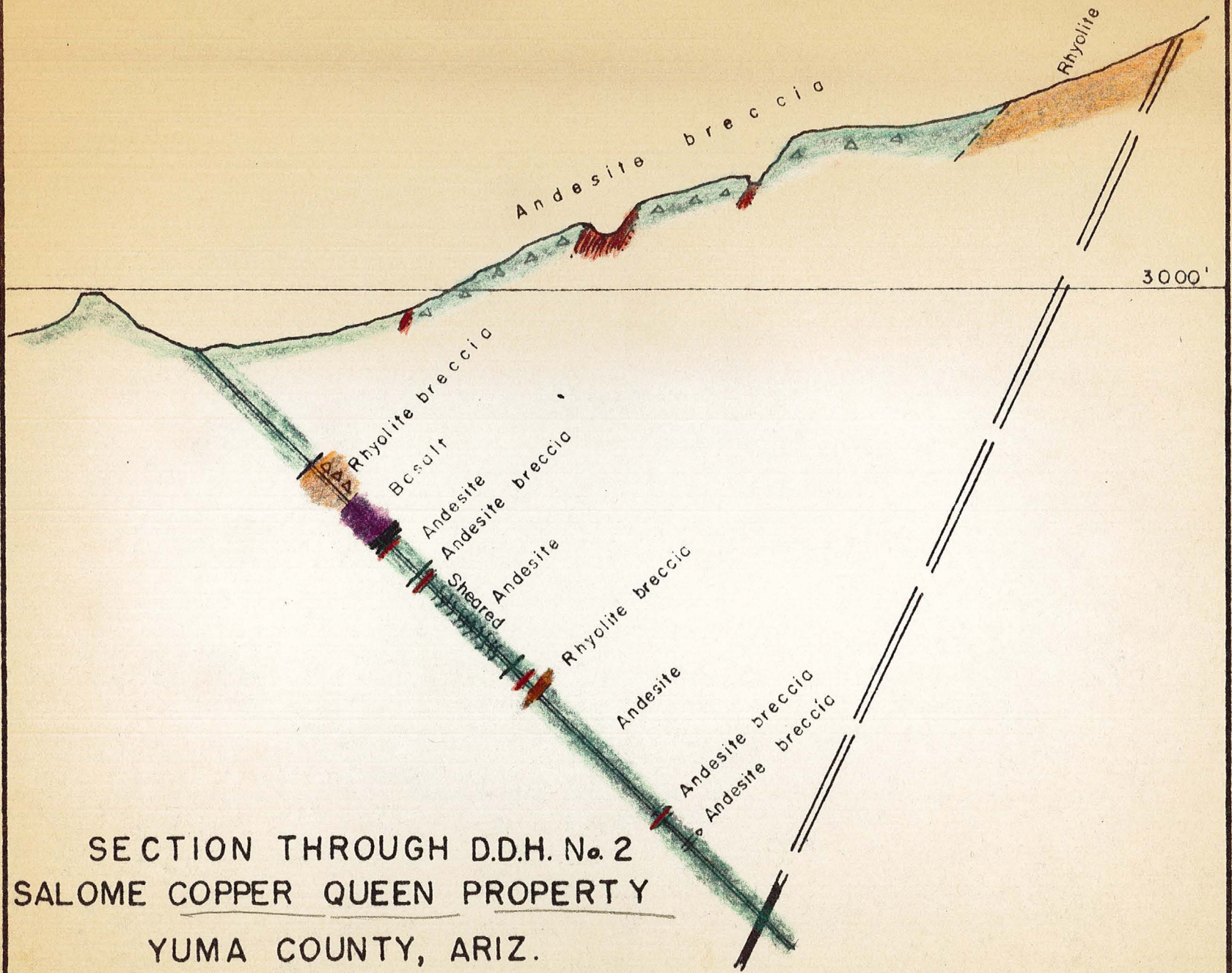
4. The rusult of survey plat was then prepared from this information, showing the relationship of the Hovatter-Cockrill claims to U. S. M. S. #3207.

5. No further survey was made nor any additional corners of the Hovatter-Cockrill claims located in the field.

Yours very truly,

(signed)

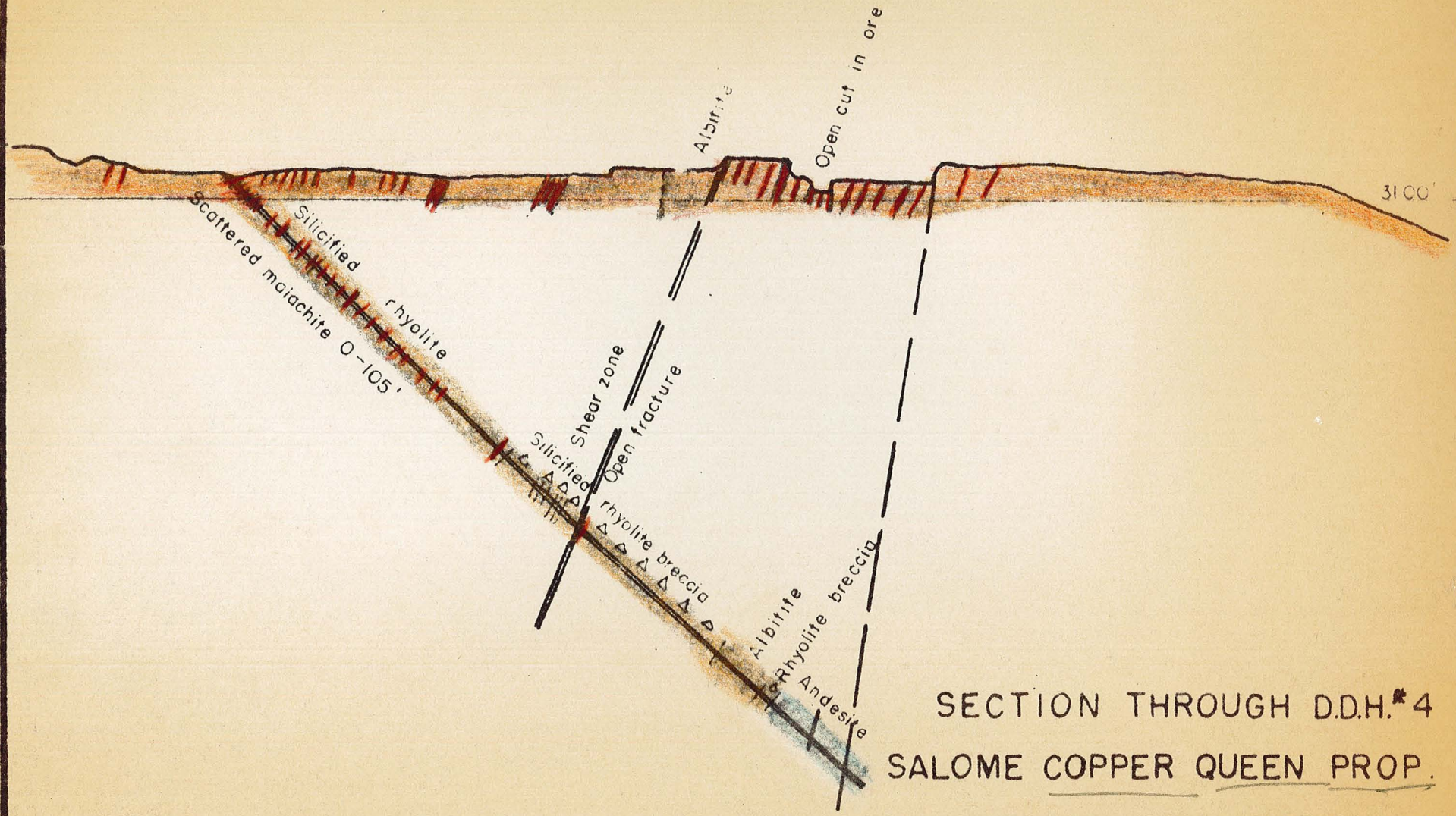
ROVERT S. KNIGHT, ENGINEER



SECTION THROUGH D.D.H. No. 2
SALOME COPPER QUEEN PROPERTY
YUMA COUNTY, ARIZ.

1" = 50'

P.J./T.K.



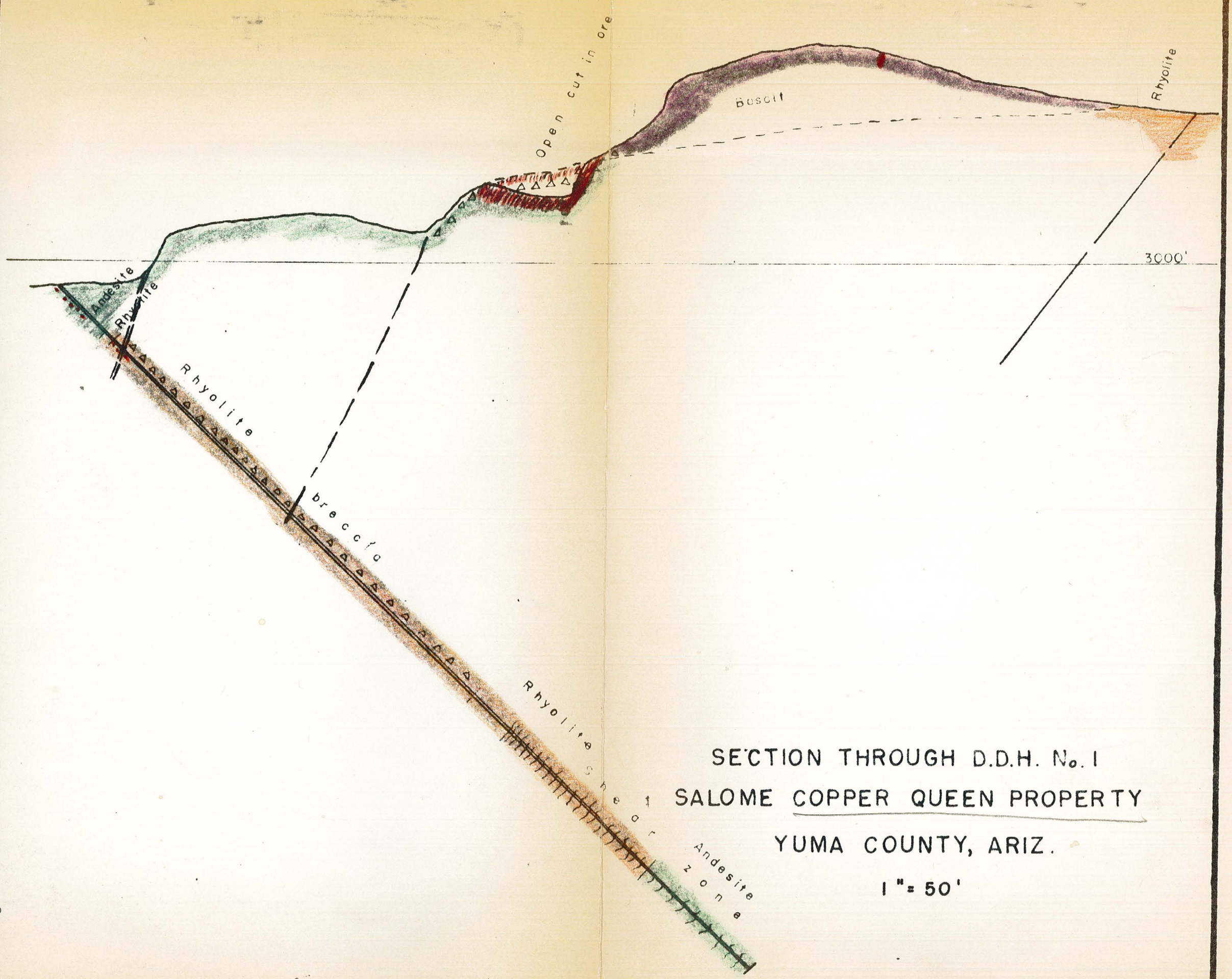
SECTION THROUGH D.D.H.* 4

SALOME COPPER QUEEN PROP.

YUMA COUNTY, ARIZ.

1" = 50'

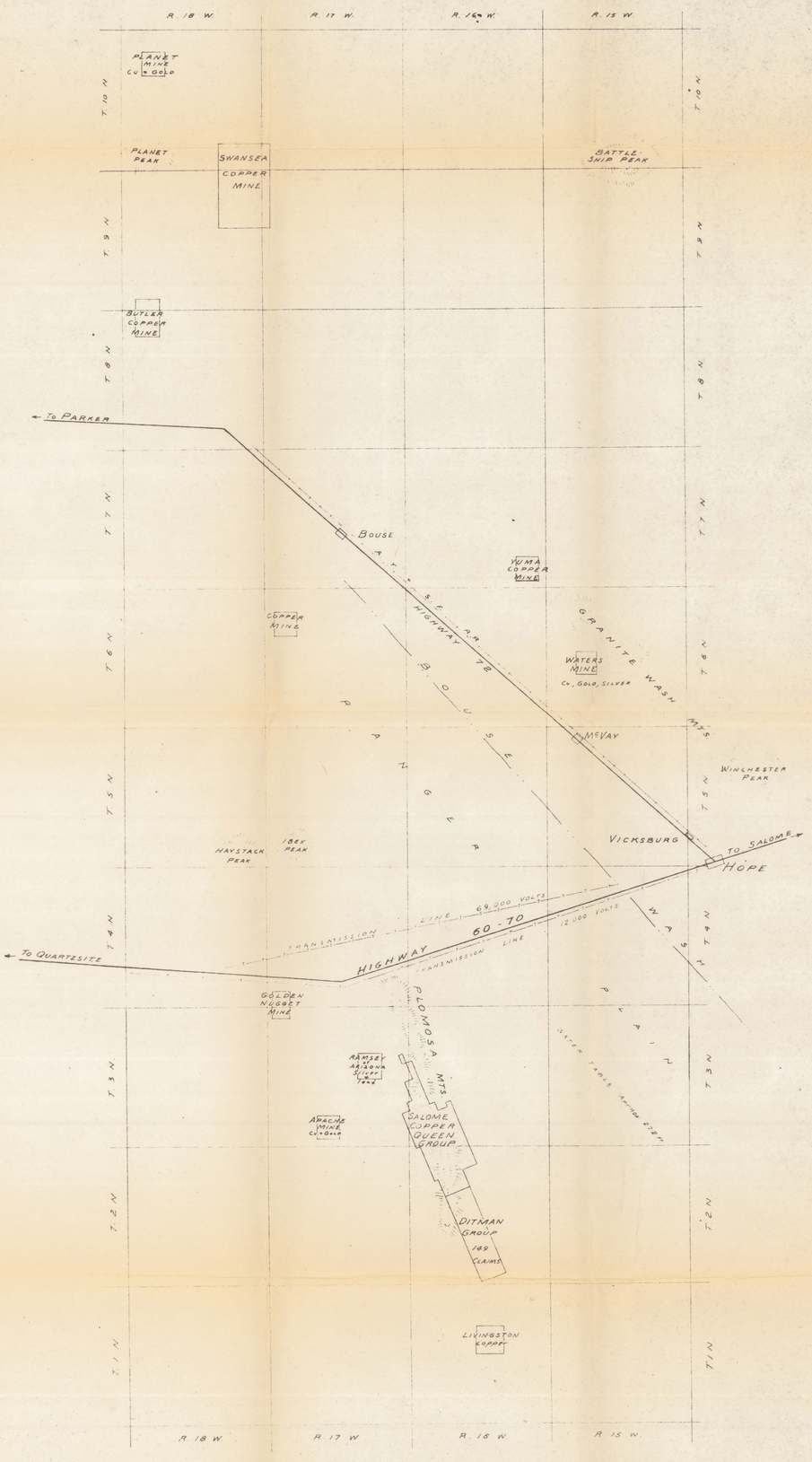
P.J. / T.K.



SECTION THROUGH D.D.H. No. 1
SALOME COPPER QUEEN PROPERTY
YUMA COUNTY, ARIZ.

1" = 50'

P.J./T.K.



GEOGRAPHICAL MAP

SHOWING PART OF N.W. AREA OF

YUMA COUNTY

ARIZONA

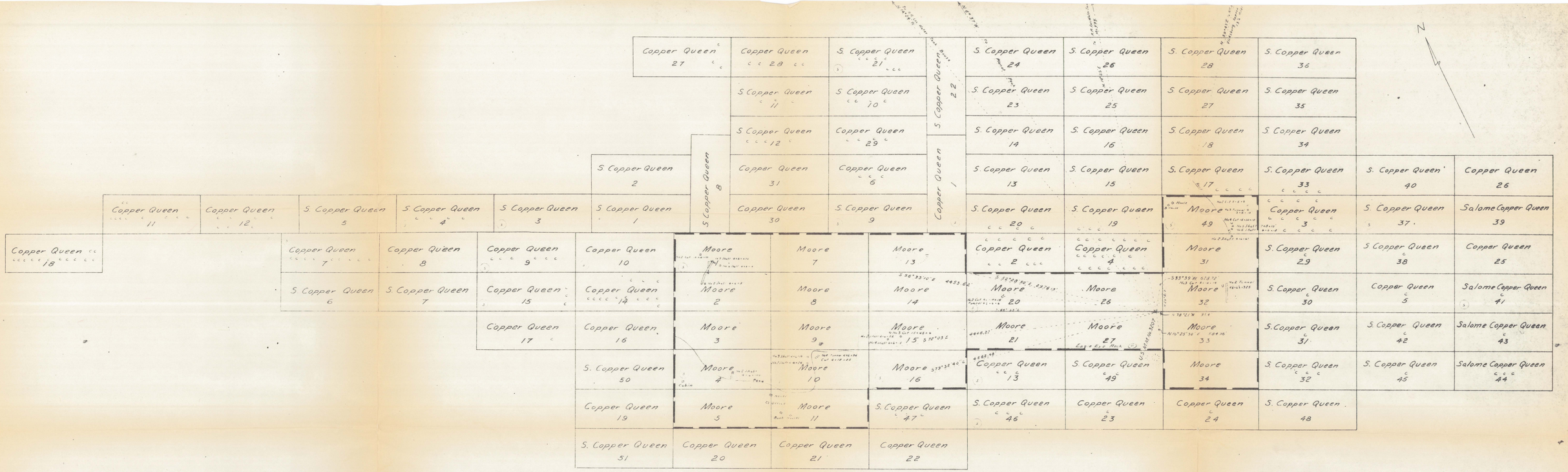
N

SCALE

0 1 2 3

MILES

ECF 6-1-38

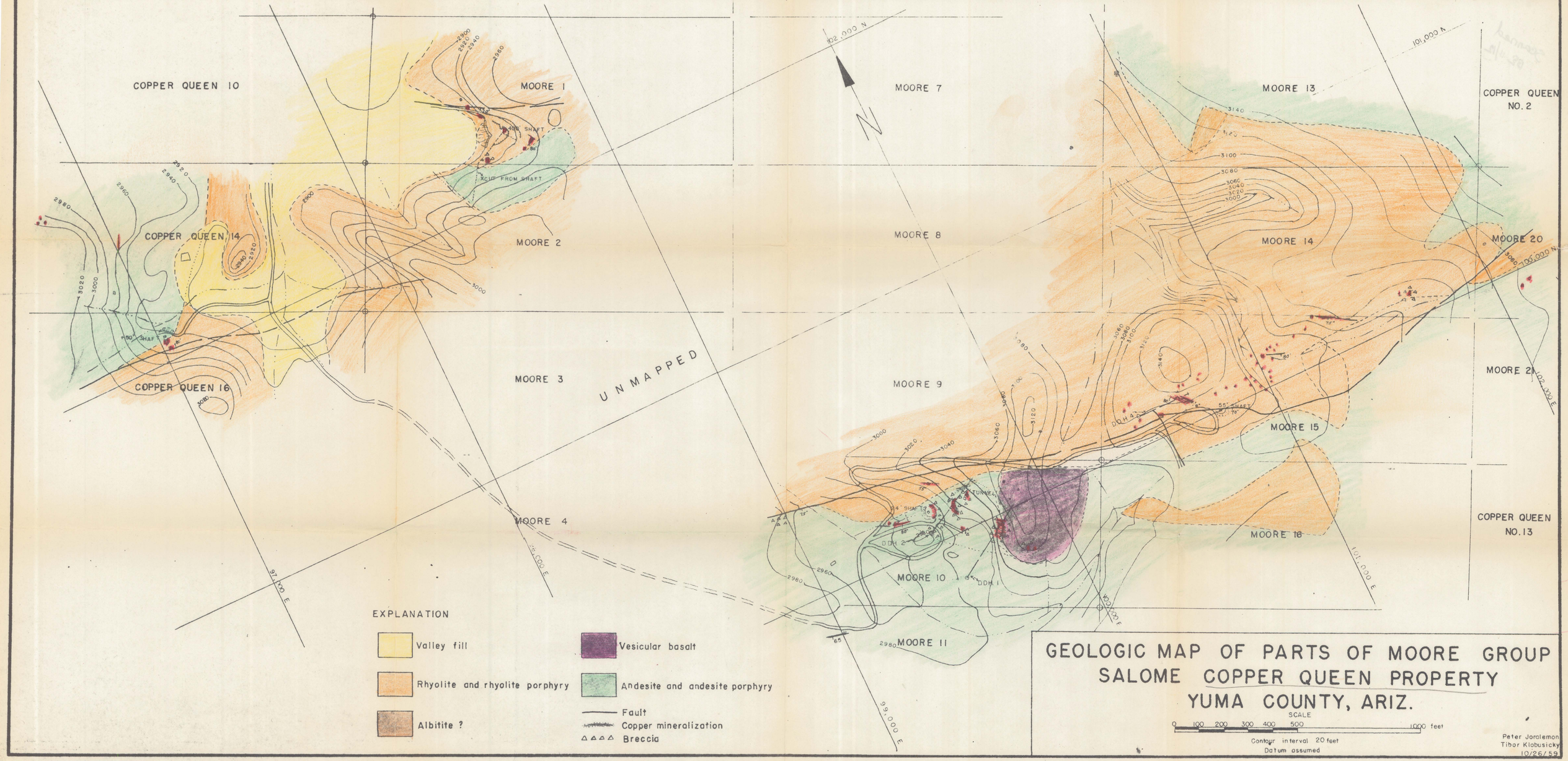


Copper outcropping marked - C
Samples - S

Moore	23 Claims
Salome Copper Queen	51 "
Copper Queen	31 "
TOTAL	105 Claims

HOVATTER - [redacted]
SALOME COPPER QUEEN GROUP
PLOMOSA MINING DISTRICT
SCALE 1 INCH = 600 FT.

E.C.F. 10-8-57



GEOLOGIC MAP OF PARTS OF MOORE GROUP SALOME COPPER QUEEN PROPERTY YUMA COUNTY, ARIZ.

SCALE

0 100 200 300 400 500 1000 feet

Contour interval 20 feet
Datum assumed

Peter Joralemon
Tibor Klobusicky
10/26/59