



CONTACT INFORMATION

Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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PRINTED: 09/06/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: VULCAN MINE GROUP

ALTERNATE NAMES:

PIMA COUNTY MILS NUMBER: 247

LOCATION: TOWNSHIP 17 S RANGE 12 E SECTION 2 QUARTER NE
LATITUDE: N 31DEG 58MIN 40SEC LONGITUDE: W 111DEG 05MIN 43SEC
TOPO MAP NAME: TWIN BUTTES - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

COPPER OXIDE
SILVER
GOLD LODE
LEAD OXIDE
ZINC OXIDE

BIBLIOGRAPHY:

AZBM BULL. 189, P. 139, 1974
ADMMR VULCAN MINE GROUP FILE
ADMMR "U" FILE CU 37

03/25/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

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SILVER-COPRODUCT
GOLD-(M) LODE-BYPRODUCT
LEAD-(M) OXIDE-BYPRODUCT
ZINC-(M) OXIDE-BYPRODUCT

BIBLIOGRAPHY:

AZBM BULL. 189, P. 138, 1974
ADMMR VULCAN COPPER & ZINC MINING CO. FILE

shows file
See: USGS Bull 725 J Page 421

VULCAN COPPER & ZINC MINING CO. ✓

Cu, Zn, Ag

Pima 10 - 6 S 2 & 3, T 17 S, R 12 E

Edward Foy & Matthew Baird, Ruby Star Rte., Box 21, Tucson ✓ 146

CLAIM MAP & AREAL GEOLOGY
 VULCAN MINE & ADJACENT CLAIMS
 PIMA MINING DIST., PIMA COUNTY, ARIZ.
 Secs 2-3, T_p 17S-R12E Scale 1"=600'
 After C.J. Sarle by J.A. Wood, 12-31-28

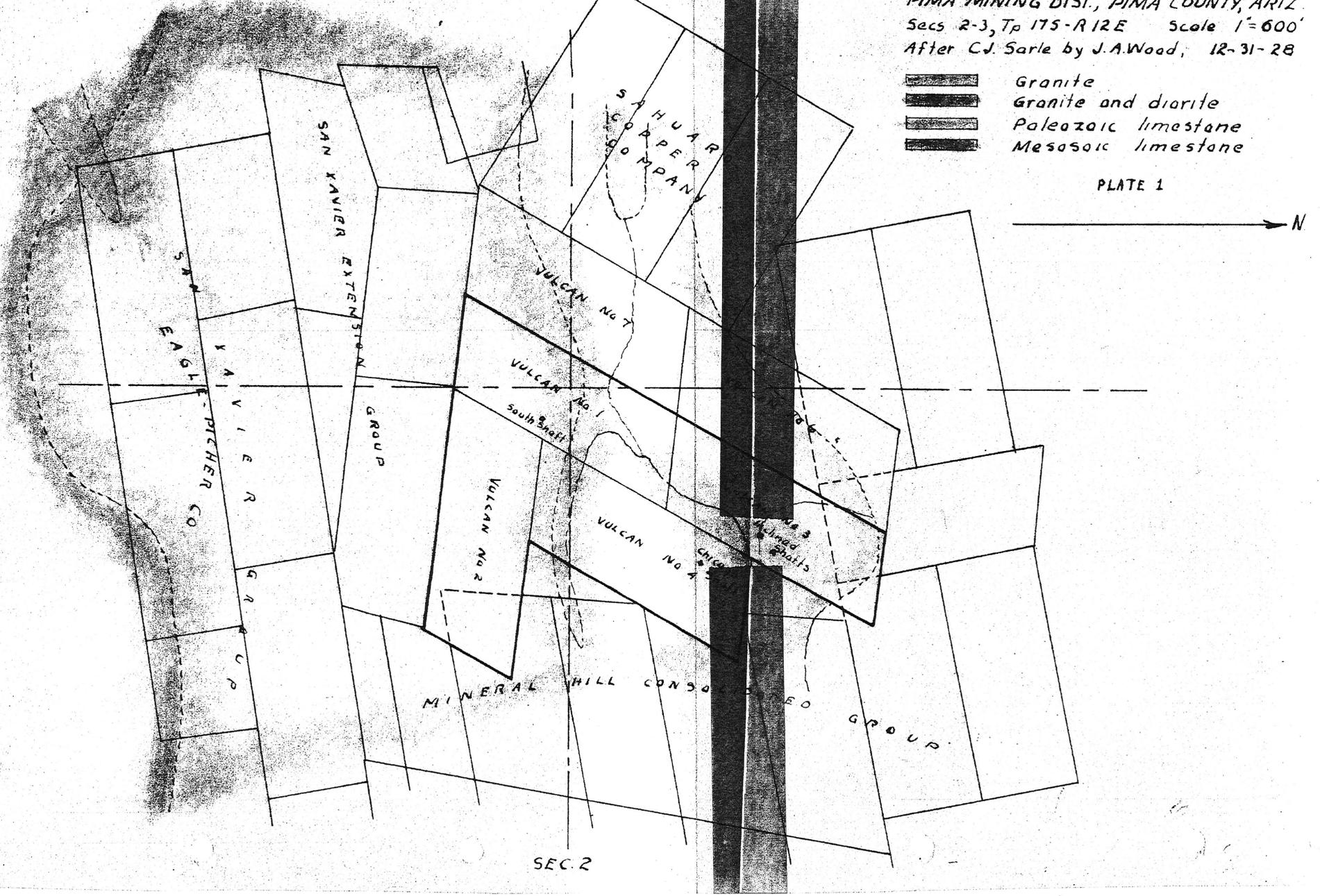
-  Granite
-  Granite and diorite
-  Paleozoic limestone
-  Mesozoic limestone

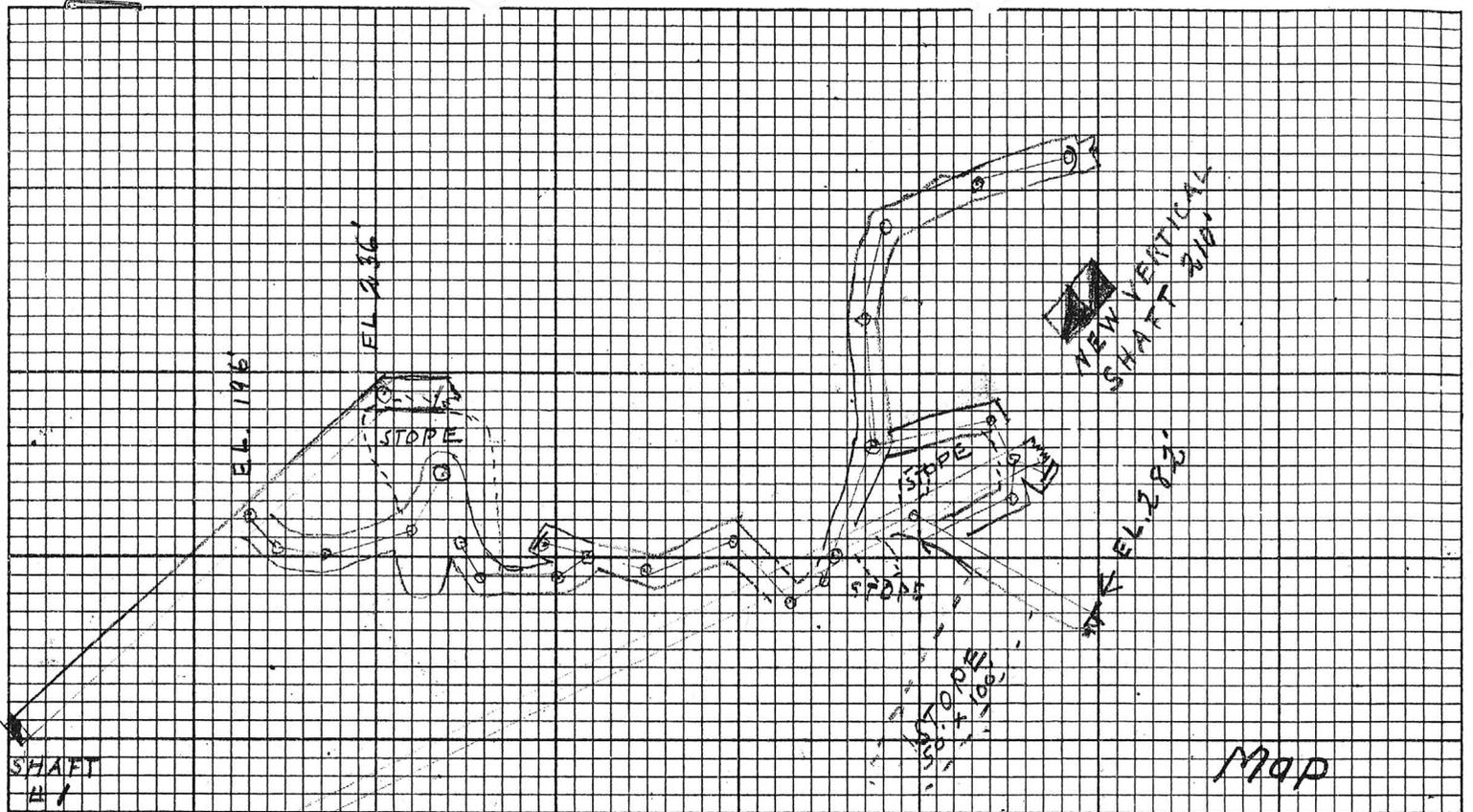
PLATE 1



SEC. 3

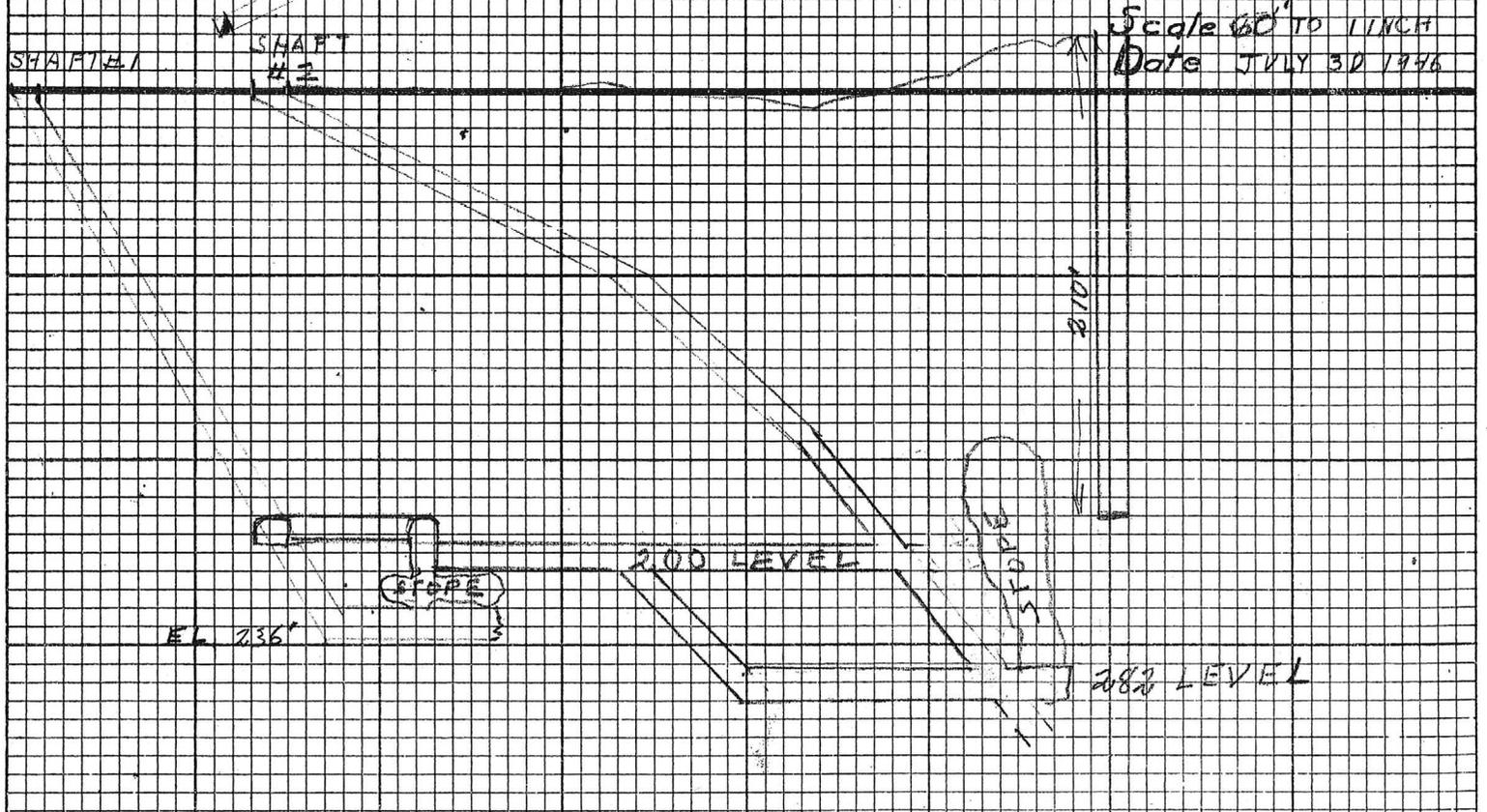
SEC. 2





Map

Scale 60' TO 1 INCH
Date JULY 30 1946



Section

Scale 1" TO 60'
Date JULY 30 1946

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Vulcan Mine

Date June 30, 1960

District Pima Mining Dist., Pima County

Engineer Axel L. Johnson

Subject: Information from Arthur W. Jacobs.

References: Report of June 25, 1952

Location: Secs. 2 & 3, T. 17 S., R. 12 E., 17 miles south of Tucson and 1 mile west of the Banner Mine.

Number of Claims: 4 patented lode claims

Owners: Mathew Baird and Edward Foy estate, Tucson, Ariz.

Principal Minerals: Copper, Silver

Present Activity: Idle

Past History:

- (1) For history prior to 1946, see Mine Owners Report of Aug. 18, 1946.
- (2) Sold for taxes in 1946 to Mathew Baird and Edward Foy, Tucson, Ariz.
- (3) Property has been leased out at various times to Strong and Harris, Bill Martin, et al. United Geophysical Co. also had an option on the property in 1952, and did some exploration work including some diamond drilling.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

RECEIVED

JUL 25 1952
DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

Mine Vulcan Mine

Date June 25, 1952.

District Pima Mining Dist., Pima Co.

Engineer Axel L. Johnson

Subject: Mine Report --- Personal Inspection.

Location About one mile south of San Xavier---- 17 miles south of Tucson.

Owners Vulcan Mining Co.

Operators Option by United Geophysical Co., 3407 S. Park Ave., Tucson, Ariz.

Officers R. E. Thurmond, Mining Engineer in charge, United Geophysical Co.

Metals Copper

Men Employed 3 men on diamond drilling.

Production Rate No production.

Geology and Ore Values No information as yet.

2. Pima County, Arizona
3. Submitted by Mr. Doyle
4. Messrs. Herson and Stone
5. Data re-checked October 3, 1943, and they found no reason to revise opinion made during the district survey in 1943-44.
6. Copper-silver
-

7. "As indicated in 1943-44 ore occurrences in the Vulcan are probably similar to the Mineral Hill deposits. There is reason to believe that there will be no continuity and that only small disconnected orebodies may be expected. . . . Undoubtedly the Vulcan will produce some ore, but from present data the orebodies are indicated to be small and erratic and possible tonnage insufficient to compensate for the risk."
8. On June 15, 1950, Mr. Duff stated in a memo to Mr. Isern that "the Vulcan Group of claims . . . has recently been leased and some prospecting work is going on."

Addendum by G. J. Duff - May 21, 1951: Since the above was written, the property was again leased, and I have been informed by Mr. D. G. Chilson that a churn drill hole was drilled from the bottom of a vertical shaft for a depth of approximately 140 feet. Some mineralization was encountered but by no means commercial ore.

* * * * *

THE E. LE-PICHER MINING & SMELTING COMPANY
MIAMI, OKLAHOMA



INTRA-COMPANY
CORRESPONDENCE

TO Grover Duff - Tucson Office
FROM John W. Chandler - Miami Office
SUBJECT: Exploration Work

DATE April 6, 1951

Dear Grover:

We are presently compiling a record of all the mines and prospects which we have examined for the Company during the past 10 years.

Starting with 1940, and listing the work done by years, such as 1940, 1941, 1942, etc., we would like to have the following information tabulated:

1. Name of property
2. Location - (State and County)
3. Who it was submitted by
4. Who made the examination
5. Time spent on the examination
6. Metals involved
7. General conclusions drawn from examination
8. Remarks - Under this heading could be shown whether we have done drilling or any other work in addition to the examination. Give brief outline. If the property subsequently became a mine unit and was operated so state.

We do not have a complete file in this office on all properties examined by the Company and we will combine your report with the one being made up from our files to make the final report complete. I would appreciate it if you could put someone on this work until it is completed, sending me three copies of your tabulation.

Best regards,

Jack.
John W. Chandler.

JWC/jm

4-25-51 - Mr. Chandler will send us a list of the properties on which they have reports in their files, and we will then send him the information on the others.

GJD

MINING REPORT

ON

VULCAN MINING PROPERTY

Pima Mining District

Pima County, Arizona

by

John A. Wood

**Dixon, New Mexico
February 1, 1947**

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Geologic Reconnaissance of Vulcan Mining Property by C. J. Sarle, Mining Geologist.	

I

SUMMARY

In April, 1946 the writer was requested to make a cursory examination of the Vulcan Mining Property by Mr. R. C. Warnock, Attorney at Law, Tucson, Arizona in the interest of clients who were owners of the property.

An inspection was made on April 16 and 17, 1946; and preliminary report expressed the opinion that, although the mine contained no ore reserves, it was a better than average prospect.

Due to existing unsettled politico-economic conditions no serious attempt was made to finance development of the claims.

In December, 1946 the writer spent three days on the ground studying surface geology and mapping such underground workings as permitted safe entry.

Preparation of this report is the final result of careful interpretation of geology together with available records and maps.

My considered opinion is that the Vulcan property merits exploration for new copper-silver orebodies of the replacement type; and a plan for such exploration and possible subsequent development is outlined.

The property can be reasonably well tested for \$6,500.00

Full scale development cost is estimated at \$48,500.00

It is recommended that a 90 day option be negotiated to permit execution of the recommended exploration program.

Signed:

JOHN A. WOOD

2/1/47

II

PROPERTY & LOCATION

The Vulcan Mining Property is located in Sections 2 and 3, Township 17 South, Range 12 East; Pima Mining District, Pima County, Arizona. The claims are immediately adjacent to the north boundaries of the San Xavier Mine, currently operated by Eagle-Picher Mining and Milling Co. The small settlement of Twin Buttes is 6 miles south and the city of Tucson is 21 miles northeast of the property.

4 full patented claims and 2 full unpatented claims, with a total of 123.96 acres, comprise the Vulcan group. They are the Vulcan Nos 1,2,3,4 and Vulcan Nos. 6,7 respectively. The writer has recommended early re-location of two important fractions known as Vulcan Nos. 5 and 9.

Refer to Plate 1, "Claim Map and Areal Geology." appended.

III

ACCESSIBILITY

Transportation and shipping facilities are excellent.

The Tucson-Nogales paved highway passes directly through the Southern Pacific railroad at Sahuarita, 13 miles south of Tucson. From Sahuarita a well graded and maintained dirt road serves the Twin Buttes area about 8 miles to the west. This road passes through the Eagle-Picher camp and north along the eastern edge of the Vulcan Property.

Contractors are currently hauling ores from the Twin Buttes area to loading ramps at Sahuarita for 9¢ per ton mile.

No electric power is available in the district at the present time.

Water for mining purposes can be obtained by arrangement with the Eagle-Picher people and ample water is known to exist underground at about the 300 ft. level.

IV

OWNERSHIP

The four patented claims were purchased at tax sale early in 1946 by Col. Matthew Baird and Mr. Edward Foy, both residing in the Twin Buttes region. Messrs. Baird and Foy subsequently formed the Vulcan Copper and Zinc Co., an Arizona corporation.

The law firm of Knapp, Boyle, Bilby and Thompson of Tucson supervised the purchase of the claims at tax sale, then brought suit to quiet title and propose to transfer title to Vulcan Copper and Zinc. Co. A copy of their opinion on validity of title is appended.

It should be mentioned that when the State of Arizona offered the patented claims for sale and called for sealed bids, Eagle-Richer Company's agent submitted a bid of \$1,200.00, which was somewhat less than the figure bid by Messrs. Baird and Poy.

V

CLAIMS

The six full mining claims, as well as two small fractions not yet located, are offered for a purchase price of \$100,000, payable entirely from a royalty of 10% of net smelter or mint returns on all ores shipped or milled. No cash payments are required and any reasonable work requirements may be negotiated.

The owners are desirous of having the property developed by reliable and experienced operators.

VI

PREVIOUS DEVELOPMENT, EXPLORATION AND REPORTS

The Vulcan property has been developed by means of 5 different shafts, relative location of the main four being shown on Plate II, "Plan of Workings", appended to this report. However only two of these shafts were very productive and actual exploration has been confined to a small area about 300 feet in length by approximately 300 feet in vertical depth.

As a matter of record, the following excerpt from USGS Bulletin 725 (1922) by F. L. Fanscoe is presented:

"Adjoining the ground of the Mineral Hill Company on the west, and lying for the most part west of the main road from Tucson to Twin Buttes, is the Vulcan Mining Co., of Tucson, but understood to be bonded by Chicago people. The ground has been developed by a 560 ft. inclined shaft, from which considerable work was evidently done. Ore shipped from these workings in 1916-17 is said to have yielded nearly 1,200,000 pounds of copper and over 11,000 ounces of silver and to have averaged between 6 and 7 percent of copper. Abundant water is reported to have entered the

bottom of the incline, and these workings were finally abandoned. A new vertical shaft was started a short distance south of the old incline, but has not yet reached the ore zone. No work was in progress at the time of visit (1920). The geologic conditions at the Vulcan are similar to those at Mineral Hill, and the ore deposit is apparently of the same general character."

Inclines:

Principal production of copper ores has come from the immediate area developed by incline shafts Nos. 1 and 2, both of which closely followed a granite-limestone contact and were carried to a depth of 400 to 500 ft. on the incline, or nearly 300 ft. vertically beneath the surface. Elevation of the two collars is designated as 00 ft.

A Mr. James E. Pemberton started the two inclines prior to 1917 and reportedly shipped in excess of 25 railroad cars of 6-7 percent copper ore from them above the 50 ft. level. Referring to Plates III and VI a general outline of the stope in No. 2 shaft can be seen; but although there was definitely near-surface stoping in No. 1 shaft, records are too incomplete to warrant any interpretation.

In 1917 one William E. Bamsdell took active charge of the property and proceeded to develop both inclines to some depth, as shown on Plates II and VI, but apparently not in very workmanlike fashion.

Recorded shipments made by Bamsdell totaled 8117 tons averaging 6.8% copper and 1.3 oz. silver. The Copper Queen Smelter at Douglas, Arizona received and recorded these shipments as follows:

Shipped in name of W. E. Bamsdell, Tucson, Arizona:

Date	Dry Tons	Oz. Au	Oz. Ag	% Cu	% Fe	% Mn	% Zn	% Pb	% S	% S
1916										
March to Dec.	2167	tr.	1.12	6.24	34.0	7.4	11.4	16.8	5.8	
1917										
Jan. to Nov.	3262	tr.	1.56	7.80	31.4	6.8	13.3	16.1	7.2	
1918										
Jan. to Feb.	68	tr.	1.35	7.92	34.8	7.5	12.8	14.2	3.7	

C. J. Barle, whose "Geologic Reconnaissance of the Vulcan Mining Property" (1928) is appended, visited the property early in 1918 and confirms the production by Bamsdell of several thousand tons of 6-7% copper ore from the two incline shafts.

Bamsdell's deepest workings were on the 282 ft. level near the bottom of No. 2 Incline. He was forced to abandon the property after some stopes caved early in 1918.

No. 1 incline is entirely caved around the collar, but No. 2 is open for about 65 ft. below the surface. The outcrop of ore on which this shaft was started is plainly visible on the north side and occurs on a granite-limestone contact, granite forming the footwall.

It is this writer's opinion that all of the 173 ft. level and also a drift on the 220 level running southwest from its southernmost stop is uncaved; and these two sections could be readily opened for inspection from the Chicago Shaft. See Plate II.

No. 3 Shaft:

Nothing has been recorded of this work, which was commenced on an outcrop 80 ft. northeast of the Chicago Shaft. It stands open and unbarred for 50 ft. and could be entered for inspection by erecting an A-frame and lowering a beam's chair. An exposure of highly oxidized material shows a contact below the collar and some pieces of carbonate ore are seen in the dump.

Chicago Shaft:

In 1920 a 210 ft. two compartment vertical shaft was sunk about 300 ft. southeast of No. 2 Incline, the work being done by a Chicago group. Apparently their objective was to develop projected extensions of the ore zone to the south of and also below the caved workings. Work was stopped before sufficient depth was reached, although an effort was seemingly made to connect with the 173 level by means of a cross-cut to the northeast. This connection missed by a few feet due to difference in elevation.

There is no headframe standing, but the shaft itself is in perfect condition and constitutes a major asset for any future development program.

South Shaft:

Some time between 1920 and 1928 a small incline was sunk on a surface exposure in limestone on the Vulcan No. 1 claim at the north base of the limestone ridge that traverses the south end of the claims. These workings are accessible and a small stop above the 50 ft. level indicates that about 75 tons of material have been removed from a well defined vein averaging 3 ft. in width. This vein as now exposed is highly oxidized and has been partially leached. The writer cut a 3 ft. channel sample from a pillar on the west side of the shaft at 50 ft., assay values of which were 0.10 oz. Au, 0.16 oz. Ag and 1.28% Cu. At the bottom of the shaft, which is 70 ft. below surface on a 56 degree incline some spots of lead-zinc sulfide appeared and were noted by the writer in April, 1946. In December, 1946 several feet of water had washed in and prevented sampling of this sulfide ore. The vein on the surface can be traced for about 200 ft., strikes S 75 W and is in limestone not far from granite contact.

Maps:

A map of the underground workings by F. W. Stevens, Registered Mineral Surveyor, Tucson, accurately depicts the extent of workings up to July 12, 1917. Stevens has stated that some sections around the inclines began to cave shortly after his last survey.

Appended maps by the writer have been prepared after careful correlation of Stevens' map, salient points in the report by C. J. Sarle and data gathered on two visits to the property by the writer in 1946. Color legend employed for geologic interpretation is as follows:

- Orange - ore extracted in known stops
- Terra-cotta - observed mineralization
- Gray - Paleozoic limestone and incline
- Green - granite or granite and diorite

Reports:

The Geologic Reconnaissance by C. J. Sarle, Mining Geologist, dated December 31, 1922, is appended to this report and contains a rather voluminous description of the general geology of the Vulcan-Mineral Hill area, description of the Vulcan workings and some production data gained from Sarle's visits to the property when it was operated by Ramsdell.

VII

GEOLOGY AND MINERALOGY

Thin-bedded Paleozoic limestones have been up-tilted by the intrusion of granite and associated diorite dykes. Generalplanation of the area followed and some remaining limestone blocks form low ridges and hills along the southern margin of the property. Regional thrust faulting has caused abundant shearing along bedding planes and fractures and a high degree of silicification, kaolinitization and epidotization is present along intrusive contacts. Although a thin alluvium covers much of the property, there are sufficient exposures of intrusives and sediments to permit a fairly clear conception of general structural features.

The occurrence of contact type orebodies along or near intrusive contacts, as well as replacement type deposits in the limestone beds has been noted authentically, but details of controlling structural features were not recorded.

General geologic conditions of the Vulcan property are typical of any copper deposits in the arid southwest. Primary chalcopyrite and chalcocite were probably deposited in zones of weakness by hydrothermal solutions closely following intrusions of the granite into Paleozoic sediments. Weathering events have oxidized near-surface ores; a shallow zone of secondary sulfide enrichment follows and primary sulfidation could be expected.

not far below the present water table.

Copper-silver orebodies of moderate size have been mined, but development has been on a rather small scale.

There are at least two general trends of mineralization on the north section of the property which are recognizable on the surface by occasional "blossoms" or outcrops of siliceous material that is highly oxidized, impregnated with iron oxide and containing skeletal quartz. These mineralized zones strike roughly northwest-southeast and one of them corresponds to the zone which yielded ores from the two incline shafts.

Careful exploration along these zones in the north section should yield new ore deposits similar to those previously mined, although they cannot be expected to be strictly continuous orebodies, either laterally or vertically.

Near-surface ores in the north section are oxidized and examination of dump material shows the common association of malachite, azurite and chrysocolla. Sulfide minerals, chief of which were pyrite and chalcopyrite were found at a vertical depth of about 200 ft. and some of this material remains in the dumps. Gold-silver-copper ratio of the oxide ore is nearly identical with that in the sulfide ores as shipped.

In the south section of the property, around the South Shaft area, there is evidence of a more complex mineralization. Here a true fissure vein occurs in limestone near granite, striking nearly east-west and dipping to the south toward Eagle-Richer workings, which are chiefly lead-zinc. Near-surface exposures of this vein show a high degree of oxidation and some leaching. Lead-zinc sulfides begin to show at a depth of 70 ft., but it is doubtful that continuous ore of much importance would occur above the 100 ft. level. This vein, which averages about 3 ft. in width is definitely worth development below the bottom of the South Shaft, which is at 70 ft.

VIII

DISPOSAL OF PRODUCTS

Any ores that might be extracted from the Vulcan Mine within a year or two from this date can be disposed of in the following manner:

Oxide ores:

Copper ore, shipping grade, to A.S.&R. smelter at Hayden, Arizona per standard smelter schedule with probable premium for CaO in excess of 15%.

Copper ore, less than shipping grade, to stockpile.

Sulfide ores:

Shipping grade copper ores to A.S.&R. smelter at Hayden, or El Paso with probable bonus for Cao in excess of 15%.

Copper ores lower than shipping grade to Eagle-Picher custom mill at Sahuarita.

All lead-zinc ores to Eagle-Picher mill.

Market Data:

Although the future outlook is for firm prices and high consumption of base metals, except for some weakening in zinc markets, it is felt that a price schedule somewhat lower than current quotations should be adopted to form a conservative basis for evaluation of any ores that might be found. The following figures are suggested: copper - 15.50¢, silver - 80.1¢, lead - 10.00¢, zinc - 8.25¢.

Computed from standard smelting schedules, ore containing 6.8% copper and 1.3 oz. silver, the average of recorded shipments from the Vulcan mine (see page 4), would be evaluated thus:

Copper:

wet assay	136.0 lbs.	
deduct	8.0 lbs.	
	<u>128.0</u> lbs.	
pay for 95% of	121.6 lbs.	
= (15.50¢ less 2.6¢) =	13.24 ¢ per lb.	\$ 16.09
or, per ton		

Silver:

assay	1.3 oz.	
deduct	.5 oz.	
	<u>0.8</u> oz.	
= (80.1¢ less 1.5¢) =	78.6 ¢ per oz.	\$.62

\$ 16.71

Total contained value, per ton

less base smelter charges and taxes	\$ 3.68
less freight charges to Hayden	<u>1.50</u>
	5.18

Net smelter value f.o.b. Sahuarita, per ton\$ 11.53

No data for evaluation of milling grade ores are pertinent at this time, although such ores would undoubtedly be encountered in the course of mining shipping ores.

RECOMMENDED DEVELOPMENT

There are no proven ore reserves on the Vulcan property, and yet the geologic conditions are so favorable that search for new ore is, in the writer's opinion, entirely warranted. It should be re-emphasized that appreciable production has come from a relatively small area beneath the two incline shafts. However, since those workings have been largely caved, exploration should logically be directed along the lateral and vertical extension of the old ore horizons as recorded on maps accompanying this report. Probable extensions of ore lie south of the 200 level and also underneath it on projected dips of sedimentary beds and intrusive contacts.

Initial cost of equipment and work involved in deepening the Chicago Shaft to an extent that will permit prospecting in the above-mentioned areas does not seem justified.

The most advantageous method of testing this property, therefore, is the execution of a carefully planned diamond drill program, and such a program can be carried out very economically from a set-up in the station on the 180 level of the Chicago Shaft.

A suggested pattern of holes is illustrated on Plates II and VI, which will prospect ore extensions to the 350 ft. level. This pattern might be subject to some alteration as information were gathered from the first few holes, but essentially it consists of drilling 9 holes for a total footage of about 1500 ft. Drilling should be performed by a reliable contractor and sampling, examination of cores and logging of drill records should be supervised by a competent engineer. Approximately one month's time would be required.

Suggested drilling sequence and data:

<u>Hole No.</u>	<u>Depth</u>	<u>Dip</u>	<u>Direction</u>
1	120'	-58°	N 89 E
2	156'	-55	N 24 W
3	123'	-24	S 77 W
4	162'	-22	S 67 W
5	212'	-14	S 57 W
6	123'	-76	N 71 W
7	163'	-47	S 48 W
8	179'	-69	S 38 W
9	253'	-14	N 9 "

Estimate of costs:

1500' of hole @ \$3.00	\$ 4,500
Supervision, sampling, and assaying	\$ 1,500
Total	\$ 6,000

Another important phase of prospecting can be quickly and cheaply executed on the surface. The exposure of "blossoms" or patches of oxidized and mineralized material has been mentioned under VII on page seven. It is a matter of record that carbonate ores were shipped from workings started on surface outcrops such as these blossoms. Where these zones occur, the formation is sufficiently decomposed to permit scraping with a bulldozer to a depth of several feet. It does not appear that the surface has ever been very thoroughly prospected and thus an excellent possibility for discovery of near-surface ore lies in systematically scraping a series of bulldozer cuts in well chosen locations. This work can be accomplished in about five days' time at an estimated cost of \$500.

Further development at depth of the vein in the South shaft also merits consideration, but not in conjunction with first-stage development and hence is not further considered in this report.

After completion of the bulldozer cuts and diamond drilling program, results should be carefully considered. If there is indication of sufficient ore possibilities to equip the property for production, a small surface plant must be provided that will permit sinking the Chicago Shaft to the 200 and 300 levels, with provision for ventilation, opening up of levels and stope preparation. A detailed cost study of such a program has been prepared, but is not made a part hereof.

A summary of estimated expenses for the exploration as outlined plus estimates for possible full scale development follows:

Exploration:

A. bulldozer cuts	\$	500.00
B. diamond drilling	\$	6,000.00
Total exploration	\$	<u>6,500.00</u>

Development:

A. organization	\$	500.00
B. surface plant		12,000.00
C. mining equipment		3,500.00
D. initial supplies		1,500.00
E. shaft & level development to 220 ft.		9,000.00
F. ventilation raise		1,500.00
G. shaft & level development to 300 ft.		13,000.00
H. reserve for contingencies		7,500.00
Total development	\$	<u>48,500.00</u>
TOTAL, REQUIRED CAPITAL	\$	55,000.00

Respectfully submitted

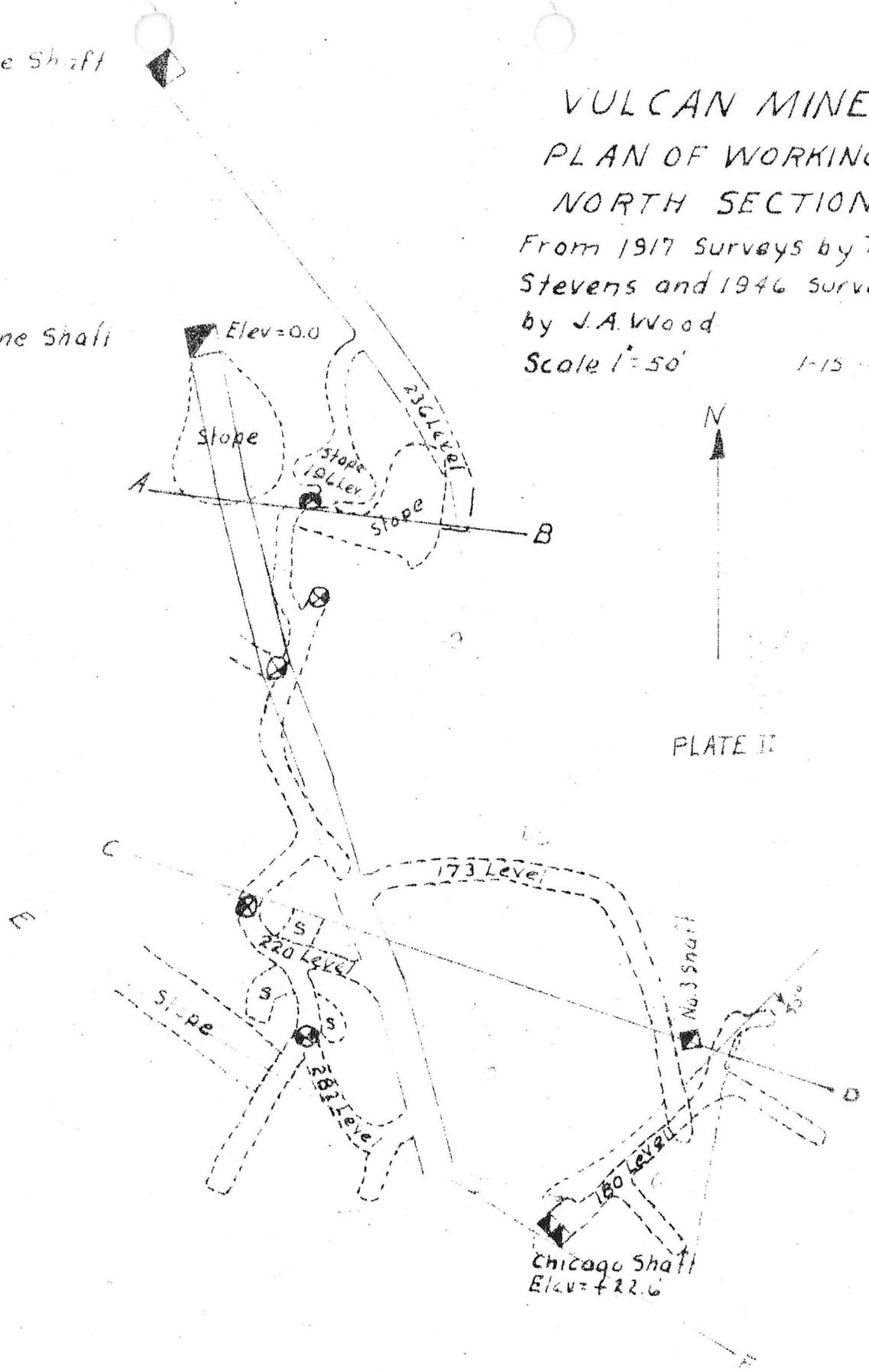
John A. Wood, Gen. Mgr.
Harding Mine Division
Hayden Mining Company

Dixon, New Mexico
February 1, 1947

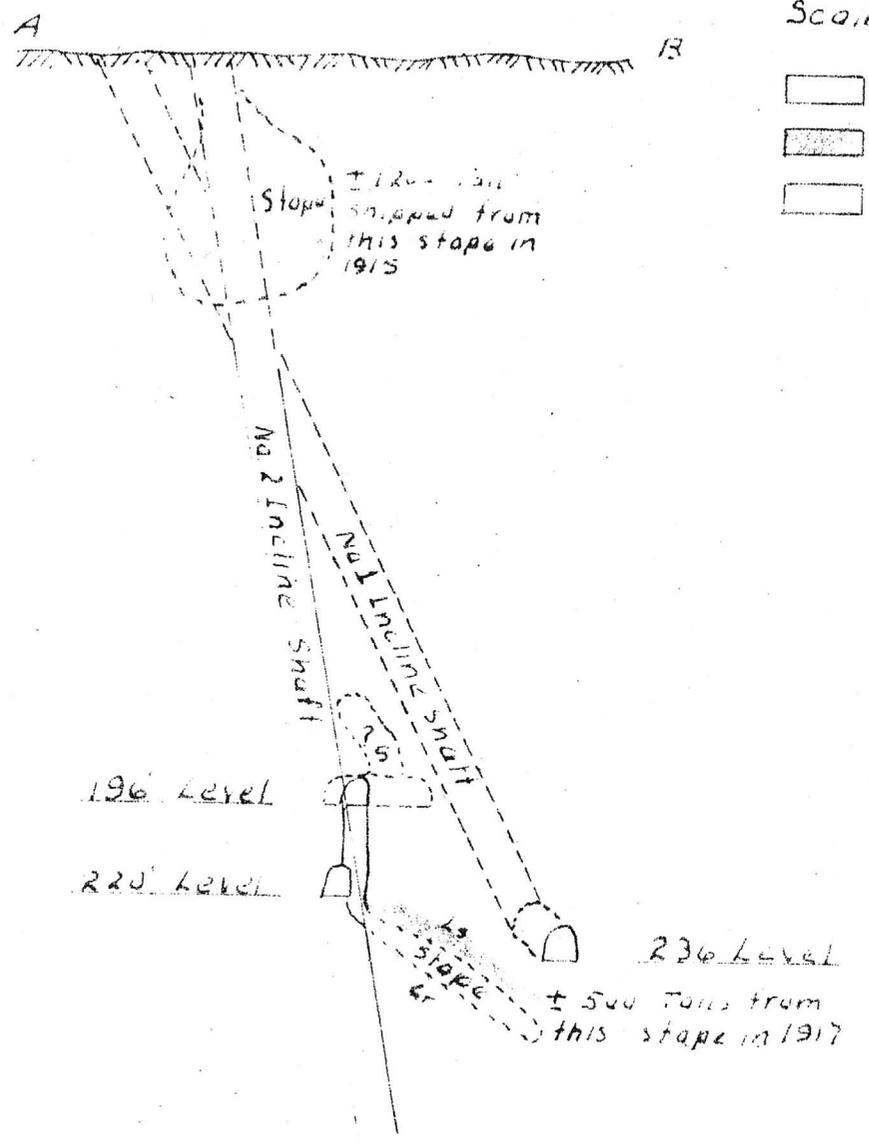
No 1 Incline Shaft

No 2 Incline Shaft

VULCAN MINE
 PLAN OF WORKINGS
 NORTH SECTION
 From 1917 Surveys by T.N. Stevens and 1946 surveys by J.A. Wood
 Scale 1"=50' 1-15-47



VULCAN MINE
 NORTH SECTION
 SECTION A-B
 From Surveys by T.N.
 Stevens, 1917.
 Scale 1"=50'



- Granite
- Limestone
- stope ore

PLATE III

VULCAN MINE
NORTH SECTION
SECTION E-F

From data by Stevens,
Sarle and Wood
Scale 1"=50' 1-17-17

PLATE V

Chicago Shaft El. = +22.6

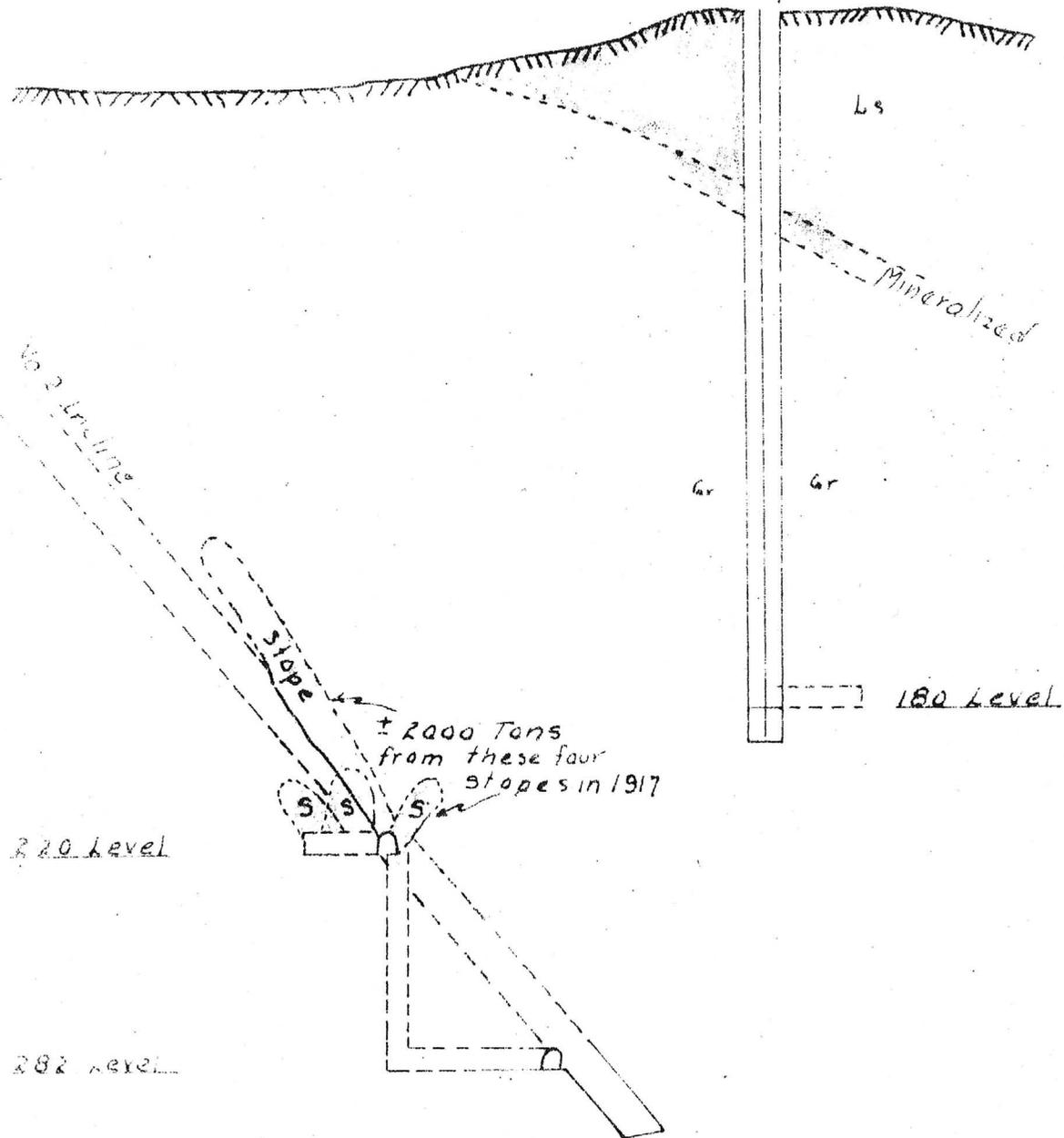


PLATE VI

VULCAN MINE
NORTH SECTION
LONGITUDINAL PROJECTION
From 1917 Surveys by T.N. Stevens
Scale 1"=50' 1-20-47

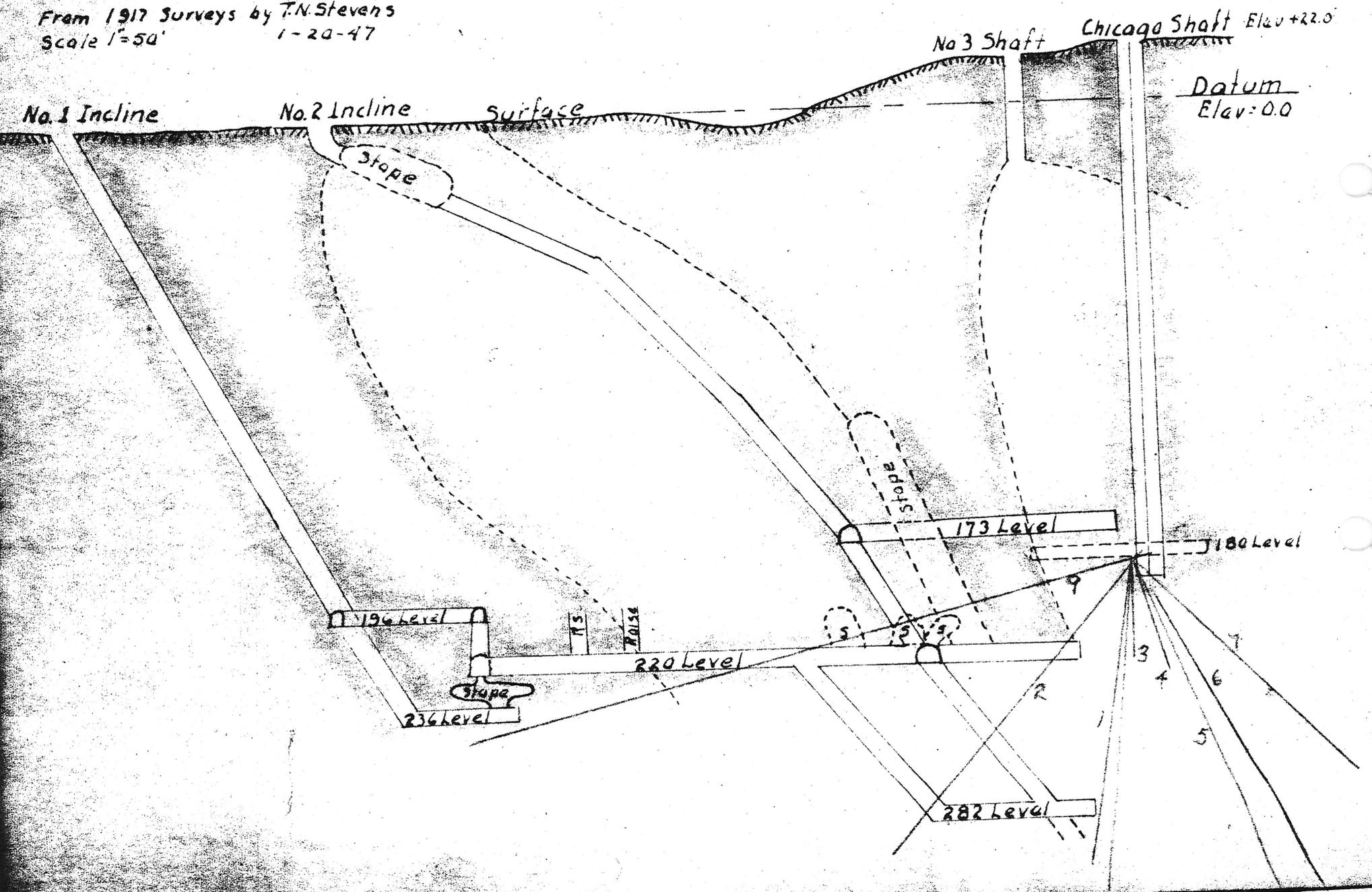
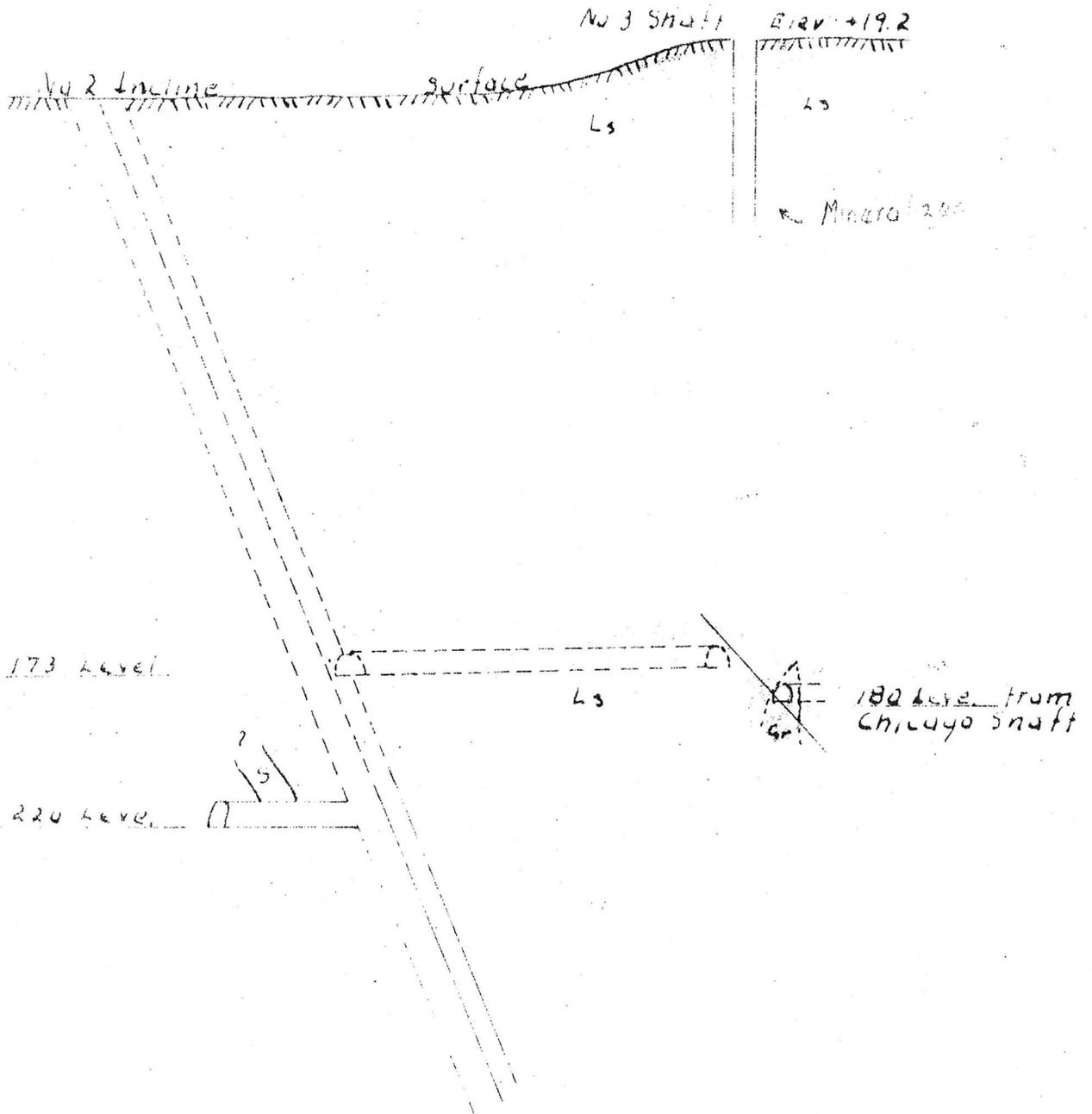


PLATE IV

VULCAN MINE
NORTH SECTION
SECTION C-D

From surveys by T N
Stearns, 1917 and data
by C. V. Surie, 1928

Scale 1" = 50' 11-7-47



College of Mines
Arizona Bureau of Mines

January 18, 1946

Mr. Edward Foy
Ruby Star Route, Box 21
Tucson, Arizona

Dear Mr. Foy:

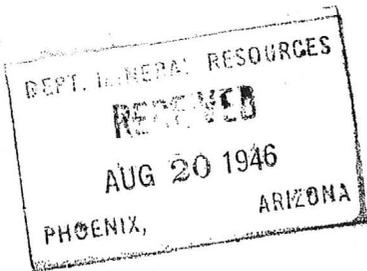
In reply to your letter of January 15, essentially all of the available information we have regarding the Vulcan claims is the following statement by F. L. Ransome in U. S. Geological Survey Bulletin No. 725, p. 421 (1922):

"Adjoining the ground of the Mineral Hill Company on the west, and lying for the most part west of the main road from Tucson to Twin Buttes, is the Vulcan Mining Co., of Tucson, but understood to be bonded to Chicago people. The ground has been developed by a 660-foot inclined shaft, from which considerable work was evidently done. Ore shipped from these workings in 1916 and 1917 is said to have yielded nearly 1,200,000 pounds of copper and over 11,000 ounces of silver and to have averaged between 6 and 7 per cent of copper. Abundant water is reported to have entered the bottom of the incline, and these workings were finally abandoned. A new vertical shaft was started a short distance south of the old incline but has not yet reached the ore zone. No work was in progress at the time of visit. The geologic conditions at the Vulcan are similar to those at Mineral Hill, and the ore deposit is apparently of the same general character."

As you probably know, Ransome's study of the area was in 1920.

Sincerely yours,

/s/ Eldred D. Wilson
Geologist



DEPARTMENT OF MINERAL RESOURCES
State of Arizona
MINE OWNER'S REPORT

Date August 18, 1946

- 1. Mine: VULCAN COPPER AND ZINC MINING CO.
2. Location: Sec. 2 and 3 Twp. 17 S Range 12 E Nearest Town TUCSON
Distance 17 MILES Direction NORTH Road Condition GOOD
3. Mining District & County: PIMA MG DIS. PIMA COUNTY
4. Former Name of Mine: VULCAN CONSOLIDATED COPPER CO
5. Owner: EDWARD FOY AND MATTHEW BAIRD
Address: RUBY STAR ROUTE, BOX 21 TUCSON
6. Operator: NOT OPERATING
Address:
7. Principal Minerals: COPPER, ZINC, SILVER
8. Number of Claims: 4 Lode LODE Placer
Patented 4 Unpatented
9. Type of Surrounding Terrain: VERY FLAT. HILLS SW AND SE. SMALL KNOLL ON SOUTH CLAIM.

10. Geology & Mineralization: THIN-BEDDED PALEOZOIC LIMESTONES HAVE BEEN UPTILTED BY INTRUSION

OF GRANITE AND ASSOCIATED DIORITE DIKES, WITH SUBSEQUENT PENEPLANATION. SOME LIMESTONE BLOCKS REMAIN TO FORM LOW RIDGES AND HILLS ON THE SOUTHERN EXTREMITY. THERE IS ABUNDANT SHEARING ALONG BEDDING AND ALONG INTRUSIVE CONTACTS, ALTHOUGH ALLUVIUM COVERS MUCH OF THE VULCAN PROPERTY THERE ARE SUFFICIENT EXPOSURES TO PERMIT CLEAR CONCEPTION OF THE GENERAL STRUCTURAL FEATURES.

UNDETERMINED. SMELTER RECORDS INDICATE SHIPMENTS OF 7000 TO 8000 TONS OF 7% CU AND 1.30% AG WERE MADE IN 1916 AND 1917 WHEN WORK WAS HALTED BY SHAFT CAVE IN DUE TO CARELESS MINING AND FLOODING. NO ATTEMPT WAS MADE BY THE THEN OWNERS TO REOPEN BECAUSE OF LACK OF AGREEMENT ON NEW POLICY. PLENTY REASONS EXIST TO GIVE HOPE THAT THE PROPERTY HAS PROMISES OF MAKING A MODERATE SIZED PRODUCER WITH AN INTELLIGENT PROGRAM OF DEVELOPEMENT.

10-6 Pima

cu 20 Ag

C-B

12. Ore "Blocked Out" or "In Sight": IT IS EVIDENT THAT THE PREVIOUS OWNERS WERE MORE INTERESTED IN GOUGING OUT ORE THAN IN DEVELOPING THE PROPERTY FOR MORE ECONOMICAL ORE EXTRACTION, AND MINED TOO CLOSE TO THE SHAFT FOR SAFETY. THIS CAUSED THE LOSS OF THE SHAFT AND FURTHER DEVELOPMENT. IT CAN ONLY BE SAID THAT THE MINE WAS PRODUCING 7% CU. 1 1/2% AG AT TIME OF CAVE IN AND THAT EXTENT OR SIZE OF ORE BODIES ARE UNKNOWN. Ore Probable: EITHER SINK THE VERTICAL SHAFT AN ADDITIONAL 100 FT. TO THE BOTTOM OF INCLINE #2 SHAFT AT THE WATER LEVEL AND WHERE CAVE OCCURRED, OR X CUT FROM PRESENT 210 FT. DEPTH, ^{TO} THE KNOWN MINERALIZED ZONE ABOVE 200 LEVEL FOR QUICKER RESULTS.

13. Mine Workings—Amount and Condition:.....

No.	Feet	Condition
Shafts <u>4</u>	<u>282, 236, 210, 65</u>	<u>INCLINE #1 + 2 INACCESSABLE</u> <u>210' VERTICAL EXCELLENT, 65' UNTIMBERED, OPEN</u>
Raises <u>2</u>	<u>30'</u>	
Tunnels	<u>300 TO 400 FT.</u>	
Crosscuts	<u>100 TO 200 FT.</u>	
Stopes	<u>4</u>	

14. Water Supply: WATER WAS ENCOUNTERED AT 282 FT VERTICAL DEPTH IN #2 INCLINE SHAFT. QUANTITY UNKNOWN AT THIS DATE

15. Brief History: PRIOR TO 1916 J.R. PEMBERTON SHIPPED 6-7 % CARBONATE ORE FROM THE VULCAN FROM NEAR THE SURFACE BUT NO RECORDS ARE AVAILABLE AS TO TONNAGE IN 1917 PEMBERTON TURNED THE OPERATION OVER TO W.R. RAMSDELL. SOME SHIPMENTS WERE MADE BY RAMSDELL TO THE COPPER QUEEN SMELTER AT DOUGLAS AND A COPY OF THE PHELPS DODGE RECORDS OF SHIPMENTS BY RAMSDELL FOLLOWS.

SHIPPED BY	1916	DRY TONS	AG	CU
W.R. RAMSDELL	1917	5167	1.12	6.24
" " " "		3262	1.56	7.80
SHIPPED BY VULCAN CONS. COPPER CO.	1918	88	1.35	7.92

TO THE WRITER'S CERTAIN KNOWLEDGE THE 88 TONS WAS SORTED FROM THE DUMP AND THE SIMILARITY IN VALUES WOULD INDICATE A COMMON SOURCE.

16. Signature: Edward Fay
Matthew Baird

17. If Property for Sale, List Approximate Price and Terms: OPEN FOR DISCUSSION WITH RESPONSIBLE PARTIES. WOULD PREFER LONG TIME CONTRACT 3 TO 4 YEARS ON ROYALTY BASIS

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
MINE OWNER'S REPORT

Date August 18, 1946

1. Mine Vulcan Copper & Zinc Mining Co.
2. Location Sec. 2 & 3, T 17 S, R 12 E
17 miles ~~north~~ ^{south} of Tucson
3. Mining District & County Pima Dist., Pima County
4. Former name Vulcan Consolidated Copper Co.
5. Owner Edward Foy & Matthew Baird,
6. Address (Owner) Ruby Star Rte., Box 21,
Tucson, Ariz.
7. Operator Not operating
8. Address (Operator)
9. President, Owing Co.
- 9A. President, Operating Co.
10. Gen. Mgr.
14. Principal Minerals Copper, Zinc, Silver
11. Mine Supt.
15. Production Rate
12. Mill Supt.
16. Mill: Type & Cap.
13. Men Employed
17. Power: Amt. & Type

8. Operations: Present

9. Operations: Planned

10. Number Claims, Title, etc. -- 4 patented lode claims

1. Description: Topography & Geography Very flat - hills S.W. and S.E. - small knoll on south claim.

2. Mine Workings: Amt. & Condition
4 shafts - 282', 236', 210', 65' - incline # 1 & 2 inaccessible,
210' vertical excellent condition, 65' untimbered, open.
2 raises - 30'
tunnel - 300 to 400'
crosscuts - 100 to 200'
Stopes - 4'

23. Geology & Mineralization Thin bedded paleozoic limestones have been tilted by intrusion of granite and associated dikes, with subsequent penep. Some limestone blocks remain to form low ridges and hills on the southern extremity. There is abundant shearing along bedding and along intrusive contacts; although alluvium covers much of the Vulcan property there are sufficient exposures to permit clear conception of the general structural features.
24. Ore: Positive & Probable, Ore Dumps, Tailings It is evident that the previous owners were more interested in gouging out ore than in developing the property for more economical ore extraction, and mined too close to the shaft for safety. This caused the loss of the shaft and further development. It can only be said that the mine was producing 7% cu., 1½ oz ag. at time of cave in and that extent or size of ore bodies are unknown. Either sink the vertical shaft an additional 100' to the bottom of incline #2 shaft at the water level and where cave (occurred, or x-cut from present 210' depth (to the known mineralized zone above 200' (level for quicker results.
- 24A. Dimensions and Value of Ore body
Undetermined. Smelter records indicate shipments of 7000 to 8000 tons of 7% cu. and 1½ oz. Ag were made in 1916 and 1917 when work was halted by shaft cave-in due to careless mining and flooding. No attempt was made by the then owners to reopen because of lack of agreement on new policy. Plenty reasons (exist to give hopes that the property has (promises of making a moderate sized (producer with an intelligent program of (development.
25. Mine, Mill Equipment & Flow-Sheet
26. Road Conditions, Route Good
27. Water Supply Water was encountered at 282' vertical depth in #2 incline shaft. Quantity unknown at this date.
28. Brief History Prior to 1916 J.R. Pemberton shipped 6 - 7% carbonate ore from the Vulcan from near the surface but no records are available as to tonnage. In 1917 Pemberton turned the operation over to W.R. Ramsdell. Some shipments were made by Ramsdell to the Copper Queen smelter at Douglas, and a copy of the Phelps Dodge Records of shipments by Ramsdell follows:
29. ~~Special Problems, Reports Filed~~
- | | | | <u>Dry Tons</u> | <u>Ag</u> | <u>Cu</u> |
|------------------------------------|------|--|-----------------|-----------|-----------|
| Shipped by W. R. Ramsdell | 1916 | | 5,167 | 1.12 | 6.24 |
| " " " | 1917 | | 3,262 | 1.56 | 7.80 |
| Shipped by Vulcan Cons. Copper Co. | 1918 | | 88 | 1.35 | 7.92 |
30. Remarks To the writer's certain knowledge the 88 tons was sorted from the dump and the similarity in values would indicate a common source.
31. If property for sale: Price, terms and address to negotiate. Open for discussion with responsible parties. Would prefer long time contract 3 to 4 years on royalty basis.
32. Signature..... Edward Foy and Matthew Baird.....
33. Use additional sheets if necessary.

Edwin A. Stone 6-8-38

Vulcan Group: Ore makes on contact of granite and limestone; the contact is an interfingering one. Some ore makes out as much as 100 feet from actual contact. The ore was valuable for copper; total production about \$130,000. The ls-granite contacts dip to the south probably at a low angle. A 400' incline at 45 degrees to the south and a 210' vertical shaft developed the property. The vertical shaft did not reach ore.

This property may yield some ore yet but conditions do not appear favorable for large orebodies. It would be well to test the property if mining nearby.

1. [REDACTED]
2. Pima County, Arizona
3. Submitted by Mike Doyle
4. Messrs. Hernon and Stone
5. Data re-checked October 3, 1946, and they found no reason to revise opinion made during the district survey in 1943-44.
6. Copper-silver

7. [REDACTED] As indicated in 1943-44 ore occurrences in the Vulcan are probably similar to the Mineral Hill deposits. There is reason to believe that there will be no continuity and that only small disconnected orebodies may be expected. . . . Undoubtedly the Vulcan will produce some ore, but from present data the orebodies are indicated to be small and erratic and possible tonnage insufficient to compensate for the risk."
8. On June 15, 1950, Mr. Duff stated in a memo to Mr. Ibern that "the Vulcan Group of claims . . . has recently been leased and some prospecting work is going on."

Addendum by G. J. Duff - May 21, 1951: Since the above was written, the property was again leased, and I have been informed by Mr. D. G. Chilson that a churn drill hole was drilled from the bottom of a vertical shaft for a depth of approximately 140 feet. Some mineralization was encountered but by no means commercial ore.