



CONTACT INFORMATION

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PRINTED: 12/18/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: BUNKER HILL MINE

ALTERNATE NAMES:

PINAL COUNTY MILS NUMBER: 554D

LOCATION: TOWNSHIP 8 S RANGE 18 E SECTION 14 QUARTER W2
LATITUDE: N 32DEG 44MIN 14SEC LONGITUDE: W 110DEG 28MIN 43SEC
TOPO MAP NAME: RHODES PEAK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

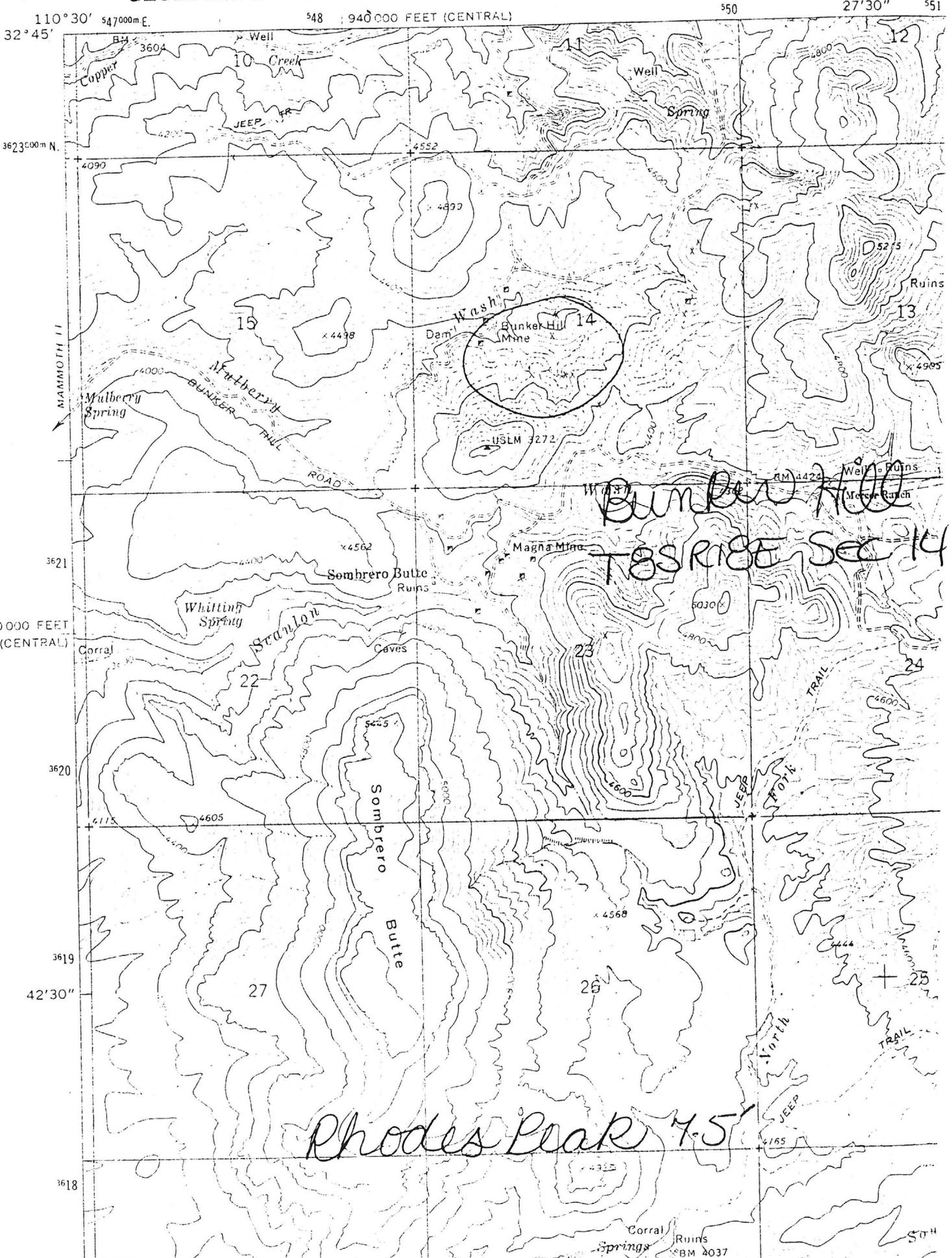
COPPER SULFIDE
COPPER OXIDE
LEAD SULFIDE
LEAD CARBONATE
MOLYBDENUM SULFIDE
SILVER

BIBLIOGRAPHY:

BLM MINING DISTRICT SHEET 741
ADM MR BUNKER HILL MINE FILE
CLAIMS EXTEND INTO SEC. 10, 11, 12 & 15
TENNEY, J.B., HISTORY OF MINING IN ARIZ.
AZBM 1927-29, P. 333
ADM MR MAGMA CHIEF MINE FILE
ADM MR U FILE PINAL CU34 (USBM NO 463.2/14091)
AZ ZINC AND LEAD DEPOSITS AZBM BULL. 158,
1951, P. 56-65
AGS 2001 FEBRUARY FIELD TRIP GUIDE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

(1 SE
JOE PEAK)



BUNKER HILL MINE

PINAL COUNTY

ABM Bull. 125 p. 97

ABM Bull. 129 p. 75

ABM 158 Chapter VII

Production Possibilities of the
Marginal Copper Mines in Arizona,
1941, p. 54-56

MAPS - Upstairs in the ABM rolled file boxes - Maps show all 5 levels and some geology
by Ramsome.

Arizona Department of Mines and Mineral Resources

INFORMATION FROM MINE CARDS IN MUSEUM

ARIZONA

MM-K092 Galena

Pinal Co.
15 mi. SE of Mammoth
Sombrero Butte Dist.,
Bunker Hill Group

MILS # 554 D

0 - AKF

Bunker Hill #100

December 16, 1948

Mr. G. A. Boardson
220 San Jose Avenue
Los Gatos, California

Dear Mr. Boardson:

Referring to your letter of December 12th regarding the Bunker Hill Arizona Mining Company, this company was incorporated July 14, 1927, listing J. E. Creighton, address unknown, Agent, and O. J. Fortun, 213 Commerce Bldg., Everett, Washington, Secretary.

The last communication the Arizona Corporation Commission had with this company was in 1941. According to our records, however, the Bunker Hill Arizona Mining Company sold to the Ari-Butte Operating Company in 1938, but we have no record of the Ari-Butte Company. We would suggest that you contact Mr. Travis Lane of 1221 North 1st Street, Phoenix, who might be able to give you some information as he has been mining in that area recently.

Yours very truly,

Roger I. C. Manning
Field Engineer

RICM:mh

December 12, 1948
220 San Jose Avenue
Los Gatos, California

Charles H. Dunning, Director
Department of Mineral Resources
Mineral Building, Fairgrounds
Phoenix, Arizona

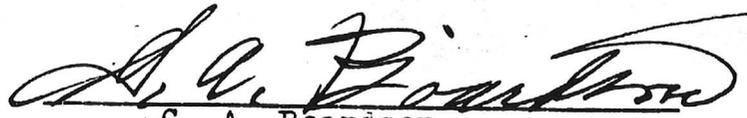
Dear Mr. Dunning:

I have been referred to you by Mr. Robert MacDonal Robertson, who thought that you could advise me regarding some mining interests which I have in Arizona.

These interests of which I speak are shares in a stock company which went under the name of Bunker Hill Arizona Mining Company in 1935. The mine is located at Sombrero Butte, Pinal County, Arizona. I understand that a smelter was built at the site. I have been unable to get in touch with any of the officials..

I sincerely hope that you can aid me in this matter. Thanking you in advance I remain

Yours truly,


G. A. Boardson

GAB:hr

~~Dec 10 - 19~~
July 7-14-27
J.E. Creighton
Agent
O. J. Fortun sec.
213 Commerce Bldg
Everett, Wash.

June 9, 1941

Mr. O. W. Blevins
Sombrero Butte, Arizona

Dear Mr. Blevins:

I want to thank you for the second questionnaire that we have just received giving us the description of the Bunker Hill Mine. This gives us complete information on your property for our report.

Thanking you again, and with kindest personal regards, I am

Yours very truly,

Chairman, Board of Governors
Arizona Department of Mineral Resources

CFW:LP

May 27, 1941

Mr. O. W. Blevins
Sombbrero Butte, Arizona

Dear Mr. Blevins:

Many thanks for so promptly returning the questionnaire regarding the possibilities of the copper production from the Bunker Hill Mine.

It would appear very evident that your property will well qualify to be in this report and, therefore, we would like to get some additional information, as we hope to include a brief statement regarding each property that is being reported upon.

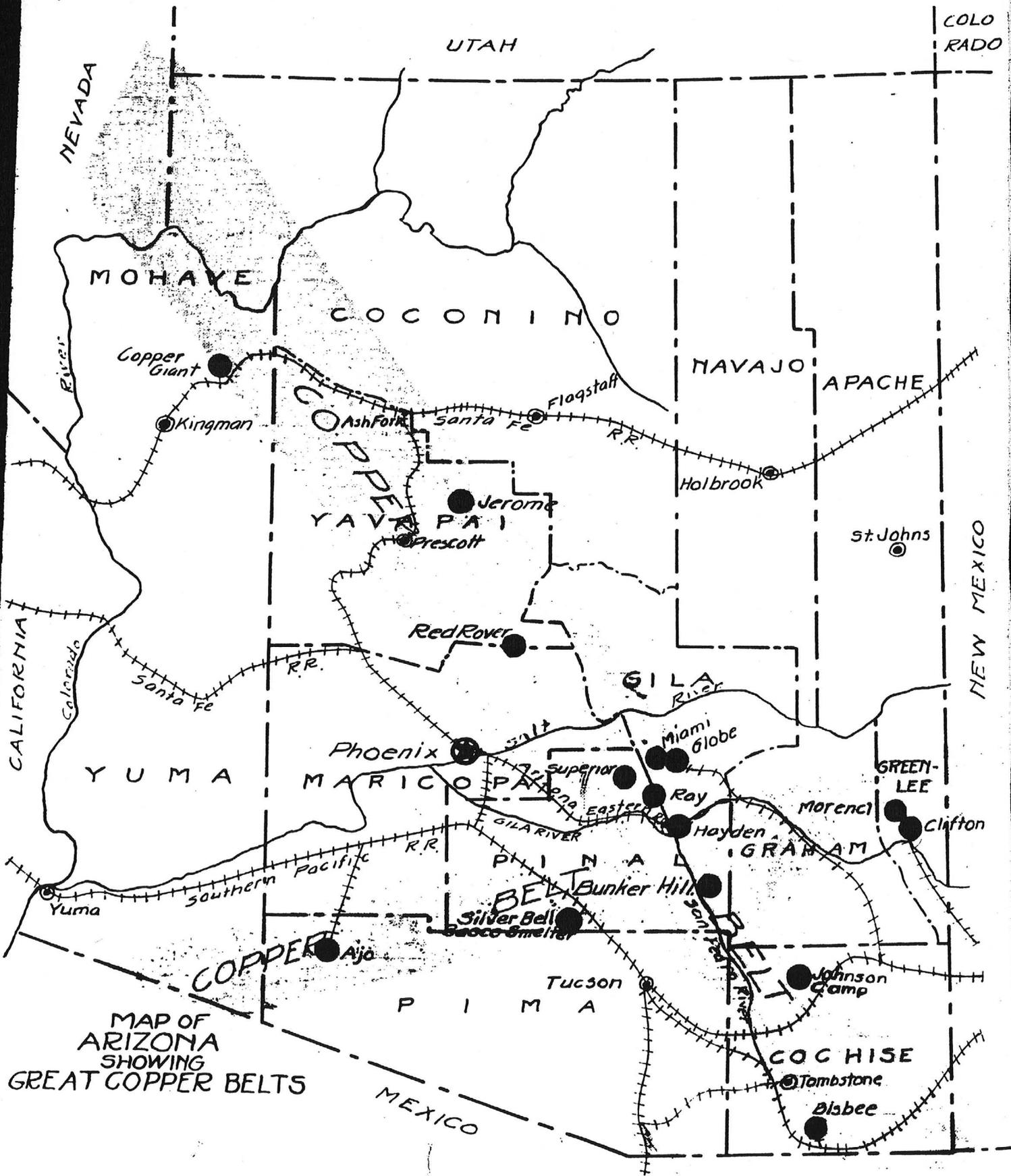
I am enclosing another questionnaire which will give us the data that we want for this brief statement. We would appreciate your making it concise.

Trusting that we will have it back shortly, and with kindest personal regards, I am

Yours very truly,

Chairman, Board of Governors
Arizona Department of Mineral Resources

CFW:LP
Enc.



MAP OF
 ARIZONA
 SHOWING
 GREAT COPPER BELTS

BUNKER HILL MINE

PINAL COUNTY

Visited the Bunker Hill mine - Pinal County - inactive. GWI WR 4-1-67

Visited Bunker Hill mine - no activity. GWI WR 7-1-67

Visited Bunker Hill mine - no recent activity. GWI WR 6-30-68

*GENERAL REFERENCES

- REFERENCE 1 F1 < ABGHT-WGM . LE DATA >
- REFERENCE 2 F2 < AOMR BUNKER HILL FILE >
- REFERENCE 3 F3 < ADM BULLETIN 158 , P. 56-65 >
- REFERENCE 4 F4 < KUHN, T.H. 1941 . PIPE DEPOSIT OF THE COPPER CREEK AREA . ECONOMIC GEOLOGY V 36, P 512 >

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

RECORD NUMBER B10 < >

REPORT DATE G1 < 8, 2, 0, 3 >
YR. MO.

RECORD TYPE B20 < X, 1, M >

INFORMATION SOURCE B30 < 1, 1, 3 >

DEPOSIT NUMBER B40 < >

FILE LINK IDENT. B50 < USOM-0040210205 >

REPORTER(SUPERVISOR) G2 < GEST, D, N, F. >
(last, first, middle initial)

REPORTER AFFILIATION G5 < ABGHT >

SYNONYMS A11 < >

SITE NAME A10 < BUNKER HILL MINE >

LOCATION

MINING DISTRICT/AREA A30 < BUNKER HILL >

COUNTY A60 < PINAL >

PHYSIOGRAPHIC PROV A63 < 1, 2, 2 >

DRAINAGE AREA A62 < 1, 5, 0, 5, 0, 2, 0, 3, 1, LOWER COLORADO >

QUADRANGLE NAME A90 < (RHOES) PEAK >

SECOND QUAD NAME A92 < >

ELEVATION A107 < 4, 200, Y, F, T >

STATE A80 < A, Z >

COUNTRY A88 < U, S >

LAND STATUS A64 < 4, 9, 1, 1, 1, 9, 2, 9, 1 >

QUADRANGLE SCALE A100 < 2, 4, 0, 0, 0 >

SECOND QUAD SCALE A91 < >

JTM

NORTHING A120 < 3, 6, 2, 2, 0, 9, 0 >

EASTING A130 < 5, 4, 8, 8, 6, 8 >

ZONE NUMBER A110 < 1, 1, 2 >

*ACCURACY

ACCURATE (circle)

ESTIMATED EST < >

GEODETTIC

LATITUDE A70 < > N

LONGITUDE A80 < > W

CADASTRAL

TOWNSHIP(S) A77 < 0, 0, 8, S >

SECTION(S) A79 < 14 >

SECTION FRACTION(S) A76 < WEST CENTER >

MERIDIAN(S) A81 < GILA AND SALT RIVER >

RANGE(S) A78 < 0, 1, 8, E >

POSITION FROM NEAREST PROMINENT LOCALITY A82 < IN MULBERRY WASH, 1 MILE NNE OF SOMBRERO BUTTE >

LOCATION COMMENTS A83 < >

This specimen is now catalogued in the ADMR Museum (see K number)
L-8

MINERAL SPECIMEN FOR DEPARTMENT OF LIBRARY AND ARCHIVES

K092

(Do not write in this space)
Ore _____
Cabinet _____
No. _____

(Wrap each specimen separately, or place it in a substantial bag, by itself, with a number attached, identical with the number on this card.)

Specimen No. 20, collected by Newton Wolcott
Field Engineer

Name of ore Lead, silver, copper, gold

Operator Bunker Hill Mining Co.

Minerals contained Galena, Tetrahedrite, chalcopyrite & quartz also ~~breccia~~

Mine active or inactive Active

If inactive, when operated _____

Gangue Quartz

Specimen presented by O. W. Blevins

Depth at which taken 225 feet below surface

Date December 28, 1939.

Approximate mineral content (in terms of average per ton) Total value of specimen

Notes (Any general information regarding the history of the property.)

approximately \$50 per ton in gold, silver, lead and copper
Name of mine or claim _____

This is an old property just being reopened

Group Bunker Hill Group

District Sombrero Butte

Location (distance and direction by highway from what town) 15 Mi. S.E. of Mammoth

If more space is desired for notes, use other side.

Owner of property Ari-Butte Operating Co.

716402

12.0 x 11.0 x 10.0
1.19.40

BUNKER HILL MINE

PINAL COUNTY

Corporation Commission reports that the Bunker Hill Arizona Mining Company is defunct.
TPL WR 1-14-61

Dave McGee, Box 332, Oracle - re Bunker Hill mine. Mr. McGee recently purchased the Bunker Hill mine and leased some surrounding claims. Diamond drilling by Glen Thatcher, Tucson, was started on Feb. 27, 1964 and two holes have been drilled so far. Report to follow. ALJ WR 3-20-64

Bunker Hill Arizona Mng Co.

12/16/48 Last communication w Corp Comm
in 1941.

Sold to Ari-Butte Operating Co. in 1938



no such no 400

Mr. O.W. Blevins

723 Second Ave.

Seattle, Washington



NAME OF MINE: BUNKER HILL

COUNTY: PINAL S
DISTRICT: SOMBRERO BUTTE
METALS: PB, CU

OPERATOR AND ADDRESS:

MINE STATUS

DATE:

DATE:

5/1/44 Frank Poole, Sombrero Butte 5/1/44 Closed

BUNKER HILL MINE

Winkelman, Ariz.

O. W. Blevins
Sombrero Butte

1st-5/29

4/9 - Complete

AS+R - E.P.

'36

377. 3027 Lbs.

Blevins, O. W. (5-43) Rt. 5, Box 72 8-1842
Sombrero Butte, Arizona Tucson

Ari - Butte Operating Co.

See Roads

See - MS-58

Re - Mine Access Roads

See SULPHIDE MINE

Re - application for "C" loan

See MAGMA CHIEF - Re "C" loan application 2-10-43

See MAGMA CHIEF - Re road application 11-15-44

ARI BUTTE OPERATING CO.

(Bunker Hill Mine)

O. W. Blevins
723 Second Ave.
Seattle, Wash.

5/16 - 1st

5/29 - 2nd

1940. AS+R - H. 107. 1277 Lbs.

File Copy
DATA ON BUNKER HILL MINE IN PINAL COUNTY, ARIZONA

Location of Property. The mining claims, all unpatented, are situated within the Bunker Hill Mining District, near Sombroso Butte, in Pinal County, State of Arizona. The mine is reached from railroad station at Winkelman, Arizona, by way of Mammoth, a distance of 38 miles; and from Tucson, Arizona, by way of Oracle Junction and Mammoth, a distance of 65 miles. The property is on the west flank of the Galiuro Mountains at an elevation of about 4000 feet.

The Mining Property. The property consists of 32 contiguous claims covering the group and 1 claim nearby covering the townsite of Sombroso Butte. The group are joined on the north by holdings of the Arizona Molybdenum Company and on the south by the Magas Chief Mine. A map of the group is available.

History. The claims which constitute the holdings were mostly located prior to 1917. In that year a corporation was formed and claims signed over to the corporation. Prior to that date little effort had been made to development, effort had been made to prospect the copper outcroppings along the contact between Granitic-diorite and quartz porphyry about 600 feet south of the present shaft. An attempt had been made to reach that deposit in depth by means of a tunnel leading 150 feet where a lead ore body was encountered. This tunnel is now the 66-ft level of the mine at the shaft. Drifts were made east and west on the vein and hand-sorted carload of ore was shipped to the smelter. A winze was then sunk from the tunnel level to a depth of 85 feet on the vein from which a second carload of ore was shipped. Records of these two carloads have been lost.

In the year 1919 the shaft was raised from the tunnel level to the surface and, after the installation of a hoist, the shaft was deepened to the 150-ft level. From this work a third carload of ore was sold netting \$ 1,355.26--a net settlement value of \$53.67 per ton. Deepening of the shaft continued and where the shaft crossed the vein below 300 feet a fourth carload of ore was shipped. Sinking continued until the shaft reached the 300-ft level--where a cross-cut was run for a distance of 143 feet to the north and 45 feet to the south. Short drifts were run on the vein both east and west.

In 1921 a drift was driven for 100 feet east of the shaft and 75 feet to the west on the 150-ft level. In the year 1922 the west drift was continued an additional 84 feet and another carload of ore was sent to the smelter. In 1923 stoping operations were commenced above the 150-ft level from which 2 carloads of lead ore and 1 carload of copper ore was shipped. Only sufficient ore was extracted from the stopes to allow the stoping operations to continue and the shipments were made by hand-sorting the extracted ore. These three shipments aggregated 65 tons and gave net returns of \$ 3,460.21 or \$53.43 per ton. Stoping operations were continued on this level in 1924 and the stope carried up to the 66-ft level. From these operations 188 tons of lead ore and 53 tons of copper ore were sold, aggregating a net return of \$ 12,474.80. The lead shipments averaged 39% lead and the copper shipments 9.51% copper. Silver varied from 11.5 to 22.2 ounces per ton; and gold from .108 to .300 ounces per ton. The ore averaged \$51.75 per ton after smelting and freight charges were paid.

In 1925 a crosscut was run on the 225-ft level a distance of 90 feet south and 55 feet north. Drifting was undertaken westward on the vein and ore was encountered at 20 feet from the shaft in the hanging wall at the base of the drift. From this point 15 tons of high grade was taken from the bottom of the drift with no ore in the back or top of the drift. A stope was raised up toward the 150-ft level which was carried up about 50 feet as a shrinkage stope. Some high grade was sorted from the ore on this stoping operation.

In 1926 additional drifting was done both east and west on the 300-ft level and the shaft sunk to the 400-ft level. A crosscut was driven south from the shaft on the 400-ft level which cut the vein 19 feet from the bottom of the shaft; and from this point drifts were run on the vein 49 feet to the east and 115 feet to the west. These drifts on the 400-ft level prove the vein to be much wider than in upper workings and both faces in the drift were stoped in good milling ore.

In 1927 a 50-ton flotation mill was constructed on the property but, due to the low price of copper and lead was closed down after a test run. (It was practically idle until in 1942 and after the fire was dismantled and equipment sold)

In September of 1938 the property was leased to a Mr. C. V. Blevins who had been connected previously with option and lease holders operating the property under the name Bunker Hill Arizona Mining Company. Mr Blevins soon organized the Ari-Butte Operating Company and operated under that name, but under the lease held in his own name, until the shaft and power house burned in May of 1942. In the fall of 1940 they started opening up and reconditioning the mine. Old workings were timbered where necessary and where ore could be found in the old workings it was mined and milled.

Starting in July of 1941 the mine was unwatered to the 300-ft level. This level was cleaned out and retimbered and a small amount of ore extracted from the old stopes and milled. In the winter of 1941 the mine was unwatered to the 400-ft level which is the level of the bottom of the mine at the present time. That level was cleaned out and retimbered, the shaft between the 300-ft and 400-ft levels was repaired, and air and water lines installed, and track laid on the 400-ft level in preparations for stoping operations. The shaft had been made into a three-compartment shaft from the surface to ten a little below the 300-ft level, and drifting carried forward on the 300-ft level to a distance of 308 feet west and about 380 feet east. Ore of good milling quality was encountered in both drifts.

Present Conditions (1950). The old workings of the mine, from the 300-ft level to the surface, are wet; and was making approximately 5000 gallons each 24 hours. A sump was blasted out on the 300-ft level to catch the water from the upper workings, and water was pumped from this sump to the surface. Practically no water was encountered at the 400-ft level other than that coming from above the 300-ft level; but it is presumed that the mine is now water filled. When the shaft and power house burned the debris from all the way down the shaft dropped to the bottom, including the pump. Every indication seemed to point to the conclusion that the fire started in the shaft; and when reaching the surface jumped to adjoining power house. It was during the night with no person present. All machinery in the power house was practically ruined. With the owners in no condition to place and continue a guard or watchman on the premises it was determined advisable to sell off the equipment which would otherwise be carried off. This was done and proceeds turned to creditors. Accordingly the only part of the mine that can be seen is what is evident at the termination of the 150 ft tunnel on 66-ft level, which reaches the shaft at that level.

Geology and Topography. The prevailing country rock on the property is a wide spread diorite or grano-diorite which has been intruded by irregular dykes of quartz porphyry or quartz diorite diorite porphyry, together with some intrusions of more basic rocks.

The grano-diorite constitutes the prevailing country rock and is found over a large area to the north, west, and south, where not covered by later extrusions or by the Gila Conglomerate. The diorite weathers rapidly and normally forms small to large boulders as frost and water find their way along joint planes in the diorite. These joints are very prominent, very persistent, and very regular. Within the area covered by the mine (and also over the Magma Chief Mine and the holdings of the Arizona Molybdenum Corporation) the joint planes strike regularly east and west and dip between 75 and 85 degrees to the south.

The joint planes provide easy access to mineralizing solutions ascending from the magmas below, and it is undoubtedly to this condition that can be attributed the wide-spread mineralization in the area.

An irregular dyke of quartz porphyry has intruded grano-diorite. The porphyry is exposed for a width of about 600 feet south of the shaft and strikes northwestward for two or three miles, widening in some places to from 1200 to 1800 feet. The first 80 feet of the Bunker Hill shaft was sunk through this formation. East of the shaft it spills out toward the northeast and appears to be the material which forms the broken fragments of the breccia encountered in the north drift of the 300-ft level.

In character the porphyry is slightly harder than the surrounding diorite, making the outcrop quite prominent. It weathers to a bluish pink making it easy to distinguish from the dull brown of the weathered diorite.

The quartz porphyry is younger than the grano-diorite but it has been subjected to very much the same pressures which have acted upon the diorite. This pressure with the accompanying movement has crushed large areas of the brittle porphyry, forming a brecciated condition through which mineralizing solutions have readily found their way, and wherever these brecciated zones occur conditions are very favorable to ore deposition.

As noted above, the great groundmass of grano-diorite rocks are split by permanent joint planes striking generally east and west. Faulting has occurred along these joint planes with a horizontal component in the displacement. These fissures persist with an east-west trend over an area of many square miles.

The Bunker Hill lode occupies a fault fissure close to the contact of the grano-diorite with the intrusive quartz porphyry. The collar of the Bunker Hill shaft was started in porphyry but crossed the contact into grano-diorite shortly below the 66-ft level. The main fissure containing the Bunker Hill lode strikes generally North 70 degrees west. The fissure dips 85 degrees north to the 225-ft level, at which point the dip reverses to an angle of about 85 degrees south. Where it is not mineralized, the fissure has well defined walls filled with one to six inches of gouge. Faulting is evidenced in the fissure and has occurred both subsequently to and prior to mineralization. The extent of the displacement cannot be determined but involves a considerable horizontal component. Those portions of the fissure occupied by the ore shoots show considerable widening and at times horses of considerable size are included in the ore.

Mineralization. While there is considerable evidence of replacement, the banded character of the vein suggests that fissure filling was more prominent. The sequence of deposition was first high-grade copper as chalcopyrite, followed by tetrahedrite containing the silver sulphide argentite and some calcocite. This was followed by deposition of quartz, and then by the lead sulphide galena, and finally by barite. While the copper minerals were deposited mainly as streaks of high grade the lead minerals were more generally deposited in a quartz gangue. In addition, galena with minor amounts of chalcopyrite has impregnated the country rock for a considerable distance south of the main fissure. Calcite is not present as a gangue mineral.

The ore shoots as developed occur over a width of about 400 feet and have been followed for a depth of nearly 400 feet, with ore still continuing strong in the deepest workings.

Faulting and crushing preceded ore deposition and some faulting has occurred since the ore body was formed. These phenomena give rise to ore shoots of lenticular character and this appears to be characteristic of the deposition in the Bunker Hill Mine. The ore can be expected to pinch out wherever displacement has caused a protruding irregularity in the hanging wall to come in contact with a similar irregularity in the foot wall. Continued drifting or sinking through the barren zones should uncover areas where similar displacement has again made conditions favorable for ore deposition.

In deepening the shaft to the 400-ft level the ore was not followed and the small amount of drifting done to the east and west on that level is insufficient to show whether the ore exposed is a part of the ore shoot to the east or to the west of the shaft. It is probable that this ore, exposed on the 400-ft level, is a continuation of the ore exposed in the east drift of the 300-ft level and that this constitutes a second ore shoot raking similarly downward to the west, or that the two shoots are united at this level. If the former is true, future drifting westward on the 400-ft level will be required before the main shoot is entered, although the face of this drift still shows 400 feet of ore.

Water Supply. The water supply for milling is obtained from a retaining dam was constructed below the tailings pile so that the water from the tailings drains into the pond and is pumped back to the mill tanks. The water pumped from the mine was added to it each day.

McGee loaned Axel a copy of a report on the Bunker Hill Mine & Axel made these copies for our file.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine 'Bunker Hill Mine

Date March 26, 1964

District Bunker Hill District, Pinal Co.

Engineer Axel L. Johnson

Subject: Field Engineers Report. - Information from Dave McGee, Mgr., Little Hill Mines

Location: Approx. Sec. 11 - T. 8 S., R. 18 E. - at Copper Creek.

Owner: (1) Little Hill Mines, Box 332, Oracle, Ariz. - 1 unpat. claim.
Purchased recently from Mrs. Morris Wilkins, Morris, Texas
(2) Fred E. Lehman, 2738 N. Geronimo Ave., Tucson - 5 unpatented claims
surrounding (1)

Lessees: Little Hill Mines, Box 332, Oracle, Ariz.
'Dave McGee, Mgr.
Lease with option to buy the 5 unpatented claims owned by Fred E. Lehman.

Number of Claims: 6 unpatented claims as shown above.

Principal Minerals: Copper, lead, silver, occurring as chalcopyrite, tetrahedrite, galena, chalcocite and argentite.

Present Mining Activity: Repairing and retimbering Bunker Hill shaft and mine dewatering with 6 men working on 2 shifts will be started on March 30th.

Geology & Mineralization:

- (1) See enclosed report by unknown writer in 1950.
- (2) See Arizona Bureau of Mines Bull. #158 "Arizona Zinc and Lead Deposits" - Chapter VII on the Bunker Hill District.

Ore Values: Mines Handbook of 1931 states "A cross cut being driven on the 300 ft. level, in 400 ft., reported to have cut a 5 ft. ledge assaying 4.5% copper, 7 oz. silver, and 5.0% lead. Several carloads of ore shipped to the smelter ran \$60 per ton in lead and silver during late 1925."

Past History & Production:

- (1) Arizona Bureau of Mines Bull. #140, "Arizona Metal Production" gives the production of the Bunker Hill Mine, 1917 to 1929 as 100,000 lb. of copper, and \$5,000 in silver for a total value of \$20,000.
- (2) See enclosed report by unknown writer in 1950.
- (3) A letter by Lincoln Stewart, U.S. Bureau of Mines, of March 4, 1960 - states "The power house, hoist and shaft timbers down to the 100 ft. level were burned in May, 1942."

Old Mine Workings & Condition: See enclosed report by unknown writer, 1950.

Review of Recent Operations: (1) Diamond drilling was started on Feb. 27, 1964 by Glenn Thatcher, Tucson on contract, and was finished on Mar. 26, 1964. Two holes were drilled, the first hole going down to a depth of 277 ft., and the second hole to a depth of 600 ft. Mr. McGee stated that the results of the drill samples indicates that there is an ore body. Drilling is finished for the present, but may be resumed later.
(2) Timbering and repairing the shaft will start on Mar. 30 with 6 men working. The shaft will be a 3 compartment, with a 16 ft. wall plate and a 6 ft. end plate. Mr. McGee says they will have to timber the shaft down to the 100 ft. level.

Bunker Hill Mine (continued)

Proposed Plans: Future plans are as follows: -

- (1) Dewater the shaft all the way to the 400 ft. level.
- (2) Repair the 300 ft. level.
- (3) Underground diamond drilling on the 300 ft. level.
- (4) Drifting on the 400 ft. level.

The ore may be milled at the Burney Mill in Mammoth.

Name of property. Bunker Hill Mine, Controlled by Ari-Butte Operating Co.

Location and accessibility of property. The property is located 65 miles N.E. of Tucson, Ariz., and 14 miles from Mammoth, Ariz. It is situated in the Galurio Mountains and is a part of the Bunker Hill Mining District in Pinal County. The property lies about 11 miles East of the San Pedro River and 40 miles south of the American Smelting and Refining Plant at Hayden, Ariz. It is reached via paved and improved county roads from Tucson to Mammoth and fair mine road from Mammoth to the property.

History of ownership. The property was formerly owned by the Bunker Hill Copper Company from 1917 until 1927. It was then sold to the Bunker Hill Arizona Mining Company under lease and bond. The above company developed the property until Sept., 1938 when it was acquired under lease and bond by the present owners, the Ari-Butte Operating Company.

Production history. The only production records we have of this property show that 968 tons of sorted ore brought \$35,349.05 or an average of 36.50 per ton. This was sorted ore. During the winter of 1940-1941 about 20 tons of high grade ore and about 35 tons of concentrates were shipped to the smelter, bringing approximately \$1,400.00. Due to the fact that the mill recovery was not as high as it should have been recent activities have been confined to mill tests and flotation tests run with the help of the Arizona Bureau of Mines. Results from these tests have been very satisfactory, showing recovery of better than 90 %.

General geology (brief) The prevailing country rock on the Bunker Hill property is a wide spread diorite or grano-diorite which has been intruded by irregular dykes of quartz porphyry or quartz diorite porphyry, together with some intrusions of more basic rocks. The Bunker Hill Lode occupies a fault fissure close to the contact of the grano-diorite with the intrusive quartz porphyry. The collar of the Bunker Hill Shaft was started in porphyry but crossed the contact into grano-diorite shortly below the 66 foot level. The main fissure containing the Bunker Hill Lode strikes generally North, 70 degrees west. The fissure dips 85 degrees north to the 225 ft. level at which point the dip reverses to an angle of about 75 degrees south. While there is considerable evidence of replacement the banded character of the vein suggests that fissure filling was more prominent.

Ore occurrence. The ore occurs as high grade copper in the form of chalcopyrite, as tetrahedrite containing argentite and as lead silver galena. The ore body varies in width from a few inches to nine feet.

Ore reserve (quantities and values). Ore reserves are estimated as follows. Approximately 5000 tons of ore on the dump (partly oxidized) having a value on present metal prices of \$8.40 per ton. Approx. 4000 tons broken in the stopes having a value of \$10.00 per ton and an estimated 14000 tons between the levels having a value of over \$12.00 per ton.

Accessory metals of value. The chief metals of the vein are copper, silver, lead and gold. The ore also contains a small amount of bismuth and antimony.

Development work done. Development work consists of 400 feet of shaft (300 feet three compartment and 100 feet one compartment), and five levels having a total footage of 1600 feet of drifts and 1085 feet of cross cuts in addition to numerous raises between the levels.

Plants (with capacity) already on property. Equipment on the property consists of two diesel engines having total horse power of 360 together with generators and electrical equipment. 4000 lb. double drum electric hoist. 557 cu. ft air compressor. Complete blacksmith shop, complete assay office. 50 ton flotation mill (complete with the exception of filter) including Acme Crusher, Marcy Mill, Door type classifier, Wilfley sand pumps and ten Denver Equipment Co. flotation cells (six cells bulk flotation, four cells differential flotation.) The entire plant is electrified. Adequately equipped with small tools, track, pipeline and mining equipment.

Date June, 5th, 1941.

Signed

O. W. Blevins,

O. W. Blevins.

Arizona Department of Mineral Resources, Capitol Building, Phoenix, Arizona

QUESTIONNAIRE

Relating to survey of potential copper production from Arizona small and marginal mines for national defense purposes;

Name of mining property..... Bunker Hill Mine

Location..... Sombrero Butte, Pinal County, Arizona,

Ownership..... Ari-Butte Operating Co.

Name of Manager..... O.W. Blevins

Post Office address... Sombrero Butte, Arizona,

Copper production (pounds) during each of the past five years:

1936... none 1937... none 1938... none

1939... none 1940... \$1000.00 ←

1941 rate of copper production based upon first four months... none

How much copper could this property produce annually

on a 14 cent price? ... 365,000 lbs.

on a 16 cent price?

on an 18 cent price?

on a 20 cent price?

What price copper is necessary for this property? ... 14 cents per pound?

What plant facilities would be required and how much is the estimated cost in the event a 14 cent price could be assured? .. Plant and mill already installed.

a 16 cent price could be assured?

18 cent price?

20 cent price?

For what length of time would assurance of price and sale of full production be necessary? ... One year.

How long would it take for financing has been provided, before production on the above basis could be reached?60 days.....

Does your organization have the facilities for raising the necessary capital to increase production to the amount stated?No.....

If not, do you believe that your company would be amenable and agreeable to government financing?Yes.....

Do you believe that you could finance the capital investment yourself on some such basis as a guarantee of sale of output at a fixed price and for a definite period, with damages to cover unamortized portion of capital investment in the event the government failed to take the output for the agreed upon time - or some similar arrangement?Yes.....

Please let us have your comments on the probability or possibility of your organization participating in such a program for national defense purposes.....

.....Although only partially developed, our property could assure.....
.....an output of at least 1000 lbs of copper per day for the next.....
.....year and a half.....

What would be your ideas on financing and carrying out such a plan as is indicated by these questions?A \$10,000. loan from the government to be used...
.....as operating capital.....

Kindly list names and addresses of other potential copper producers in Arizona whose operations should be included within this survey.....

Date..... May, 26th, 1941.....

Signed, *W. B. Lewis*

3-20-1910
Report on the property of the BUNKER HILL Copper Co.

LOCATION:- The property is located in Bunker Hill Mining District, Pinal County, Arizona, at the foot of the Galuro range of mountains, at an altitude of about 4000 ft. above sea level.

It is reached by automobile road, from Winkelman, a station on the Arizona Eastern railroad, up the San Pedro valley, past the town of Mammoth 4 miles, thence up along and over the low foot hills to the camp a total distance of $36\frac{1}{2}$ miles. The first $27\frac{1}{2}$ miles, up the San Pedro valley is practically level. The remaining 9 Miles is on a good grade. From the camp the road is followed about 2000 ft. thence a good trail leads to the mine workings, a distance of about 3000 ft. An automobile makes the run from Winkelman to the camp in $2\frac{1}{2}$ hours.

CLAIMS:- There are 34 claims in a compact group, totaling about 575 acres, all held by possessory title.

TOPOGRAPHY:- The central portion, of the area is characterized by low hills, but the eastern and western portions are more rugged, with some rather deep gulches and steep hillsides, but the whole area is easily accessible.

GEOLOGY:- The general formation, of the district is grano-diorite, much fissured and cut by later eruptive dykes.

On several of the highest elevations, quartzite occurs, which is probably the fragmentary remains, of the now nearly eroded, but at one time overlying sedimentary rocks. Immediately to the southwest is a very prominent quartz^{ite}/reef, which in places rises several hundred feet perpendicularly. It has a general northwest southeast strike and shows on both sides of Mulberry wash. (see sketch).

The general geological conditions are similar, to those found in all of the properties of the district, including the Old Reliable mine of the Copper State Co, the developed area of the Calumet and Arizona Co., the Childs group, the Southwestern Inspiration and the Sombrero Butte. Much evidence of fault fissuring exists, especially on the western half of the area. In two localities the fault breccia can be traced for several hundred feet, showing copper at frequent intervals. This breccia consists mostly of finely broken, silicious rock, cemented in a fine grained matrix, containing much of the hydro-mica, sericite.

The dump of a water filled shaft, said to be 50 ft. deep, on the Copper Bell claim is largely made up, of quartz-monzonite, with copper sulphide disseminated through the whole mass. Whether it is from the same magma as the general mass of the diorite, or not, I am unable to say, as the surficial structure gave no evidence, of its existence.

DEVELOPMENT: - On the Dixon Camp claim, a cross cut tunnel has been run a distance of 226 ft., course S 10. degrees E. 142 ft. in from the portal, a vein was cut and drifts extended, 82 ft. east and 20 ft. west. 15 ft. east of the crosscut a winze has been sunk 60 ft. and drifting is now being started from that point. The portal, of this tunnel is near the north end line of the claim.

On the Black Metals claim, several shallow shafts have been sunk, also a number of open cuts have been made. One shaft 40 ft. deep is near the center of the claim and another 40. ft. deep is near the south side line, about 400 ft, from the west end line. A tunnel now caved and inaccessible, said to be 400 ft. in length, has been driven from the west end, of the claim in a northerly direction.

Two shafts, each 50 ft. deep, inaccessible, on account of water, are located on the Copper Bell claim, about 400 ft. from the west end line.

At about the center, of the Clipper claim a shaft has been sunk to a depth of 40 ft. on a small fissure. Other shallow openings have been made, on the same vein all of which show high grade copper ore.

Considerable ore is said to have been shipped from the workings of the Vella claim, which consist of several shallow shafts and cuts. These shipments were made many years ago, the ore running high in silver and copper.

Scattered over the whole area, are many shallow workings, nearly all of which show some ore. As this work was mostly done, as assessment work, it does not tend to develop the property.

ORE OCCURRENCE:- The mineralized portion, of the vein encountered in the cross cut tunnel on the Dixon Camp claim, will average at least 3 ft. in width. This is all ore, either of a shipping or concentrating grade. The gangue material is a brecciated quartz diorite, in which most of the feldspar has become kaolinized, together with stringers and bunches, of quartz. Some mineralization, extends into the walls, which are composed of the ordinary diorite, of the ## district, but most of the workings, on the vein, show it to be well defined and clean cut, with every evidence, of being a fault fissure. There is no evidence, of its existence on the surface, comparable with the underground showing, and the finding, of it was unlooked for, the tunnel having been driven, for the purpose of opening a surface showing of copper ore, still beyond the tunnel heading. The vein is cut at a depth, of about 40 ft. from the surface, which added to the depth of the winze, makes 100 ft. the present deepest

workings. The character, of the ore is lead-copper, carrying gold and silver, with a small amount, of pyrite and barite. The lead occurs as galena, and the copper as chalcopyrite and tetrahedrite.

One shipment, of 66548 pounds, dry weight, has been made, which gave a return, from the smeltery, of 6.8 % copper, 31.8 % lead, 19.7 ounces silver and 0.22 oz. gold, equalling a value per ton, as shown by the smeltery sheet, of settlement, of \$81.84. With the ~~###~~ present price of metals, copper at 16 cents, lead at 5 $\frac{1}{4}$ cents, after allowing for the usual deductions, the value would be, about \$60.00 per ton. There is about 250 tons of ore in the concentrating ore dump. I made a careful sampling of it, by cutting 12 trenches. The assay showed it to contain 4.64 % lead, 3.78 % copper, 6.8 ozs. silver and 0.08 oz. gold. By using the flotation process, of concentration, 90 % of the values, of the sulphides can be saved, together with as good a saving of the gold and silver, and the ratio, of concentration would be, about 3 $\frac{1}{2}$, into 1, allowing for the contained pyrite. The concentrates would have a value, of about \$70.00 per ton, at the present price of metals.

Across the gulch, to the west, about 1000 ft. distant, on the Copper Bell claim, in some very shallow workings, ore of a similar character, to that described above is found. It occurs in a large, persistent vein and may be the same one as that which is being worked, on the Dixon Camp claim, but sufficient work has not been, to establish this fact. However the strike and locus strengthens this view.

On the Copper Bell claim, where the two 50 ft. shafts have been sunk, there is considerable copper carbonate ore showing, at the surface. The formation here has been considerably disturbed, with some faulting. Although water precluded an examination, of

these shafts, a careful examination, of the dumps, satisfied me that practically all, of the material taken from them is a low grade, disseminated, copper ore occurring, largely in the quartz monzonite.

A careful sampling of the dump, from the lower shaft, assayed $2\frac{1}{2}$ % copper and 80 cents in gold and silver. The copper is all sulphide, chalcopyrite and bornite, with very little pyrite and is a good concentrating ore.

On the Black Metals claim, immediately north of the tunnel on Dixon Camp, carbonate and oxide of copper is exposed in several places. The surface exposure here is quite complex, the later intrusive porphyry and diorite showing, without any apparent regularity in either. In an open cut, a sample, all carbonate, from a width, of about 12 ft, assayed $2\frac{1}{4}$ % copper and 30 cents in silver. The dump, of the 50 ft. shaft near the south side line contains considerable pyrite, occurring mostly in the diorite.

In several openings, to the north the complexity, of the formation is shown, consisting of porphyry, diorite and much breccia, all containing copper as carbonate.

Very strong brecciated vein croppings appear in the vicinity, of the Bunker Hill No. 4 and Yellow jacket, also on the Porphyry # Dyke and Little Butte claims, but nothing has been done to prove the existence of ore.

Some ore has been shipped from the Clipper shaft, which is said to have run well in silver and copper. The vein is small, but persistent, in the diorite.

A small vein shows, for practically the whole length, of the Vella claim. Shallow shafts have been sunk at frequent intervals and considerable high grade silver-lead ore, it is claimed, was shipped 30 years ago and all indications would seem to bear out

the claim.

TRANSPORTATION:- The freight rate, from the mine to Winkelman where loads are provided both ways is \$7.00 per ton. With teams going back empty there would be a proportionate increase. A railroad survey has been made to the property, of the Copper State Copper Co. on Copper Creek, about 2 miles to the north, but construction has not yet been started.

WOOD & TIMBER:- There is sufficient wood in the district, for domestic purposes, but timber and lumber, for mining purposes must be brought in from the railroad.

WATER:- There has been developed in the quartzite formation, about 800 ft. to the southwest, of the camp a splendid supply, of water sufficient, for all domestic purposes, and some irrigation. It is piped to the camp under a head, of about 300 ft.

Nothing has been done in an effort to develop water, for milling purposes, near the mine workings. There are springs in that immediate locality and all of the shafts have some water upon reaching a depth of 50 ft., and I believe that sufficient water, for a 50 to a 100 ton mill can be developed.

CLIMATE:- As the altitude is about 4000 ft. the climate is usually mild through the year. There are some hot days, but the extreme heat, at this altitude is never prolonged.

MINING COSTS:- Where work is now being carried on, the costs are moderate. The Dixon Camp vein is very easily worked, and usually requires very little timbering. However some timbering is required in the drifts, and shafts will require square sets and lagging. Under present conditions drifts can be run, for \$3.00 per ft. not including timbering. The 60 ft. winze has cost \$30.00 per ft. including timbering. Wages run from \$3.00 to \$5.00 per day.

CONCLUSIONS:- The work now being done on the Dixon Camp claim, in developing the silver-lead-copper vein is proving the existance of a character, of ore that was entirely unlooked for, in this locality. While some little lead ore had been found, on near by ground nothing that promised large returns was expected, until the cutting, of this vein, by a tunnel which was being driven, for the purpose of exploiting a surficial showing of copper, beyond the present heading of the tunnel.

To date the value, of the ore taken from the vein workings is more than sufficient to pay all expense. 102 ft. of drifting and 60 ft. of sinking has been done. From these workings, 33½ tons of sorted ore has been marketed, and there remains on the dump, about 5 tons, of the same grade, about \$60.00 per ton value. Also there is about 250 tons of concentrating ore, which with a mill should net \$10.00 per ton. A small amount, of underhand stoping has been done, but it does not exceed 2 fathoms. This is a remarkably good showing, and should the vein continue to develop as it now promises, would become a large producer, of a very desirable ore not only from the standpoint, of profits, but simplicity of milling.

This vein showed little evidence, of its existance at surface, but the 100 ft. of drifting shows it to be strong and well defined. I believe that the exposure of similar ore on the Copper Bell claim is on the same vein, which is at least 1000 ft. away. Should this prediction prove true, there is the probability of a very extensive and profitable ore body existing here. Rapid progress can be made here in developing this vein, as the ground is easily and cheaply worked.

The showing of disseminated copper sulphide in the Copper Bell workings is a very important consideration. To what extent it occurs, can only be told by actual development. That it occurs at all, is very promising and the extent and grade should be determined, first by some work, from the shafts, where it was located and perhaps drilled at a later date. The grade is such that it could be milled very profitably, provided a sufficient tonnage can be developed.

The Black Metals area, should be developed by sinking a shaft and prospecting the ground, by crosscutting and drifting. The complexity of the formation here, makes it difficult to predict the result, from such work, but the fact that there exists the intrusive dykes with considerable copper showing, leads me to believe that ore bodies should here be found.

On the western half of the property several fault fissures are evidenced. They are large and prominent, but have not been developed, except by location and development work.

The area of the property is large and not yet, thoroughly prospected. At the present time, work should be confined to developing the Dixon Camp, with some development on the Copper Bell, to prove the extent of the disseminated ore.

Adjoining this property on the southeast is located the Sombbrero Butte mine, now owned and being actively developed, by the Magma Chief Copper Co. Considerable development was done by the former owners, all paid for, by the ore taken out in development.

About 2 miles to the north are the properties of the Copper State, Copper Co. the Calumet and Arizona Copper Co. the Childs property and the Southwest Inspiration, Copper Co. These properties are in the same geological formation as the Bunker Hill, and developments to date have proven the existence, of large ore bodies.

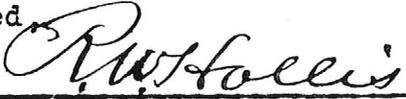
Page No. 9.

Should future development prove the existance of large, commercial ore bodies, of concentrating grade it might become necessary to either transport the ore to the San Pedro river, for milling, or pump water to the mill, at , or near the mine. Either plan is practical. I believe that sufficient water, for a 100 ton mill can be developed, on the ground.

I would reccomend that a raise be made to the surface, from the collar of the winze, in the drift, from the tunnel on the Dixon Camp claim and a hoist be installed, on the surface.

The results of the development on the property to date, are such that the risks are reduced to the minimum and I heartily reccomend it to any prospective investors.

Respectively submitted,


Mining Engineer

Phoenix Arizona,
March 20th. 1919