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Arizona Department of Mines and Mineral Resources Mining Collection

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PRINTED: 12/18/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: BULLDOG

ALTERNATE NAMES:
- UNPATENTED CLAIMS MS 4598
- HIGHLAND BOY
- ENTERPRISE CLAIMS
- EXTRA SESSION GROUP
- SUNSET AND MARYJANE

PINAL COUNTY MILS NUMBER: 44B

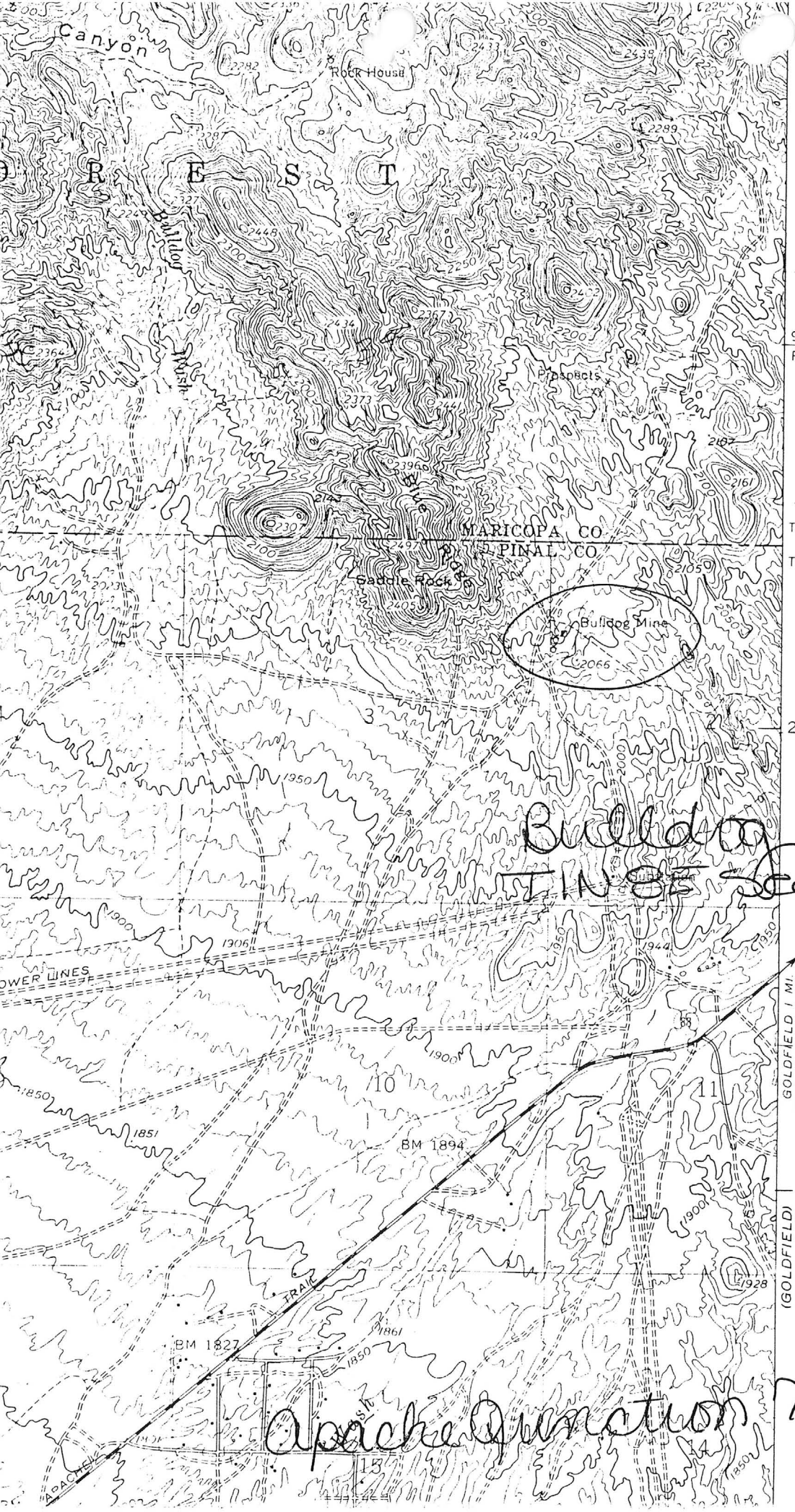
LOCATION: TOWNSHIP 1 N RANGE 8 E SECTION 2 QUARTER W2
LATITUDE: N 33DEG 27MIN 43SEC LONGITUDE: W 111DEG 30MIN 36SEC
TOPO MAP NAME: APACHE JUNCTION - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
- GOLD
- SILVER
- COPPER

BIBLIOGRAPHY:

- BLM MINING DISTRICT SHEET 117
- ADMMR MESA GOLD MINING AND MILLING CO. FILE
- ADMMR BULL DOG MINE FILE
- ADMMR U FILE PINAL AU2
- CLAIMS EXTEND INTO SEC. 3
- AZ MINING JOURNAL, 1919, VOL III, NO.1, P48



Bulldog
T1N R8E Sec. 2

Apache Junction 7.5'

PHOENIX.

BULLDOG MINE IS TAKEN OVER.

L.A. Times July 1910.

WILL BE OPERATED IN CONJUNCTION WITH MAMMOTH.

Territorial Secretary Young Starting Work on a Large Scale—Resumption of Development on the Horton Group—Bond Is Given on Maverick Property.

(SPECIAL CORRESPONDENCE OF THE TIMES.)

PHOENIX (Ariz.) July 8.—The old Bulldog mine at Goldfield has been purchased by Territorial Secretary Geo. U. Young and will be added to the property of the Young Mines Company, Limited, which is mainly himself, to be operated in conjunction with the nearby Mammoth property, bonded by Young a month or so ago. The Bulldog once was operated by a company of Phoenix men, who placed a small mill upon it, but who were unable to secure returns equal to expenditures, despite the fact that assays uniformly ran high on the ledge matter. Bad management was charged with the failure.

The mine lies just below Bulldog

BULLDOG MINE

Three miles west of the Mammoth Mine is the Bulldog Mine, a lonely mine by itself. This mine is characterized by the most outstanding vein of all the mines. For here is a long, white vein of quartz and calcite that trends north and south for some 200 feet upon the surface and averages in width eighteen inches. The deposit must have been very rich for in 1917 a Phoenix syndicate placed a forty-ton stamp mill upon the property and started right in to mill the ore. Typical of the bonanzas of Goldfields, the ore was so rich that two of the partners were overcome by the wealth and absconded with gold bullion variously estimated at from $50,000 to $80,000 leaving behind unpaid labor and machinery bills.

In the winter of 1927 and 1928, Mr. Boyles was exploring near the conspicuous white ledge of the old Bull Dog mine. Here he burrowed into an extremely rich pocket of gold, about the size of a wash tub, that yielded two thousand dollars in gold. This was not too unusual for Goldfield is known as "rich pocket country."

This mine is developed by 600 feet of drifts on the 100 foot level and 300 feet of drifts on the 50 foot level. The mine is named after a peak to the west that resembles a bulldog.

Considerable mining on the old Bull Dog vein has left a gaping fissure within the earth.

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THE BULL DOG GROUP

Goldfield, Arizona

INTRODUCTION

The Bull Dog group consists of three unpatented claims, Jessieland No. 1, 2 and 3 (originally located as the Bull Dog claims), comprising approx. 61.98 acres. The claims are accessed from paved State Highway 88 via less than a mile of excellent gravel-surfaced road. They lie 1.35 miles west of the Mammoth group. The owners state a water well is on the property. A 45kV electrical substation with 480V 3-phase service lies 0.3 miles distant.

A preliminary title examination shows the claims to be in "good standing". The appropriate fees and a maintenance fee waiver have been timely filed with the Bureau of Land Management. However, ordinary discretion in the mining industry would indicate the wisdom of conducting a thorough title examination on any unpatented claims at Goldfield or anywhere else.

The listing price of the Bull Dog Group is U.S. $1,112,000.00.

A drilling program is currently underway by the owners, however the writers are unaware of any metallurgical test results on cores. The pioneer-era underground workings are flooded.

HISTORY

Kilbey [26] states the major exploitation of mineralization in the Goldfield district occurs along north trending fault zones, with one running through Goldfield, one lying west of Goldfield and another occurring at the Bull Dog Mine. Wilburn [87] says the Bull Dog, bearing stage three electrum deposition, was the second largest gold producer in the district,. Wilburn continues by stating that at the fifty foot level, ore five feet wide assayed 1.84 Au opt, with high grade ore assaying 250 Au opt. One fifteen foot winze below the 100 foot level assayed 2.42 Au opt.

John Wilburn, *Superstition Mountain Journal, April 1981,* characterized the Bull Dog as a lonely mine all by itself with the most outstanding vein of all the mines. The article refers to a wash tub sized pocket of ore yielding $2,000 worth of gold, worth $28,000 at today's prices ($289.50/oz). This is not unusual in rich pocket country. The article states that in 1917 the ore was so rich that two partners were "overcome" by the wealth, whereby they absconded with $50,000 to $80,000 worth of bullion, leaving behind accrued debts. This would be worth $700,000 to $1,120,000 today.

A 22-page engineer's report by Alfred Strong Lewis, July 1917 [68], is the only report on the property known to the writer. Though the report is somewhat antiquated, Lewis points out that anywhere in the district low grade gold values can be found. It was this almost universal presence of gold through various kinds of formations which created such wide-spread confidence in this area. Lewis stipulates that practically all of the many large deposits of low grade which occur from the surface downward can be milled profitably (circa 1917) but little attention was paid to these ore bodies due to the glamour of the rich strikes so frequently made. In this writer's opinion this has been the case to date.

Lewis states no attempt has been made to exploit these immense and certain bodies of low grade ore (still true to date). Lewis refers to the Bull Dog vein as the most conspicuous and well defined mineralized ledge in the area. He further states the ore was so rich at the fifty and one-hundred foot levels that no thought was given to systematic development.

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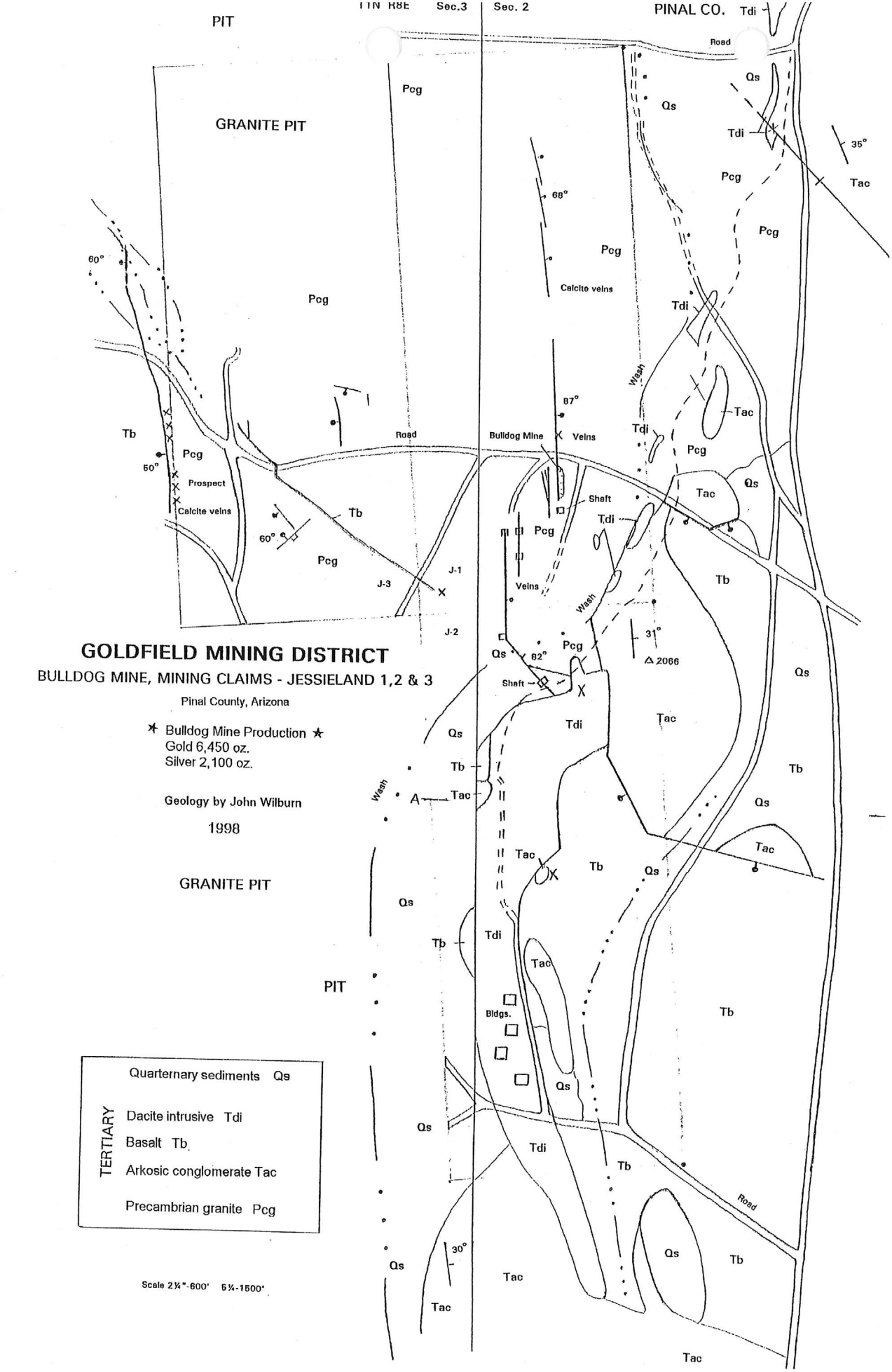
After following the course of least resistance, gophering out the richest ore and leaving the mine in a gutted condition, several sporadic efforts to operate the mine only met with a limited degree of success. Lewis states these efforts failed due to a lack of necessary capital and equipment to develop the mine systematically. He believes the entire mass of granite is mineralized across its seven hundred foot width and three thousand foot length.

Lewis adds that this mineralized zone, known to have produced commercial grade ores of gold and silver from several ledges, cannot fail to justify his opinion that deep development work will uncover millions of dollars worth of gold and silver ores. He feels that permanent gold values in this type of deposit cannot be expected until several hundred feet beneath the surface is attained. He also states that the rich ore shoots that reach the surface, as a rule, are of limited size and only an index of what would be expected in a permanent ore deposit of large extent at depth somewhere between the two hundred and the one thousand foot levels.

Finally, Lewis concludes that the geological, chemical and mineralogical evidence, supported by the rich ore encountered in the lowest level, is such to *convince the most skeptical* that the Bull Dog has only been touched. He believes that ore deposits of great richness throughout the entire length of the vein extending to considerable depth will be encountered, and the possibilities of enormous low grade ore bodies does exist.

Warren Konemann



GOLDFIELD MINING DISTRICT

BULLDOG MINE, MINING CLAIMS - JESSIELAND 1,2 & 3

Pinal County, Arizona

★ Bulldog Mine Production ★
Gold 6,450 oz.
Silver 2,100 oz.

Geology by John Wilburn

1998

GRANITE PIT

PIT

	Quarternary sediments Qs
TERTIARY	Dacite intrusive Tdi
	Basalt Tb
	Arkosic conglomerate Tac
	Precambrian granite Pcg

Scale 2¼"-600' 5¼-1500'

H. d'Andrea/Bulldog Mine
Apache Jct., Az.
Fusion Analysis
6/15/98

Konemanns'Konsulting
4629 E McLellan
Mesa. AZ 85205-3217
(602) 807-2055

SAMPLE	MESH	AU OZ/T	AG OZ/T	Pt	Pd	SAMPLE WEIGHT	TEST	HD:CONS	NOTES
1	-30	0.08	0.37			29.2g	Fusion		74'-79'
									precamb granite
									sulphide
2	-30	0.06	0.11			29.2	Fusion		100'
									precamb granite
									sulphide
MILL RUN									
Head ore									
Scrn. Analysis									
	-20								
	-30								
	-50								
	-80								
	-150								
	-200								

Tests were run using standard analytical procedures
and are based solely on the samples submitted. Konemanns' Konsulting
strives to do the best to its knowledge and ability but makes no warrantees or promises, written or implied.

THE BULLDOG FILE WAS DISCOVERED MISSING 2/15/95. THIS FILE IS A COPY OF THE FILE FROM THE TUCSON OFFICE. THE MESA GOLD FILE REFERENCE IN THE BIBLIOGRAPHY IS ALSO MISSING.

Pinal County | Arizona State

Chief Mineral Gold No. Au 2

Property Name: Bulldog Mine

Accessory Minerals

Owner: Name, Address Date

Location: About 4 mi NE of Apache Junction
Approx sec 3, T1N, R8E.
1N-8E-NW2
See page 15 this book

Operator:

Production:
Total From to
Present Rate Per Date

Source of Information:

Ariz Mng Jr., Vol 3, No 1, p 48

Status	Date
Inactive	1948

USBM Report: File No.

Classification: Exhausted Mine
(See other side for general information)

A/3

General Information: Reference states property produced rich gold ore from silicified lenses in a wide spar ledge. Has about 1/] mile of workings with greatest depth of only 100'.

Character of Ore:

Equipment (Date):

BULLDOG MINE

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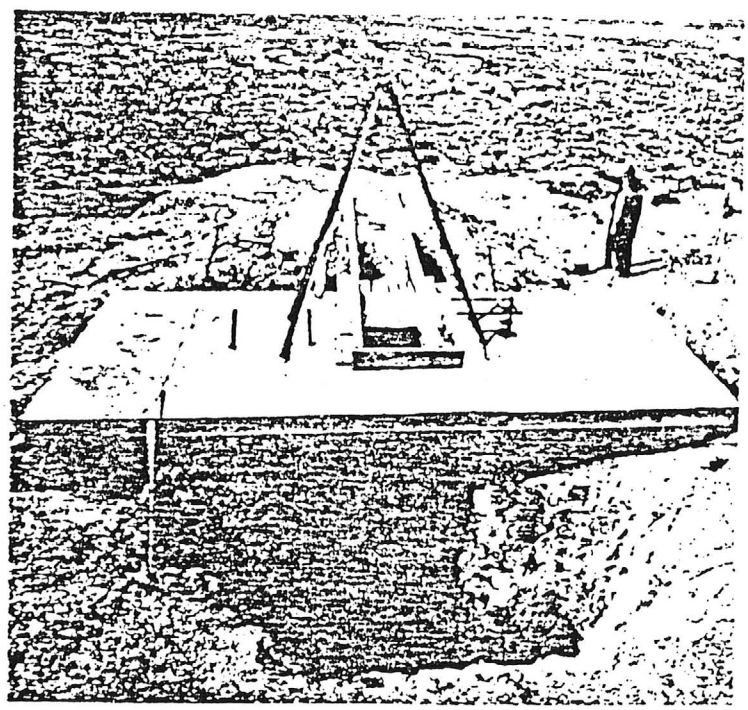
In the winter of 1927 and 1928, Mr. Boyles was exploring near the conspicuous white ledge of the old Bull Dog mine. Here he burrowed into an extremely rich pocket of gold, about the size of a wash tub, that yielded two thousand dollars in gold. This was not too unusual for Goldfield is known as "rich pocket country."

This mine is developed by 600 feet of drifts on the 100 foot level and 300 feet of drifts on the 50 foot level. The mine is named after a peak to the west that resembles a bulldog.

Considerable mining on the old Bull Dog vein has left a gaping fissure within the earth.

DOC PALMER MINE

The Doc Palmer Mine is located on the western slopes of Superstition Mountain itself. This mine was first located in 1886, it being the first claim ever staked near the mountain. Originally it was called the Buckhorn located by Wm. Kimball. A newspaper account of February 28, 1900 reported, "W. A. Kimball of Mesa is shipping some high producing ore from the Buckhorn Mine, two carloads being loaded yesterday". In 1937 one carload of ore returned a gross value of $430.75. Most of this ore is copper bearing that lies within a fault contact between altered andesite and quartz monzonite. In 1947, the 265 foot level was reached and some 50 feet of drifts were dug to the east and west. Some small but rich pockets of gold were encountered below 125 feet. One assay ran 886 ounces per ton in gold. Once 85 pounds of ore yielded 2½ ounces of gold. The mine is caved below the 60 foot level, and it is being reopened by the present owner Mr. Copeman.



Site of the Doc Palmer Mine. This mine was originally called the Buckhorn Mine and was located in 1886.

* GENERAL REFERENCES

Bulldog

REFERENCE 1 F1 < AGMT - USBM F DATA >

REFERENCE 2 F2 < AOMR [redacted] BULLDOG MINE FILE >

REFERENCE 3 F3 < SHERIDAN, M. F., 1968, VOLCANIC GEOLOGY ALONG THE WESTERN PART OF THE APACHE TRAIL. IN ARIZONA GEOLOGICAL SOCIETY S. ARIZONA GUIDEBOOK III, P. 227-229.

REFERENCE 4 F4 < FOOR, R. V., 1964. PETROLOGY AND PETROGRAPHY OF THE VOLCANIC ROCKS IN THE GOLDFIELD MOUNTAINS, ARIZONA. ARIZONA STATE UNIVERSITY M.S. THESIS.

Mills 4448

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

RECORD NUMBER B10 < >
*RECORD TYPE B20 < X, 1, M >
DEPOSIT NUMBER B40 < >
REPORT DATE G1 < 8, 2, 0, 3 > (YR. MO.)
*INFORMATION SOURCE B30 < 1, 2 >
*FILE LINK IDENT. B50 < USBM-0040210204 >
REPORTER(SUPERVISOR) G2 < BEST, DON E. > (last, first, middle initial)
(> (last, first, middle initial)
REPORTER AFFILIATION G5 < AGMT >
*SITE NAME A10 < BULLDOG MINE >
SYNONYMS A11 < BULLDOG AND ENTERPRISE MINE >

LOCATION

MINING DISTRICT/AREA A30 < GOLDFIELDS DISTRICT >
COUNTY A60 < PINAL >
*STATE A50 < A, Z >
*COUNTRY A40 < U, S >
PHYSIOGRAPHIC PROV A63 < 1, 2, ✱ >
DRAINAGE AREA A62 < 1, 5, 0, 5, 0, 1, 0, 0, ✱, LOWER COLORADO >
*LAND STATUS A64 < 4, 9, ✱, ✱, (1, 9, 7, 9,) >
QUADRANGLE NAME A90 < APACHE JUNCTION (1, 9, 7, 3,) >
*QUADRANGLE SCALE A100 < 2, 4, 0, 0, 0 >
SECOND QUAD NAME A92 < ( ) >
SECOND QUAD SCALE A91 < >
ELEVATION A107 < 2, 0, 5, 0, ✱, F, T >

UTM
*NORTHING A120 < 3, 7, 0, 2, 4, 1, 0 >
*EASTING A130 < 4, 5, 2, 5, 8, 0 >
*ZONE NUMBER A110 < +, 1, 2 >

*ACCURACY
ACCURATE (ACC) (circle)
ESTIMATED EST < >

GEODETIC
*LATITUDE A70 < _ _ _ _ _ _ N >
*LONGITUDE A80 < _ _ _ _ _ _ W >

CADASTRAL
*TOWNSHIP(S) A77 < 00, 1, N, ✱ >
*RANGE(S) A78 < 00, 8, E, ✱ >
*SECTION(S) A79 < 2 >
*SECTION FRACTION(S) A76 < SW¼ of NW¼ >
*MERIDIAN(S) A81 < GILA AND SALT RIVER >

*POSITION FROM NEAREST PROMINENT LOCALITY A82 < ¼ MILE SE OF BLUE RIDGE >
LOCATION COMMENTS A83 < LOCATED IN BULLDOG CANYON, 1 MILE WEST OF TOWN OF GOLDFIELD >

* ESSENTIAL INFORMATION
+ ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

COMMODITIES PRESENT C10: Au, Ag, Cu
ORE MINERALS C30: FREE GOLD
COMMODITY SUBTYPES C41:
GEN. ANALYTICAL DATA C43:
COM. INFO. COMMENTS C50:

SIGNIFICANCE

	PRODUCER	NON-PRODUCER
MAJOR PRODUCTS	MAJOR: Au	MAIN COMMODITIES PRESENT C11:
MINOR PRODUCTS	MINOR: Ag, Cu	MINOR COMMODITIES PRESENT C12:
POTENTIAL PRODUCTS	POTEN:	
OCCURRENCES	OCCUR:	OCCURRENCES OCCUR:

*PRODUCTION

PRODUCER	NON-PRODUCER
PRODUCTION (YES) (circle) PRODUCTION SIZE (SML) MED LGE (circle one)	PRODUCTION UND. NO (circle one)

EXPLORATION OR DEVELOPMENT

STATUS

PRODUCER	NON-PRODUCER
STATUS AND ACTIVITY A20: 4	STATUS AND ACTIVITY A20:

DISCOVERER L20: O-O. MERRILL
YEAR OF DISCOVERY L10: 1892 *NATURE OF DISCOVERY L30: B *YEAR OF FIRST PRODUCTION L40: 1914 *YEAR OF LAST PRODUCTION L45: 1942
PRESENT/LAST OWNER A12:
PRESENT/LAST OPERATOR A13:
EXPL./DEV.COMMENTS L110: OPERATORS INCLUDED SCHILL BROTHERS AND T.W. BEAUCHEMIN, O.O. MERRILL

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) C40: VEIN
DEPOSIT FORM/SHAPE M10:
*DEPTH TO TOP M20: *UNITS M21: *MAXIMUM LENGTH M40: *UNITS M41:
*DEPTH TO BOTTOM M30: *UNITS M31: *MAXIMUM WIDTH M50: *UNITS M51:
*DEPOSIT SIZE M15: (SMALL) M15: (MEDIUM) M15: (LARGE) (circle one) *MAXIMUM THICKNESS M60: *UNITS M61:
*STRIKE M70: *DIP M80:
*DIRECTION OF PLUNGE M100: *PLUNGE M90:
*DEP. DESC. COMMENTS M110: ORE ZONE AVERAGE WIDTH 10 FT, ENTERPRISE VEIN, 5 TO 6 FT IN WIDTH, RUNS PARALLEL TO BULLDOG VEIN

DESCRIPTION OF WORKINGS

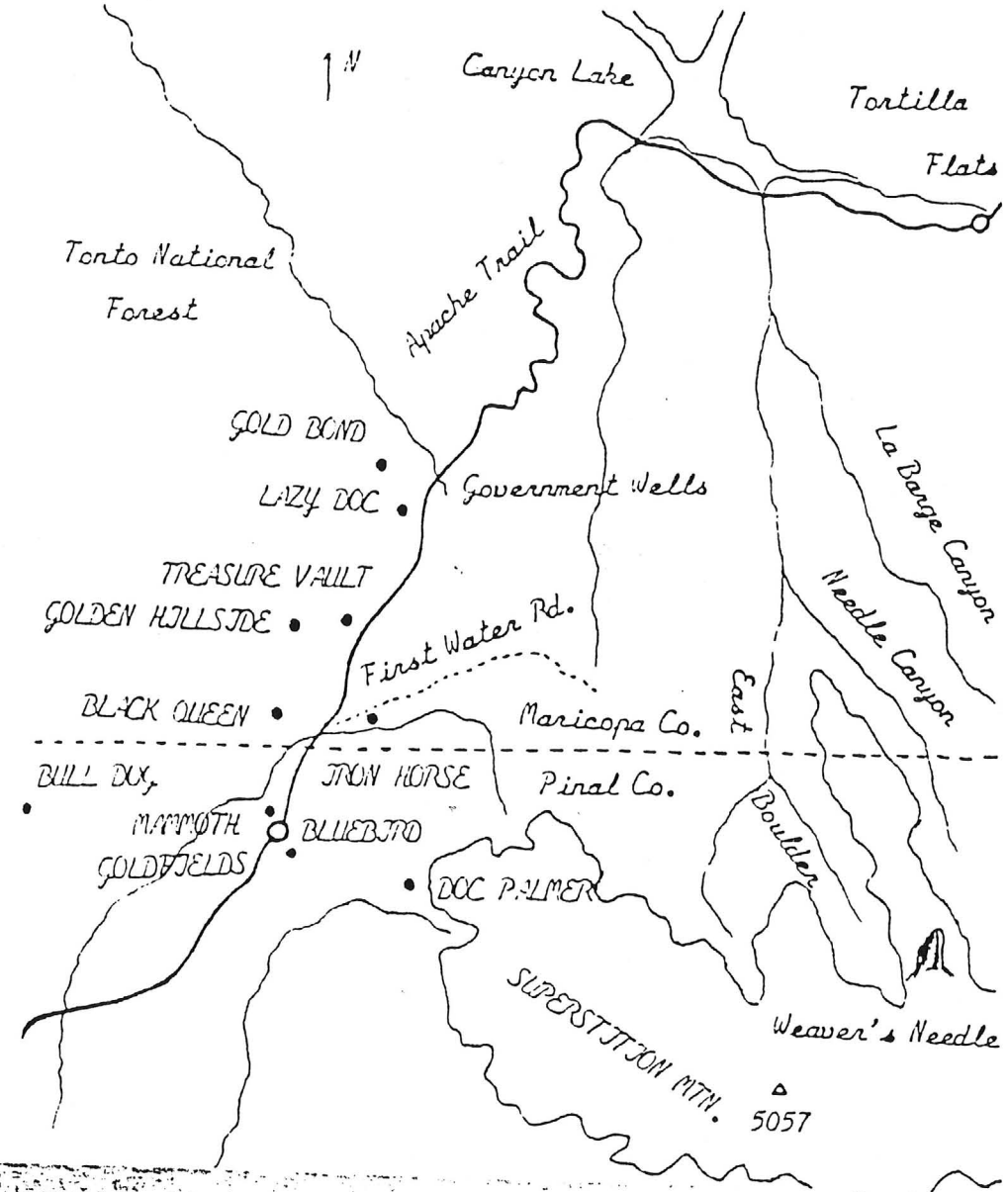
*Workings are: SURFACE M120 UNDERGROUND M130 BOTH M140 (circle one)
*DEPTH BELOW SURFACE M160: 100 *UNITS M161: FT *OVERALL LENGTH M190: *UNITS M191:
*LENGTH OF WORKINGS M170: 2000 *UNITS M171: FT *OVERALL WIDTH M200: *UNITS M201:
*OVERALL AREA M210: *UNITS M211:
DESC. OF WORK. COM. M220: MAIN SHAFT 100 FT, OTHER SHAFTS 30-100 FT. 700 FT WORKINGS AT 50 FT LEVEL, 800 FT OF WORKINGS AT 100 FT. LEVEL - ALL FROM 1918 DESCRIPTION OF MINE

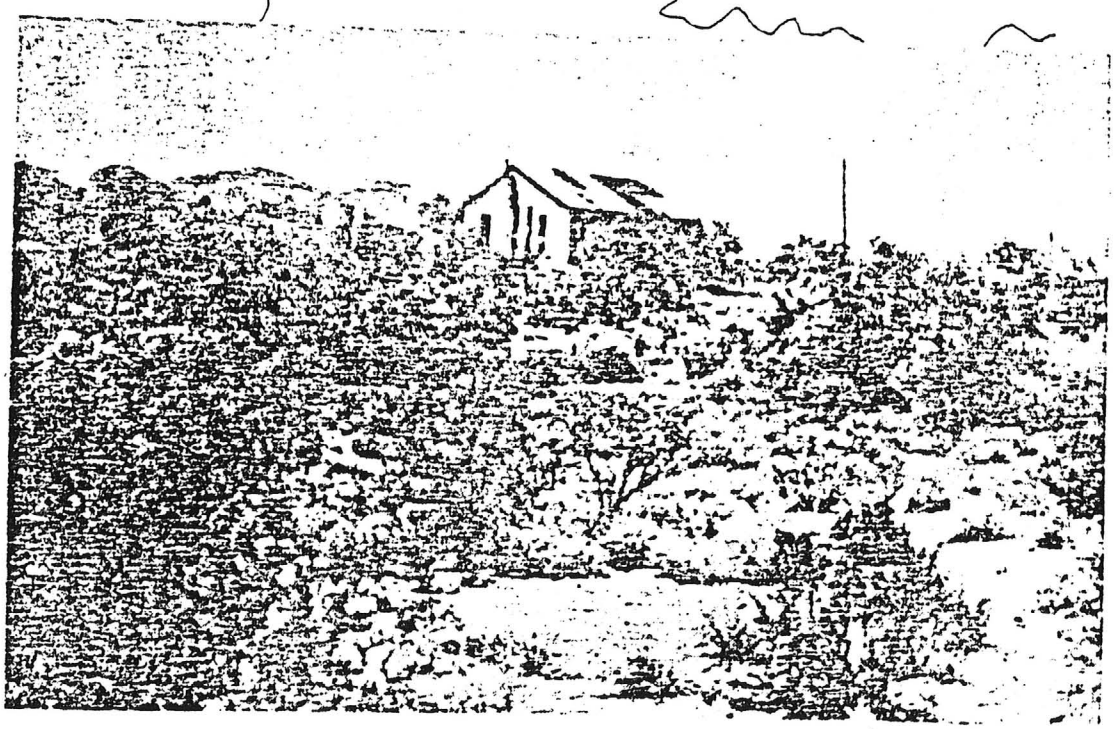
GEOLOGY

*AGE OF HOST ROCK(S) K1: P.R.E.C.
*HOST ROCK TYPE(S) K1A: GRANITE
*AGE OF IGNEOUS ROCK(S) K2: T.E.R.T.
*IGNEOUS ROCK TYPE(S) K2A: ANDESITE
*AGE OF MINERALIZATION K3: T.E.R.T.
*PERT. MINERALS (NOT ORE) K4: CALCITE
*ORE CONTROL/LOCUS K5: GOLD CLOSEST TO CONTACT WITH AN ANDESITE DIKE, IN HIGHLY ALTERED GRANITE
*MAJ. REG. TRENDS/STRUCT. N5: ANDESITE AND BASALT COMPLEX, LAYERS GENERALLY WNW STRIKE, 30 NE DIP
*TECTONIC SETTING N15:
*SIGNIFICANT LOCAL STRUCT. N70: NW TRENDING FAULTS, N-S DIKES, ~~VOLCANIC~~ COMPLEX EXPOSED 100 M NW OF MINE ON BLUE RIDGE
*SIGNIFICANT ALTERATION N75:
*PROCESS OF CONC./ENRICH. N80:
FORMATION AGE N30:
FORMATION NAME N30A:
SECOND FM AGE N35:
SECOND FM NAME N35A:
IGNEOUS UNIT AGE N50:
IGNEOUS UNIT NAME N50A:
SECOND IG. UNIT AGE N55:
SECOND IG. UNIT NAME N55A:
GEOLOGY COMMENTS N85: GRANITE AGE UNCERTAIN HERE, BUT IS PROBABLY PRECAMBRIAN

GENERAL COMMENTS

GENERAL COMMENTS GEN:


N
Canyon Lake
Tortilla Flats
Tonto National Forest
Apache Trail
GOLD BOND
LAZY DOC
Government Wells
La Barge Canyon
TREASURE VAULT
GOLDEN HILLSIDE
First Water Rd.
Needle Canyon
East
BLACK QUEEN
Maricopa Co.
BULL DOG
IRON HORSE
Pinal Co.
MAMMOTH GOLDFIELDS
BLUEBIRD
DOC PALMER
Boulder
SUPERSTITION MTN.
Weaver's Needle
5057



Gold Link Mines

PROPHESIES MAMMOTH WILL BE A MINE

Justice George S. Irwin made a tour of inspection Sunday extending over a good portion of the Goldfield mining district partly for the purpose of witnessing the development being done there and to also take a look at some property of his own which is located near the workings being done by George U. Young on the Mammoth.

Mr. Irwin has had considerable experience in the Colorado gold fields and is experienced in the mining business. Yesterday he made the statement that in his opinion the workings of Mr. Young would uncover a mine. The three-compartment shaft on the Mammoth is down to a depth of ninety feet. Drifting will commence at the 100-foot level and will continue at intervals of every hundred feet. The machinery which has been installed is all of a high grade order. The stamp mill is to be one of the latest inventions and will be located near the old mill. The hoist is in operation using buckets to carry the men up and down in the shaft until the arrival of the cages. According to Mr. Irwin the formation is easily worked and little difficulty is encountered in going down.

THE MAMMOTH MINE PROVING OF WORTH

George U. Young's Mine Shows Splendid Ore After a Little Work. Old Producer

The following, taken from the Mesa Free Press, will be good news to Phoenix people:

Most encouraging reports come from Goldfield, and it is evident that there will soon be one of the greatest mines in the territory at Mesa's door. Since Hon. Geo. U. Young took hold of this property it has been worked in a systematic manner. He found everything in disorder. The old workings were caved in, the timbers rotted and the lower levels full of water. It was hopeless at that time to take advantage of any of the old work. Consequently a new working shaft was started. It is a double compartment shaft, with a man-way and has been sunk in solid formation. When the desired depth is reached, levels will be run to cut the ore bodies, when the output of the mine should be such as to make people take notice. In the meantime a hoist was placed upon the Black Queen and that shaft is now producing ore that brings a smile to the operators. Two other shafts are now being worked and the mill is making daily runs. The ore is of high enough grade to justify sacking, showing that it is not all a low grade proposition. Mr. Young is a man who does not believe in boasting of what he intends to do, but keeps the work going in a way that results tell. When asked for news he says that he is "sawing wood," and hopes to have news later on. Enough is known of the work to justify a statement that the old Mammoth has "come back" and is here to stay. Prospectors and mining men realize this and also believe that there are other big mines in the district that need only devel-

PHOENIX.

POLITICIAN A COMING MINER.

STAMP MILL WILL BE PUT IN BY TERRITORIAL OFFICIAL.

George U. Young to Take Up Work of Developing the Old Mammoth Mine at Goldfield, Ariz.—Plans New Shaft, Mill and Machinery—Development Work on Bulldog.

(SPECIAL CORRESPONDENCE OF THE TIMES.)

PHOENIX (Ariz.) June 3.—Territorial Secretary George U. Young states that a ten-stamp mill will be working about July 1 on the old Mammoth mine at Goldfield, twenty miles east of Mesa, across the Pinal county line, on which he has an option.

A new three-compartment shaft has been started apart from the old workings, a new hoist has been set and a large amount of machinery added to the old plant.

It is not expected that any bonanza will be struck, but there is assurance that a large amount of low-grade ore is available, to be worked at a profit in a modern, labor-saving mill.

The old ore body was from three to seven feet wide, within very distinct walls, between which it was generally worked out clean.

Much of the mine has caved, as the vein was on a considerable incline.

The property lies just at the western break of the Superstition Mountains, much of the country rock being granite. It is surrounded by a large number of claims, worked for years by prospectors in a desultory sort of way, though the surface rock generally is remarkable for its value in free gold.

Across the narrow valley lies the Bulldog mine, a property that has had considerable development and on which a small mill once was operated. William Neagle has been placed in charge of the Goldfields mine and James A. Noel of Los Angeles has arrived to erect and superintend the mill.

YOUNG BUYS THE OLD BULL DOG PROPERTY

His Faith in the Goldfield District Gets Stronger Every Day.

George U. Young who is engaged in developing and equipping for active operations the old Mammoth mine at Goldfield, yesterday acquired from E. [illegible] Mattuck the old Bull Dog mine, only a short distance from the Mammoth mine and almost as historic a

anyway, for he form[illegible] of the mill under Cha[illegible] former owner, and w[illegible] the last big bar of bu[illegible] out, valued at $60,000 [illegible] of wide experience a[illegible] ton who gave to E. [illegible] notable assayer of [illegible] lesson in metallurgy.

The mill undergoing [illegible] have ten stamps. M[illegible] the present time thes[illegible] garded as more for [illegible] erty than anything [illegible] the values he expect[illegible] one and possibly two [illegible] which he believes wil[illegible] cheaper and just as [illegible] equipping the stamp [illegible] reasons. One is beca[illegible] the ore, no matte[illegible]

tions, that re[illegible] rd work, and his own part, see to it that associated with[illegible] by his ventures [illegible] be made at all, a loss, he will [illegible] st part of it.

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The Bull Dog property, which he has just acquired, will not be incorporated with the Mammoth, but is a project independent of it, though near by.

END

According to Mr. Irwin the formation is easily worked and little difficulty is encountered in going down.

YOUNG BUYS THE OLD BULL DOG PROPERTY

His Faith in the Goldfield District Gets Stronger Every Day.

George U. Young, who is engaged in developing and equipping for active operations, the old Mammoth mine at Goldfield, yesterday acquired from E. N. Shattuck the old Bull Dog mine, only a short distance from the Mammoth mine and almost as historic a property. Though never worked quite so extensively as the Mammoth it has in other days been a producer and Mr. Young is convinced it still has a future. The terms of the sale were not made public and will not be until later.

Speaking of the Mammoth mine, Mr. Young said yesterday the work of equipping the mill had not progressed quite so rapidly as he had hoped and it will not be possible to start it before the 10th or July, though he had hoped to begin reduction on the 1st. Yesterday he employed two experienced [illegible] to conduct the recovering of the gold from the plates. One of them really belongs to the plant anyway, for he formerly had charge of the mill under Charles L. Hall, the former owner, and was present when the last big bar of bullion was turned out, valued at $60,000. He is a man of wide experience and was the person who gave to E. E. Burlingame the notable assayer of Denver, his first lesson in metallurgy.

The mill undergoing completion will have ten stamps. Mr. Young says at the present time these stamps are regarded as more for testing the property than anything else. If he finds the values he expects to he will add one and possibly two Huntington mills, which he believes will work the ore cheaper and just as effectively. He is equipping the stamp mill first for two reasons. One is because it will handle the ore, no matter how hard it is and secondly because the major part of the mill was already on the ground and its equipping was the quickest way to get results.

Mr. Young is now engaged in the incorporation of "The Young Mines Company, Limited" which will take over and operate the Mammoth property. The capital stock will be $750,000, par value of the shares $10, Mr. Young owning practically all of the stock.

The incorporation is not designed for the purpose of conducting a stock sale, as is customary in the exploitation of mines. On the contrary Mr. Young is following out an original idea in his mining operations, that requires a lot of hard work, and many sacrifices on his own part, his purpose being to see to it that no man who has been associated with him shall lose money by his ventures, if there is any money to be made at all, and, if there is to be a loss, he will stand by far the heaviest part of it.

What is known as the Derby group of twenty-five claims six miles west of Prescott, now under process of being patented, in the development of which property Mr. Young has been busily engaged for the last four years, is incorporated under the name of the "Madizelle Mining Co." The capital stock is $500,000 and the stock is all held by three persons.

About seven miles south of Prescott on the Hassayampa river, is a group of ten claims owned by "The Yankee Mining Co.", of which Mr. Young owns all the stock.

Discussing his plans yesterday Mr. Young said it was his purpose to prove the assays secured on the Mammoth ores, by test runs in the mill for the next month or two. If the mill returns 50 per cent of what the assays indicate it should return, he will then install Huntington mills and a cyanide plant for working the ore on an extensive scale. He believes the Huntington mills will be much less wasteful of the values and more economically operated on ore of the sort found in the Mammoth district.

On proving the ore by the mill tests and as soon as correct deductions can be made on interest and a sinking fund it is his intention to so finance his operations as to return to the stockholders all the money they have advanced in the development of the Madizelle group leaving their holdings clear and without risk to them as a partial repayment to them for their loyalty and confidence in him.

It is Mr. Young's intention also to so handle his enterprises that he will have a further development fund of $35,000 for the Madizelle group and $25,000 for the Yankee group, both of which, if he has not been misled by reports of engineers and assays, he should be able to accomplish by the first of October. It is his intention and desire to fully develop all three properties with the least minimum of stock issued, which stock will in the end be very valuable to the few people who hold it, even if but one of the three properties become good paying mines, and at the present time he thinks they all will be so proved eventually. There will only be 3,000 shares of the Mammoth stock for sale. The first thousand shares will be sold at $5 and the remainder at par, $10. This fact is mentioned only in the case of accident or disappointment, for if the present promises are kept Mr. Young will need no financial help to perfect the Mammoth plant, put it on a basis for paying the purchase price, development and a nice little sum beside.

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PHOENIX.

BULLDOG MINE IS TAKEN OVER.

L.A. Times July 1910.

WILL BE OPERATED IN CONJUNCTION WITH MAMMOTH.

Territorial Secretary Young Starting Work on a Large Scale—Resumption of Development on the Horton Group—Bond Is Given on Maverick Property.

[SPECIAL CORRESPONDENCE OF THE TIMES.]

PHOENIX (Ariz.) July 8.—The old Bulldog mine at Goldfield has been purchased by Territorial Secretary Geo. U. Young and will be added to the property of the Young Mines Company, Limited, which is mainly himself, to be operated in conjunction with the nearby Mammoth property, bonded by Young a month or so ago. The Bulldog once was operated by a company of Phoenix men, who placed a small mill upon it, but who were unable to secure returns equal to expenditures, despite the fact that assays uniformly ran high on the ledge matter. Bad management was charged with the failure.

The mine lies just below Bulldog

YOUNG GETS THE OLD BULL DOG PROPERTY

His Faith in the Goldfield District Gets Stronger Every Day.

George H. Young who is engaged in developing and equipping for active operations, the old Mammoth mine at Goldfield, yesterday acquired from E. Snattuck the old Bull Dog mine, only a short distance from the Mammoth mine and almost as historic a property. Though never worked quite so extensively as the Mammoth it has in other days been a producer and Mr. Young is convinced it still has a future. The terms of the sale were not made public and will not be until later.

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that shaft is now producing ore that brings a smile to the operators. Two other shafts are now being worked and the mill is making daily runs. The ore is of high enough grade to justify sacking, showing that it is not all a low grade proposition.

Mr. Young is a man who does not believe in boasting of what he intends to do, but keeps the work going in a way that results tell. When asked for news he says that he is "sawing wood," and hopes to have news later on. Enough is known of the work to justify a statement that the old Mammoth has "come back" and is here to stay. Prospectors and mining men realize this and also believe that there are other big mines in the district that need only development to disclose their treasures. The country for a long distance has been located and the prospectors are now at work.

It will be a good plan for people of this section to keep an eye on the Goldfield country. One or two big mines there will prove a wonderful boost for Mesa, the base of supplies. The fact that Mesa is the nearest town and that there is no better road in the territory, will prove a permanent chain holding together the interests of the two localities.

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surface rock generally is remarkable for its value in free gold.

Across the narrow valley lies the Bulldog mine, a property that has had considerable development and on which a small mill once was operated. William Neagle has been placed in charge of the Goldfields mine and James A. Noel of Los Angeles has arrived to erect and superintend the mill.

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P R E L I M I N A R Y

ENGINEER'S REPORT

BULL DOG MINING PROPERTY GOLDFIELD, NEVADA.

JULY 28, 1917.

PREFACE— This report is written for the purpose of presenting all of the available information and facts relative to this property. It is the product of close examination and study of not only this particular property but of all other properties within this famous old Superstition Mining District.

It is impossible, however, at this time of writing to complete the sampling and geological study of the underground workings below the 50 foot level, due to their flooded conditions. This will soon be remedied as pumping operations are now commenced and should de-water the workings within a short time.

INTRODUCTION — A very significant thing to bear in mind when forming an opinion of the Bull Dog Mine is the fact that until comparatively recent years, spar ledges have been condemned by mining experts on account of the prevalent low grade values of the surface ores. However, since the Bull Dog was first operated and subsequently shut down and left in such deplorable condition there have been many of these spar ledges developed into great producing mines, notably the mines of Catman, Tonopah, Bull Frog and many other Nevada camps. It is now generally condoded that these spar outcrops make rich ore deposits with a few hundred feet of depth.

HOLDINGS-- The original Bull Dog property consisted of the two unpatented mining claims Bull Dog and Highland Boy. The Highland Boy is now known as the Enterprise. In addition to these two original claims the property consists of the Mary Jane and the Sunset, which join the Bull Dog and Enterprise on the South. The Extra Session Group of 18 claims lying south and west of the Bull Dog Group and joining same, will also be added to the property as soon as the necessary legal requirements have been accomplished and recorded. When surveys are completed the area of this property should be about 500 acres.

GEOGRAPHICAL-- The claims embodied in the district are situated at Goldfield, Arizona, in Pinal and Maricopa Counties in what is known as the Superstition mining district, twenty miles distant from Mesa, on the scenic highway to the Roosevelt Dam. The main line of the Arizona Eastern Railroad, enroute to the Kelvin, Ray and Superior sections, could be intercepted at a point twelve miles southwest, down grade across a level piece of desert, involving no difficult engineering problem from a construction point of view. The Bull Dog is situated in the western part of the district about one half mile north of the main road from which the Headframe and mill buidding can be readily seen.

ACCESSIBILITY-- The Roosevelt Highway is an excellent, broad auto road, without abrupt grades, having a gradual and uniform slope of but 80' feet in the entire twenty-mile distance from Mesa. It is an ideal wagon haul from the latter town, the road having been used for years in the haulage of thousands

of tons of freight during the construction of the famous Roosevelt Dam and having been well kept up since. This road is now traversed daily by three auto-stage lines which pass thru' Goldfield en-route between Phoenix and Globe. There is daily mail service enjoyed at Goldfield. The United States Government's telephone lines cross the property, connection with which lines may be obtained at moderate cost.

CLIMATE— Owing to the elevation, approximately 2,000 feet above sea-level, the climate is an all-year round one, never exceedingly hot in the summer nor cold in the winter, making most ideal the conditions for mining operations. The annual rainfall is not to exceed eleven inches average, which usually occurs one-half during the winter months and one-half during the rainy period in the summer. Probably no other climate in the United States (excepting possibly California) where mining operations are carried on, presents more ideal conditions than this section. Heat prostrations are unknown; rarely does the humidity exceed a few per cent, and then but for a day or so preceeding or following storms.

AVAILABILITY OF POWER— The main electric transmission lines from the Government power station at the Roosevelt Dam pass through the property, and power for mining purposes is available therefrom at 1½ cents per kilowatt or less, and while resort may be had to a form of internal combustion engine of the Diessel type, whereby cheaper power might be produced, the initial investment would be much higher than is required in the installation of a step-down transformer station and motors and considering the attendant high maintenance charge, it is

questionable whether the use of such prime-mover would be warranted, other than possibly as a relay of power.

WATER SUPPLY-- An abundance of water is available for mining, milling and domestic purposes throughout this district, and while no serious inflow of underground waters through fissues or veins has been encountered, there is an adequate supply to meet all the requirements of operation. The absence of excessive ground water, at least to depths of 400 feet (which have already been attained) is an important feature in favor of the mining operation in this district.

LABOR CONDITIONS -- At his time of unrest and unprecedented scarcity and arrogance of labor this particular question of labor conditions becomes of paramount importance. Goldfield is exceptionally well located in this respect, in that men hunting work and en-route to Superior, Globe and Miami districts pass thru' Goldfield. It is a simple matter to select first class men from this source. Wages have always been a minimum in Goldfield, both on account of its proximity to the agricultural community adjacent, and somewhat also, on account of the large number of pplicants for work, many of whom are glad to work at any price. The present scale of wages is $3.00 to $4.00 per day.

HISTORY-- The Goldfield-Superstition district is by no means a new and undeveloped mining section, for Messrs. Hall and Dennis Sullivan of Colofado, operated several mining claims in the eastern part of the district, a number of years ago, but it was the discovery of the famous Mormon Stope, in 1892, by a prospector named Merrill, that caused the district to spring

into instant fame in the mining world.

The discovery of this intensely rich vein borders on romance. It was overburdened with detrital material which, during the course of an extraordinary freshet, was eroded and the vein matter exposed in a small portion. Merrill, noting this exposure, put in a shaft and thereby brought to light, what afterward proved to be a fabulously rich ore deposit. This claim was sold the next day to Messrs. Hall and Sullivan for the sum of $20,000, and in a remarkably short time theyrecovered over $500,000 therefrom. The ore thus removed, together with that recovered from the Black Queen mine (also in the Mammoth Group) was reduced and the gold extracted by a 20 stamp mill and amalagamation process. Not alone was the Mormon Stope famous for its yield of rich ore, but the Black Queen, situated some 4,000 feet north, yielded exceedingly rich ore from several stringers at a relatively shallow depth and is credited with a production of $100,000.

GOLDFIELD, ARIZONA was the original camp in the United States of that name, although its namesake in Nevada, through more fortunate circumstances, superseded it in reputation as a gold camp. At its hey-day, it claimed a thousand inhabitants, who were operating numerous and various claims. Anywhere in the district low grade gold values could be found, and it was this almost universal presence of gold through the various kinds of formations (though often in small quantities) which created such wide-spread confidence in that section. Practically all of the many large deposits of low-grade ore, which occur from the surface downward, can be milled profitably upon modern,

large scale methods of operation, though, as stated, but little attention has heretofore been paid to such ore bodies, because of the glamour created by the rich strikes frequently made in stringers, so that, up to the present time, no attempt has been made to exploit these immense and certain bodies of low-grade ore.

DISCOVERY BULL DOG-- A short time after the discovery of the Mammoth and the selling of it, Mr. C.D.Merrill was prospecting upon the big Quartz-spar ledge, now known as the Bull Dog, situated about seven thousand feet west of the Mammoth. This ledge is the most conspicuous and well defined, and has the greatest dimensions both in width and length of any mineralized ledge in the entire district, but nearly all of the gold values have been leached from the surface leaving almost barren vein matter. Mr. Merrill, however, found one place along the ledge which would "pan" free gold and succeeded in interesting parties who sunk a vertical shaft 100 feet in depth cross-cutting into the ledge at the 50 feet and 100 foot levels. Unfortunately, however, there was so much rich ore in these levels that no thought was given to systematic development work and the process of skimming the cream was carried to the limit, without any provision for gaining depth upon the ledge, which had shown such great improvement from the surface down to the one hundred foot level.

The first operations of importance were carried on by a Phoenix syndicate, who took a lease and bond from the owners. They placed a forty ton stamp mill upon the property and started right in at the 50 and 100 foot levels to mine the ore. They extracted the ore as rapidly as possible, but with no thought for the welfare

of the mine. The general public had so much faith in the property that it was an easy matter to arrange an extensive line of credit. They operated along the lines of least resistance and gophered out the best ore and before anyone knew what they were up to, they absconded to parts unknown with gold bullion variously estimated as worth from $50,000 to $80,000.

They left all bills unpaid--labor, machinery, royalties, etc. The mine was in such a gutted condition as to necessitate the expenditure of a considerable sum to reopen it. No one appeared, who had the power to relieve the situation thus brought about. The machinery was all attached, sold and removed from the premises to pay the debts.

During the twelve years or more following, there have been several spasmodic efforts made to operate the property all of which have met with a certain degree of success, but owing to the lack of the necessary capital to properly equip and put the mine in condition for systematic work, no attractive profits could be realised. This brings us down to the present organization which proposes to sink the present shaft and open up the ledge at greater depth.

PRODUCTION -- Mr. O. D. Merrill estimates and vouches for the following figures:

Original Syndicate	$70,000
Col. Doran & O.D.Merrill	8,000
Pomeroy's off amalgamation plates	1,500
O.D.Merrill from under slats of Amal. plates	400
Sam Steele, Merrill & Johns	600
Skill from present stamp mill & cyanide plt.	2,000
	$82,500

These figures are substantiated by the indep endent

testimony of a number of reliable men who worked at the property during its producing period; also by the size and value of the tailings dump; the value of the amalgum which was sweated from the old mill plates; and by the size of the stopes from which the ore was extracted and the grade of ore as determined by samples taken around the edge of the stopes.

GEOLOGICAL FORMATION -- The general formation is composed of alternating beds of diabase and rhyolite with an occasional bed of conglomerate. These beds or sills have a thickness of from several hundred to several thousand feet. An extensive mass of granite has been intruded into the sedimentary beds of lavas and conglomerate thereby tilting the beds into anticlinal position. This intrusive granite has in turn been cut by andesite dykes which have an average width of about 50 feet.

The general course of the granite, the andesite dykes and the productive veins is north and south. There is a certain amount of evidence to support the assumption that the main ledge and the andesite dyke are closely associated in depth and that the andesite dyke is the source of the gold values.

STRUCTURAL CONDITIONS-- The mineralized area is a broad fault zone The most interesting underground phenomena are the extensive system of open horizontal fissures, which show recent and rapid settling of the entire area. These open fissures are doubtless filled with spar or other mineral below water level. Another feature worthy of note is the center wall cutting right thru' spar, quarts and everything just as smooth as plate glass, sometimes there are several of these longitudinal walls running along about parallel,

and varying from several inches to several feet apart. At many points along the ledge the vein material is shattered and crushed extensively. In some places there are small chimneys of loose quarts and manganese oxide. By these conditions, the circulation of underground waters and ore bearing solutions has been greatly facilitated.

MINERALIZED ZONE -- The entire mass of intrusive granite is highly altered and mineralized from the contact on the east with the Andesite dyke across its entire 700 feet of width to the contact on the west with the Diabase-Rhyolyte Series. Its length in a northerly and southerly direction has been proven for 2,000 feet and further work will doubtless prove much longer.

A cross-cut at the 100 ft. level, 229 feet in length from the main ledge east to the andesite Dyke shows mineralized ground and lowgrade gold values for the entire distance. Several cross-cuts on the 50 and 100 foot levels show quarts and spar stringers as far as they have gone tothe west of the main ledge, and at the surface at a distance of about 100 feet west, there is a well defined stringer from which appreciable quantities of ore of a value of from $200 to $1,000 per ton have been taken. Several hundred feet farther west the Highland vein has produced about 1,000 tons of $16 gold ore by open cut stope methods.

The three well defined trunk ledges are:
I Bull Dog, II Highland, and III Contact.

The principal workings are on the Bull Dog and are fully described in the following pages, the Highland has only been worked by the crudest kind of open cut stope met ods with no development work at all. It is the center ledge and is about 400 feet west of the Bull Dog. The Contact ledge is about 200 feet west

of the Highland and is apparently the hanging wall of the mineralized granite zone. This ledge is very prominent and can be traced for several thousand feet. It lies along the contact between the intrusive granite and diabase, dips at an angle of about 60° with the diabase as the hanging wall. It has not even been prospected deeper than ten feet. In between these trunk ledges occurs numerous branches, cross veins, and stringers of quartz and spar and silicefied area of granite. This mineralized zone, 700 feet wide by several thousand feet in length known to have produced rich commercial ores of gold and silver. From the surface workings of several of it's ledges cannot fail to justify the opinion that deep development work will uncover millions of dollars in gold and silver ores.

ENRICHMENT AND PERMANENCY OF ORE DEPOSITS— In gold bearing calcite veins, such as the Bull Dog, permanent gold values cannot be expected until a depth below the surface of several hundred feet is attained. The processes governing the deposition of gold are closely identified with the replacement of the calcite by solutions containing silica or quartz. The most favorable conditions for this chemical action are found at moderate depth although there are usually certain more or less well defined channels within which the ore bearing solutions circulate and deposit values reaching to the surface.

It is the outcropping of these occasional ore shoots at the surface which generally lead to the location of gold mines. They are as a rule of limited size and are only an index of what may be expected as a permanent ore deposit of large extent when sufficient depth is reached.

LEACHING OF VALUES AND SECONDARY ENRICHMENT IN PRESENCE OF MANGANESE OXIDE— Leaching of gold values from the surface ores is of common occurance in the desert mining camps of Arizona. This leaching action is all the more certain where the presence of manganese oxides, sodium chloride and iron pyrites are in evidence as in the case in the Bull Dog ledges. It is also supported by the entire ABSENCE OF PLACER GOLD DEPOSITS which would unquestionably have been formed during the processes of erosion, had not the gold values been carried downward in solution.

The deepest working is slightly more than 100 feet beneath the surface. It seems reasonable to expect better values for several hundred feet deeper. The ore from the winze contains small specs of pyrites disseminated throughout its mass. These specs are almost completely oxidized but show enough sulphides to indicate that the zone of secondary enrichment will soon be reached. Specimens assaying from $50 to $200 per ton in gold require close inspection with a magnifying glass to disclose the free gold. The gold is very evenly distributed and hard to see on account of its light color due to the presence of silver.

EXAMPLES OF ENRICHMENT IN DEPTH AT OTHER GOLD MINES— In the Granite-Bimetalic Mine of Montana, manganese oxide is very prevalent in the outcrop and to considerable depth. The gold values are much better between 100 and 200 feet below the surface than they are above. In the Comstock lode, much manganese oxide is found in the upper levels and to a depth of 200 feet. A significant fact about the Comstock is that both gold and silver values increase as depth is gained. Tonopah, Bull Frog, Oatman and many

other camps in Nevada may be cited as examples, where there are no rich placers, and where a notable amount of manganese oxide is present in the oxidized ore. In these camps, as a rule, the outcrop and a shallow zone below carry less gold than the deeper oxidized ore. The same statment may apply to the Granite Mountain lode in Montana, and to the Butte deposits.

In the Exposed Treasure Mine, near Mojave, the proportion of gold to silver is about 1 Oz. of gold to 15 oz. of silver in the oxidized zone, but in the lower workings below the water-table the amount of gold is very much increased so that the proportion is 1 oz, of gold to 2 oz. of silver.

Finely divided gold and the presence of manganese oxide are favorable to leaching of the upper part of the oxidized zone, and where there is considerable fissuring and the ground is open, leaching of gold may extend to depths of several hundred feet.

To get closer to home it is only necessary to examine the Mammoth Lode, our neighboring mine, where the Granite ore deposits, which is the same as the Bull Dog Granite, only averages about 80 cents per ton above the 125 foot level, but which, has been determined to increase in value to an average of $2.30 per ton below that level.

Applying the same chemical processes of the leaching of gold and silver values and the consequent enrichment in depth to th Bull Dog lode, the same identical results should be obtained.

The conditions on the Bull Dog lode are such as to justify the assumption that an ore body with an average width of 10 feet and several thousand feet in length, with a value of from $10.00

to $20 in gold and silver will be encountered at a depth of 200 or 300 feet. This deposit should extend to a thousand feet or more in depth.

DEPTH OF ORE DEPOSITS-- It should be remarked here that the history of gold mining all over Arizona and the West has demonstrated that the ore shoots are productive to depths of at least 1,000 feet. That the richest zones are usually between 200 and 700 feet, so that it can be seen that this property has merely been scratched and only a very small percentage of ore extracted. All of the various operators have been able to see plainly the advisability and necessity of sinking the shaft, but their finances would not permit it and they have frittered away their time and small capital in the old workings in an illadvised impractical manner. The geological, chemical and mineralogical evidence supported by the rich ore encountered in the winze in the lowest level is such as to convince the most skeptical that the Bull Dog lodge has only been touched, and that ore deposits of great richness throughout the entire length of the vein and extending to considerable depth will be encountered.

BULL DOG CLAIM-- The principal workings of the property as well as the Stamp Mill, Cyanide Plant and Mine Machinery are upon this claim. The main shaft is 100 feet in depth with a 10 foot sump. At the 50 foot level there is about 700 feet of mine workings. At the 100 foot level there is about 800 feet of work done. In addition to this there are a number of prospect shafts from 30 to 100 feet in depth, as well as numerous trenches, opencuts, etc.

This half mile or more of surface workings, while an unfortu nate

waste of money has served the purpose of establishing the all important fact that the ledge extends the full length of the claim and dissipates any doubts as to its permanency.

SURFACE SHOWING- BULL DOG CLAIM-- The outcroppings of the ledge can be readily traced. In some places it is split up into several parallel veins with blocks or horses of granite between, in others the ledge extends above the surface 10 or 15 feet in height and has a width of ten feet or more. The gold values of the surface are low, only at a few points have high grade values been obtained.

50 FOOT LEVEL BULL DOG CLAIM-- When the property was taken over by the present organization, the water stood about 5 foot deep in the 50 foot level. This has all been pumped out and the workings upon that level made accessible.

About 700 feet of drifting and cross-cutting has been done. Stoping has progressed to a height of about 25 feet in places and going through to the surface in one instance. The mineralized zone at this level is fully determined to be 50 feet wide and extends for the entire length of the workings, with no sign of pinching out in either direction.

This mineralized formation consists of an intrusive, highly altered and decomposed granite. The main ledge is nearly vertical and has a width of about 15 feet, along the middle of the ledge there is a distinctly defined cleavage plane. The vein material is greatly crushed, in places loose and cavernous. Many horizontal open fissures are apparent, some of which are several inches wide and extend as far back as the eye can see. These open fissures indicate a considerable amount of rapid settling in this region. On each side of this main ledge are numerous quarts and spar stringers

or veins from several inches up to several feet in width. The main ledge is composed of calcite, siderite and quartz highly stained with manganese oxides.

A remarkable improvement in the size of the ledge is noticeable at the 50 foot level. There should be a continued widening and consequent improvement at greater depth is reached on account of the fact that all of the various veins and stringers for an indefinite distance east of the main ledge are dipping into it.

100 FOOT LEVEL -- The main productive ore shoot is known to continue downward from this level. It is exposed in the bottom of the drift for a distance of 70 feet and carries values of an average of $8 in gold and silver for about 4 feet in width, altho' the vein itself is some 15 feet or more wide. A number of lenses containing several tons each, have been mined at this level, which returned assay values of $50.00 to $200.00 per ton.

The dump to the east of the shaft contains most of the cull material from this drift and shows average values of $6.00 to $8.00 per ton. By hand sorting this dump a product assaying $23.50 can be obtained.

ENTERPRISE CLAIM -- This claim was formerly known as the Highland Boy. It has produced a considerable tonnage of $16 to $20 gold ore, but was only worked on a small scale. The vein is a quartz spar ledge 3 to 6 feet in width. It runs about parallel with the Bull Dog ledges and is probably part of the general mineralization. The deepest working is 60 feet in depth.

SUNSET AND MARY JANE -- The same formations of the Bull Dog and Enterprise continue through these two claims but only surface

prospect holes have been sunk. With proper development work these claims should yield some rich ore shoots.

EXTRA SESSION GROUP-- This group of 18 claims was taken up with a view of future value. A number of encouragging outcrops can be fround upon these claims and all of them will be of great value when the Bull Dog reaches a productive stage.

PHYSICAL VALUATION MINE WORKINGS AND EQUIPMENT:

3250 feet Mine Workings @ $8.00 per foot- - - - -	$26,000
10 H. P. Fairbanks Morse Engine- - - - - - - - -	600
Small Hoist- - - - - - - - - - - - - - - - - -	100
Pump Jack- - - - - - - - - - - - - - - - - - -	500
Deepwell 6 inch pump outfit- - - - - - - - - -	250
Air Compressor- - - - - - - - - - - - - - - - -	300
20 Ton Cyanide leaching Plant- - - - - - - - -	1,500
Blacksmith Shop and tools- - - - - - - - - - -	200
Powder House- - - - - - - - - - - - - - - - -	50
Buildings- - - - - - - - - - - - - - - - - - -	100
Miscellaneous- - - - - - - - - - - - - - - - -	200
	$30,000

LOW GRADE ORE POSSIBILITIES-- The Bull Dog besides haveing possibilities for large high grade ore deposits is practically certain of having enormous low grade ore bodies and for the purpose of assurance in the matter of mining and milling costs, in which the ore will be caved or mined by steam-shovel; conveyed by an approved system of aerial or surface trams to the crushing and pulverizing plant; then amalgamated and floated by the oil flotation process and reduced to gold and silver bullion at the plant, several mining and milling costs are given in the following comparison, under conditions and information approximating as closely as possible those obtaining in the Goldfield- Superstition district.

The Alaska Juneau Gold Mining Company is treating 8,000 tons of ore per day. Of 1329 samples from their ore body, the

average value was $1.04 per ton, while their best ore deposit has a value of only $2.09 per ton, and one of their main ore bodies has a value of only $1.01 per ton.

The Alaska Gastineau Mining Company is mining ore, the average value per ton of which is $1.16, while the recovery is 81% of the value contained. The total cost for mining and milling per ton is $0.69. Upon a 6,000-tons-per-day basis this cost is reduced to $0.6425, or the milling cost alone is only $0.257 per ton. The actual profits were 25% of the gold bullion recovered with an underground stoping method of mining, which profit is less than would obtain by steam-shovel methods of mining which, however, are not applicable to that district on account of the geological character of the formation.

The total cost to the Utah Copper Company for steam-shovel mining, railroad transportation (26 miles), and milling, during 1915, was $0.8625. This is a copper ore and the milling cost is consequently much higher than for gold ore.

For comparison, the cost per ton of mining alone by steam-shovel methods, amongst several of the large successful mining companies, is as follows:

Utah Copper Company- - - - - - - - -	$0.1619
Chino Copper Company- - - - - - - - -	0.1946
Nevada Consolidated Copper Co.,- -	0.1526
Average cost per ton- - - - -	.1721

whilst the cost per ton of milling gold ore amongst several of the large companies, where the values are comparable with those of the Goldfield-Superstition district, is as follows:

Alaska Mexican Gold Mining Co------	$ 0.306
Alaska United Gold Mining Co------	0.293
Alaska Treadwell Gold Mining Co----	0.312
Alaska United Gold Mining Co------	0.273
Alaska Gastineau Gold Mining Co----	0.257
Average cost for 5 mills------	$ 0.288

In view of the many natural advantages, and considering the established cost of mining and milling in other developed sections where similar ore is encountered but where dissimilar conditions require enormous initial expenditures to overcome, it is believed that (upon the basis of 5,000 tons per day capacity) with the modern steam-shovel method of mining and approved reduction system, the following estimate of the cost of milling and mining the low grade ore from the Bull Dog property as well as its reduction to bullion can be readily attained.. This estimate of mining and milling cost follows:

Mining, per ton----------	$ 0.192
Milling, per ton----------	0.288
Possible stripping of overburden---	0.04
Tramming to mill----------	0.04
Development to keep ore reserve tonnage constant----------	0.06
	$ 0.60 per ton

With a recovery of 85% of the gold and silver it would require ore with an assay value of but 71 cents per ton to pay all expenses, while ore of a value of $1.40 per ton would yield a profit of nearly 40% which as a manufacturing industry, supplying an insatiable market from a vast reserve of raw material (in which light this project must be regarded), is seen to be a legitimate and attractive venture.

These figures are the estimate of the costs of large scale operations thoroughly systematized. By starting out with a 500 ton per day capacity and using this as a pilot mill and first unit, it should be possible to mine and mill this ore at an initial cost of $1.50 per ton, and would be a feasible commercial undertaking, with a well developed ore body which contained values of from $2.50 to $3.00 per ton.

ASSAY SAMPLES

No.	Description Samples	Assayer	Gold	Silver	Total
1	Tailings dump	Geo Demaine	2.40	2.40	4.80
2	do	do	1.00	.80	1.80
3	do	do	.40	.70	1.10
	Winze 100 ft level	do	57.80	1.10	58 .90
1	Surface dump	Geo Deihl	2.00	1.90	3.90
2	do	do	2.00	1.95	3.95
3	do	do	2.06	.75	2.81
1	North of wall-open cut	Geo Demaine	32.00	1.00	33.00
2	Bottom 100 foot level near winze	do	19.60	.60	20.20
1	Edge of open cut stope	Geo Diehl	41.34		[illegible]
2	Open cut N of Blk. Shop	do	1.81		
230	3 ft s of open cut stope	Art. Houck	3.20	3.05	6.25
231	12 ft do	do	2.80	3.00	5.80
232	Dump west of well	do	.20	.40	.60
233	" NW " "	do	.40	.50	.90
234	Genl small grab Mary J Dump	do	.80	.35	1.15
235	50 ft level N breast	do	.80	.30	1.10
236	" loose E end top of stope	do	.40	.15	.55
239	" Black spar 1'W of slip	do	.40	.20	.60
240	" E vein 1st X-cut E	do	.60	.60	1.20
241	" S drift 6' top at split	do	.50	.65	1.15
242	" 1st N of Fault 6' along E wall	do	.50	.40	.90
243	" E drift S end stope	do	.70	.80	1.50
S 1	100 ft level High Grade	Calo. Ass. Co-	310 .00	....	310.0
S 2	" " " Winze "Wetzel"	Demaine	52.00	12.00	64.00
"3	50 ft N of drift	do	1.60	.25	1.85
" 4	" " " end of stope near shaft	do	1.60	.40	2.00
" 5	Surface- open cut at air shaft	do	5.00	1.30	6.30
" 6	Enterprise N of shaft	do	3.40	.30	3.70
" 7	Wilbur shaft E of dump	do	1.80	.70	2.50
" 8	Dump close to camp	do	----	----	1.80
" 9	Enterprise, average bot. drift	do	----	----	4.00
"10	Slimes Old dump	Diehl	----	----	4.50
244	50 ft L back drift at N X-cut	Houck	.40	.40	.80
245	" " " W back at Ladder	do	3.60	1.20	4.80
246	" " " Same farther W.	do	.20	.40	.60
247	" " " S X-cut soft granite	do	.30	.30	.60
248	" " " SW drift Big L ½ way in	do	1.80	3.00	4.80
249	" " " W wall soft granite	do	.20	.10	.30
250	" " "N breast vein & drift	do	----	----	----
251	" " " Fines Milo drift at fault	do	.30	.10	.40
252	Surface Dump E of shaft, N side	do	2.60	.60	3.20
253	" " " " " W "	do	1.00	.40	1.40
254	Sort from Surface Dump	Deihl	21.99	1.60	23.59

BULLION RECORDS-- The usual carelessness about small mines in preserving records was not absent in the case of the Bull Dog and explains the fact that the following three Certificates are the only ones available at the present time.

Description	Refiner	Fineness Gold	Silver	Net Value
8 tons from dump N of shaft	Mint	197	649	$82.45
From old Tailings dump, by present Cyanide plant	Selby	73	710	158.35
Last shipment from cyanide plant-contains also some Retort from Stamp mill plates	Mint	101	634	401.99

The interesting points brought out by these figures are-- the proportion of gold to silver by weight; the fact that amalgamation got a greater extraction on gold than on silver; and that the silver remaining in the tails from the plates is very readily extracted by a crude cyanidation process. The value of the cyanide heads was about $2.50 per ton, the tails have not been assayed.

CONCLUSION-- In forming a favorable opinion of the Bull Dog property consideration has not been confined to the record of production and the large tonnage of low-grade ore now blocked out. Investigation was extended to and revealed the exceptionally advantageous location and facilities for economical mining.

Of great importance also is the free milling character of the ore which permits the making of a finished product, governed by no outside disturbances or stock market fluctuations.

With the promise of enrichment in depth; with all the factors and conditions which have contributed to the present non-producing state of the property eliminated; with efficient management by

experienced mining men, installation of modern machinery and with adequate workingcapital, a big success can be confidently expected and the Bull Dog should take its place among the Big Gold Mines of the West.

I herewith unhesitatingly state that it is my opinion based upon carefull weighing af all the evidence that development work upon the Bull Dog property will uncover millions of dollars in gold and silver ore deposits.

Respectfully submitted,

Alfred Stone Lewis E.M.

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THE BULL DOG GROUP

Goldfield, Arizona

INTRODUCTION

The Bull Dog group consists of three unpatented claims, Jessieland No. 1, 2 and 3 (originally located as the Bull Dog claims), comprising approx. 61.98 acres. The claims are accessed from paved State Highway 88 via less than a mile of excellent gravel-surfaced road. They lie 1.35 miles west of the Mammoth group. The owners state a water well is on the property. A 45kV electrical substation with 480V 3-phase service lies 0.3 miles distant.

A preliminary title examination shows the claims to be in "good standing". The appropriate fees and a maintenance fee waiver have been timely filed with the Bureau of Land Management. However, ordinary discretion in the mining industry would indicate the wisdom of conducting a thorough title examination on any unpatented claims at Goldfield or anywhere else.

The listing price of the Bull Dog Group is U.S. $1,112,000.00.

A drilling program is currently underway by the owners, however the writers are unaware of any metallurgical test results on cores. The pioneer-era underground workings are flooded.

HISTORY

Kilbey [26] states the major exploitation of mineralization in the Goldfield district occurs along north trending fault zones, with one running through Goldfield, one lying west of Goldfield and another occurring at the Bull Dog Mine. Wilburn [87] says the Bull Dog, bearing stage three electrum deposition, was the second largest gold producer in the district,. Wilburn continues by stating that at the fifty foot level, ore five feet wide assayed 1.84 Au opt, with high grade ore assaying 250 Au opt. One fifteen foot winze below the 100 foot level assayed 2.42 Au opt.

John Wilburn, *Superstition Mountain Journal, April 1981,* characterized the Bull Dog as a lonely mine all by itself with the most outstanding vein of all the mines. The article refers to a wash tub sized pocket of ore yielding $2,000 worth of gold, worth $28,000 at today's prices ($289.50/oz). This is not unusual in rich pocket country. The article states that in 1917 the ore was so rich that two partners were "overcome" by the wealth, whereby they absconded with $50,000 to $80,000 worth of bullion, leaving behind accrued debts. This would be worth $700,000 to $1,120,000 today.

A 22-page engineer's report by Alfred Strong Lewis, July 1917 [68], is the only report on the property known to the writer. Though the report is somewhat antiquated, Lewis points out that anywhere in the district low grade gold values can be found. It was this almost universal presence of gold through various kinds of formations which created such wide-spread confidence in this area. Lewis stipulates that practically all of the many large deposits of low grade which occur from the surface downward can be milled profitably (circa 1917) but little attention was paid to these ore bodies due to the glamour of the rich strikes so frequently made. In this writer's opinion this has been the case to date.

Lewis states no attempt has been made to exploit these immense and certain bodies of low grade ore (still true to date). Lewis refers to the Bull Dog vein as the most conspicuous and well defined mineralized ledge in the area. He further states the ore was so rich at the fifty and one-hundred foot levels that no thought was given to systematic development.

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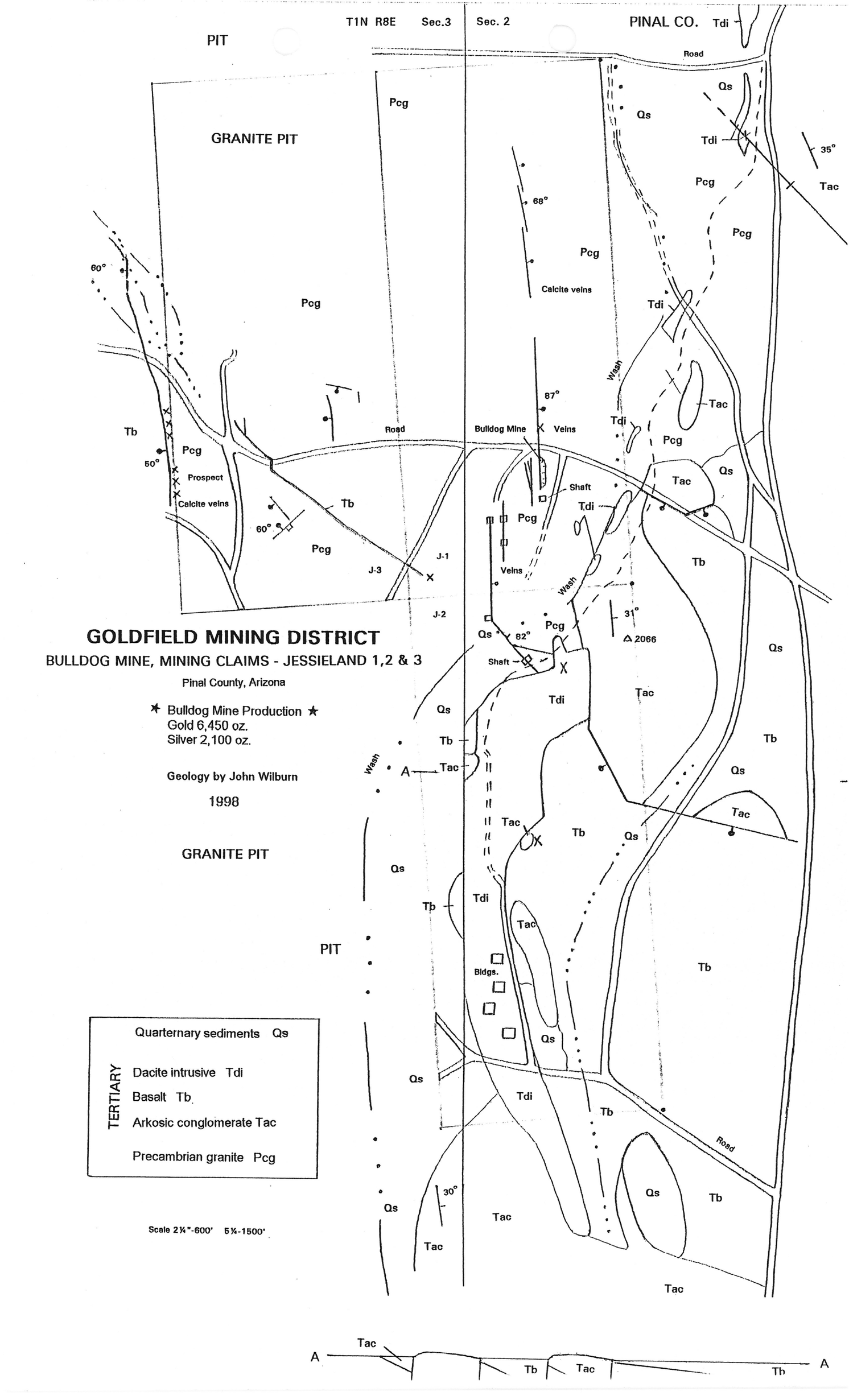
After following the course of least resistance, gophering out the richest ore and leaving the mine in a gutted condition, several sporadic efforts to operate the mine only met with a limited degree of success. Lewis states these efforts failed due to a lack of necessary capital and equipment to develop the mine systematically. He believes the entire mass of granite is mineralized across its seven hundred foot width and three thousand foot length.

Lewis adds that this mineralized zone, known to have produced commercial grade ores of gold and silver from several ledges, cannot fail to justify his opinion that deep development work will uncover millions of dollars worth of gold and silver ores. He feels that permanent gold values in this type of deposit cannot be expected until several hundred feet beneath the surface is attained. He also states that the rich ore shoots that reach the surface, as a rule, are of limited size and only an index of what would be expected in a permanent ore deposit of large extent at depth somewhere between the two hundred and the one thousand foot levels.

Finally, Lewis concludes that the geological, chemical and mineralogical evidence, supported by the rich ore encountered in the lowest level, is such to *convince the most skeptical* that the Bull Dog has only been touched. He believes that ore deposits of great richness throughout the entire length of the vein extending to considerable depth will be encountered, and the possibilities of enormous low grade ore bodies does exist.

Warren Konemann



GOLDFIELD MINING DISTRICT

BULLDOG MINE, MINING CLAIMS - JESSIELAND 1,2 & 3

Pinal County, Arizona

★ Bulldog Mine Production ★
Gold 6,450 oz.
Silver 2,100 oz.

Geology by John Wilburn

1998

Scale 2¼"-600' 5¼-1500'

PHOENIX.

BULLDOG MINE IS TAKEN OVER.

L.A. Times July 1910.

WILL BE OPERATED IN CONJUNCTION WITH MAMMOTH.

Territorial Secretary Young Starting Work on a Large Scale—Resumption of Development on the Horton Group—Bond Is Given on Maverick Property.

(SPECIAL CORRESPONDENCE OF THE TIMES.)

PHOENIX (Ariz.) July 8.—The old Bulldog mine at Golfield has been purchased by Territorial Secretary Geo. U. Young and will be added to the property of the Young Mines Company, Limited, which is mainly himself, to be operated in conjunction with the nearby Mammoth property, bonded by Young a month or so ago. The Bulldog once was operated by a company of Phoenix men, who placed a small mill upon it, but who were unable to secure returns equal to expenditures, despite the fact that assays uniformly ran high on the ledge matter. Bad management was charged with the failure.

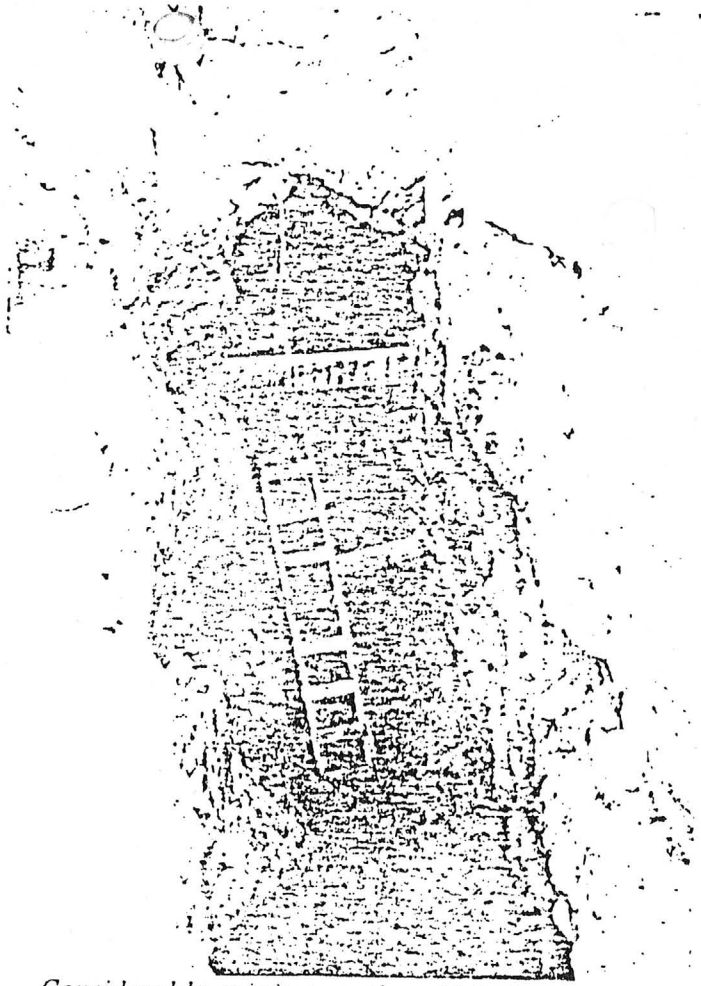
The mine lies just below Bulldog

BULLDOG MINE

Three miles west of the Mammoth Mine is the Bulldog Mine, a lonely mine by itself. This mine is characterized by the most outstanding vein of all the mines. For here is a long, white vein of quartz and calcite that trends north and south for some 200 feet upon the surface and averages in width eighteen inches. The deposit must have been very rich for in 1917 a Phoenix syndicate placed a forty-ton stamp mill upon the property and started right in to mill the ore. Typical of the bonanzas of Goldfields, the ore was so rich that two of the partners were overcome by the wealth and absconded with gold bullion variously estimated at from $50,000 to $80,000 leaving behind unpaid labor and machinery bills.

In the winter of 1927 and 1928, Mr. Boyles was exploring near the conspicuous white ledge of the old Bull Dog mine. Here he burrowed into an extremely rich pocket of gold, about the size of a wash tub, that yielded two thousand dollars in gold. This was not too unusual for Goldfield is known as "rich pocket country."

This mine is developed by 600 feet of drifts on the 100 foot level and 300 feet of drifts on the 50 foot level. The mine is named after a peak to the west that



Considerable mining on the old Bull Dog vein

P R E L I M I N A R Y

ENGINEER'S REPORT

BULL DOG MINING PROPERTY GOLDFIELD, ARIZONA.

JULY 28, 1917.

PREFACE— This report is written for the purpose of presenting all of the available information and facts relative to this property. It is the product of close examination and study of not only this particular property but of all other properties within this famous old Superstition Mining District.

It is impossible, however, at this time of writing to complete the sampling and geological study of the underground workings below the 50 foot level, due to their flooded condition. This will soon be remedied as pumping operations are now commenced and should de-water the workings within a short time.

INTRODUCTION — A very significant thing to bear in mind when forming an opinion of the Bull Dog Mine is the fact that until comparatively recent years, spur ledges have been condemned by mining experts on account of the prevalent low grade values of the surface ores. However, since the Bull Dog was first operated and subsequently shut down and left in such deplorable condition there have been many of these spur ledges developed into great producing mines, notably the mines of Catman, Tonapah, Bull Frog and many other Nevada camps. It is now generally conceded that these spur outcrops make rich ore deposits with a few hundred feet of depth.

HOLDINGS-- The original Bull Dog property consisted of the two unpatented mining claims Bull Dog and Highland Boy. The Highland Boy is now known as the Enterprise. In addition to these two original claims the property consists of the Mary Jane and the Sunset, which join the Bull Dog and Enterprise on the South. The Extra Session Group of 18 claims lying south and west of the Bull Dog Group and joining same, will also be added to the property as soon as the necessary legal requirements have been accomplished and recorded. When surveys are completed the area of this property should be about 500 acres.

GEOGRAPHICAL-- The claims embodied in the district are situated at Goldfield, Arizona, in Pinal and Maricopa Counties in what is known as the Superstition mining district, twenty miles distant from Mesa, on the scenic highway to the Roosevelt Dam. The main line of the Arizona Eastern Railroad, enroute to the Kelvin, Ray and Superior sections, could be intercepted at a point twelve miles southwest, down grade across a level piece of desert, involving no difficult engineering problem from a construction point of view. The Bull Dog is situated in the western part of the district about one half mile north of the main road from which the Headframe and mill building can be readily seen.

ACCESSIBILITY-- The Roosevelt Highway is an excellent, broad auto road, without abrupt grades, having a gradual and uniform slope of but 800 feet in the entire twenty-mile distance from Mesa. It is an ideal wagon haul from the latter town, the road having been used for years in the haulage of thousands

of tons of freight during the construction of the famous Roosevelt Dam and having been well kept up since. This road is now traversed daily by three auto-stage lines which pass thru' Goldfield en-route between Phoenix and Globe. There is daily mail service enjoyed at Goldfield. The United States Government's telephone lines cross the property, connection with which lines may be obtained at moderate cost.

CLIMATE-- Owing to the elevation, approximately 2,000 feet above sea-level, the climate is an all-year round one, never exceedingly hot in the summer nor cold in the winter, making most ideal the conditions for mining operations. Thes annual rainfall is not to exceed eleven inches average, which usually occurs one-half during the winter months and one-half during the rainy period in the summer. Probably no other climate in the United States (excepting possibly California) where mining operations are carried on, presents more ideal conditions than this section. Heat prostrations are unknown; rarely does the humidity exceed a few per cent, and then but for a day or so preceeding or following storms.

AVAILABILITY OF POWER-- The main electric transmission lines from the Government power station at the Roosevelt Dam pass through the property, and power for mining purposes is available therefrom at 1½ cents per kilowatt or less, and while resort may be had to a form of internal combustion engine of the Diessel type, whereby cheaper power might be produced, the initial investment would be much higher than is required in the installation of a step-down transformer station and motors and considering the attendant high maintenance charge, it is

questionable whether the use of such prime-mover would be warranted, other than possibly as a relay of power.

WATER SUPPLY-- An abundance of water is available for mining, milling and domestic purposes throughout this district, and while no serious inflow of underground waters through fissues or veins has been encountered, there is an adequate supply to meet all the requirements of operation. The absence of excessive ground water, at least to depths of 400 feet (which have already been attained) is an important feature in favor of the mining operation in this district.

LABOR CONDITIONS -- At his time of unrest and unprecedented scarcity and arragance of labor this particular question of labor conditions becomes of paramount importance. Goldfield is exceptionally well located in this respect, in that men hunting work and en-route to Superior, Globe and Miami districts pass thru' Goldfield. It is a simple matter to select first class men from this source. Wages have always been a minimum in Goldfield, both on account of its proximity to the agricultural community adjacent, and somewhat also, on account of the large number of pplicants for work, many of whom are glad to work at any proce. The present scale of wages is $3.00 to $4.00 per day.

HISTORY-- The Goldfield-Superstition district is by no means a new and undeveloped mining section, for Messrs. Hall and Dennis Sullivan of Colofado, operated several mining claims in the eastern part of the district, a number of years ago, but it was the discovery of the famous Mormon Stope, in 1892, by a prospector named Merrill, that caused the district to spring

into instant fame in the mining world.

The discovery of this intensely rich vein borders on romance. It was overburdened with detrital material which, during the course of an extraordinary freshet, was eroded and the vein matter exposed in a small portion. Merrill, noting this exposure, put in a shaft and thereby brought to light, what afterward proved to be a fabulously rich ore deposit. This claim was sold the next day to Messrs. Hall and Sullivan for the sum of $20,000, and in a remarkably short time theyrecovered over $500,000 therefrom. The ore thus removed, together with that recovered from the Black queen mine (also in the Mammoth Group) was reduced and the gold extracted by a 20 stamp mill and amalagamation process. Not alone was the Mormon Stope famous for its yield of rich ore, but the Black Queen, situated some 4,000 feet north, yielded exceedingly rich ore from several stringers at a relatively shallow depth and is credited with a production of $100,000.

GOLDFIELD, ARIZONA was the original camp in the United States of that name, although its namesake in Nevada, through more fortunate circumstances, superseded it in reputation as a gold camp. At its hey-day, it claimed a thousand inhabitants, who were operating numerous and various claims. Anywhere in the district low grade gold values could be found, and it was this almost universal presence of gold through the various kinds of formations (though often in small quantities) which created such wide-spread confidence in that section. Practically all of the many large deposits of low-grade ore, which occur from the surface downward, can be milled profitably upon modern,

large scale methods of operation, though, as stated, but little attention has heretofore been paid to such ore bodies, because of the glamour created by the rich strikes frequently made in stringers, so that, up to the present time, no attempt has been made to exploit these immense and certain bodies of low-grade ore.

DISCOVERY BULL DOG-- A short time after the discovery of the Mammoth and the selling of it, Mr. O.D.Merrill was prospecting upon the big Quartz-spar ledge, now known as the Bull Dog, situated about seven thousand feet west of the Mammoth. This ledge is the most conspicuous and well defined, and has the greatest dimensions both in width and length of any mineralized ledge in the entire district, but nearly all of the gold values have been leached from the surface leaving almost barren vein matter. Mr. Merrill, however, found one place along the ledge which would "pan" free gold and succeeded in interesting parties who sunk a vertical shaft 100 feet in depth cross-cutting into the ledge at the 50 foot and 100 foot levels. Unfortunately, however, there was so much rich ore in these levels that no thought was given to systematic development work and the process of skimming the cream was carried to the limit, without any provision for gaining depth upon the ledge, which had shown such great improvement from the surface down to the one hundred foot level.

The first operations of importance were carried on by a Phoenix syndicate, who took a lease and bond from the owners. They placed a forty ton stamp mill upon the property and started right in at the 50 and 100 foot levels to mine the ore. They extracted the ore as rapidly as possible, but with no thought for the welfare

of the mine. The general public had so much faith in the property that it was an easy matter to arrange an extensive line of credit. They operated along the lines of least resistance and gophered out the best ore and before anyone knew what they were up to, they absconded to parts unknown with gold bullion variously estimated as worth from $50,000 to $80,000.

They left all bills unpaid--labor, machinery, royalties, etc. The mine was in such a gutted condition as to necessitate the expenditure of a considerable sum to reopen it. No one appeared, who had the power to relieve the situation thus brought about. The machinery was all attached, sold and removed from the premises to pay the debts.

During the twelve years or more following, there have been several spasmodic efforts made to operate the property all of which have met with a certain degree of success, but owing to the lack of the necessary capital to properly equip and put the mine in condition for systematic work, no attractive profits could be realized. This brings us down to the present organisation which proposes to sink the present shaft and open up the ledge at greater depth.

PRODUCTION -- Mr. C. D. Merrill estimates and vouches for the following figures:

Original Syndicate	$70,000
Col. Doran & O.D.Merrill	8,000
Pomeroy's off amalgamation plates	1,500
O.D.Merrill from under slats of Amal. plates	400
Sam Steele, Merrill & Johns	600
Shill from present stamp mill & cyanide plt.	2,000
	$82,500

These figures are substantiated by the indep endent

testimony of a number of reliable men who worked at the property during its producing period; also by the size and value of the tailings dump; the value of the amalgam which was sweated from the old mill plates; and by the size of the stopes from which the ore was extracted and the grade of ore as determined by samples taken around the edge of the stopes.

GEOLOGICAL FORMATION -- The general formation is composed of alternating beds of diabase and rhyolite with an occasional bed of conglomerate. These beds or sills have a thickness of from several hundred to several thousand feet. An extensive mass of granite has been intruded into the sedimentary beds of lavas and conglomerate thereby tilting the beds into anticlinal position. This intrusive granite has in trun been cut by andesite dykes which have an average width of about 50 feet.

The general course of the granite, the andesite dykes and the productive veins is north and south. There is a certain amount of evidence to support the assumption that the main ledge and the andesite dyke are closely associated in depth and that the andesite dyke is the source of the gold values.

STRUCTURAL CONDITIONS-- The mineralized area is a broad fault zone The most interesting underground phenomena are the extensive system of open horizontal fissures, which show recent and rapid settling of the entire area. These open fissures are doubtless filled with spar or other mineral below water level. Another feature worthy of note is the center wall cutting right thru' spar, quartz and everything just as smooth as plate glass, sometimes there are several of these longitudinal walls running along about parallel,

and varying from several inches to several feet apart. At many points along the ledge the vein material is shattered and crushed extensively in some places there are small chimneys of loose quarts and manganese oxide. By these conditions, the circulation of underground waters and ore bearing solutions has been greatly facilitated.

MINERALISED ZONE -- The entire mass of intrusive granite is highly altered and mineralized from the contact on the east with the Andesite dyke across its entire 700 feet of width to the contact on the west with the Diabase-Rhyolyte Series. Its length in a northerly and southerly direction has been proven for 3,000 feet and further work will doubtless prove much longer.

A cross-cut at the 100 ft. level, 229 feet in length from the main ledge east to the andesite Dyke shows mineralized ground and lowgrade gold values for the entire distance. Several cross-cuts on the 50 and 100 foot levels show quartz and spar stringers as far as they have gone tothe west of the main ledge, and at the surface at a distance of about 100 feet west, there is a well defined stringer from which appreciable quantities of ore of a value of from $200 to $1,000 per ton have been taken. Several hundred feet farther west the Highland vein has produced about 1,000 tons of $16 gold ore by open cut stope methods.

The three well defined trunk ledges are:
I Bull Dog, II Highland, and III Contact.

The principal workings are on the Bull Dog and are fully described in the following pages, the Highland has only been worked by the crudest kind of open cut stope met ods with no development work at all. It is the center ledge and is about 400 feet west of the Bull Dog. The Contact ledge is about 200 feet west

of the Highland and is apparently the hanging wall of the mineralized granite zone. This ledge is very prominent and can be traced for several thousand feet. It lies along the contact between the intrusive granite and diabase, dips at an angle of about 60° with the diabase as the hanging wall. It has not even been prospected deeper than ten feet. In between these trunk ledges occurs numerous branches, cross veins, and stringers of quartz and spar and silicefied area of granite. This mineralized zone, 700 feet wide by several thousand feet in length known to have produced rich commercial ores of gold and silver, from the surface workings of several of it's ledgescannot fail to justify the opinion that deep development work will uncover millions of dollars in gold and silver ores.

ENRICHMENT AND PERMANENCE OF ORE DEPOSITS— In gold bearing calcite veins, such as the Bull Dog, permanent gold values cannot be expected until a depth below the surface of several hundred feet is attained. The processes governing the deposition of gold are closely identified with the replacement of the calcite by solutions containing silica or quartz. The most favorable conditions for this chemical action are found at moderate depth although there are usually certain more or less well defined channels within which the ore bearing solutions circulate and deposit values reaching to the surface.

It is the outcropping of these occasional ore shoots at the surface which generally lead to the location of gold mines. They are as a rule of limited size and are only an index of what may be expected as a permanent ore deposit of large extent when sufficient depth is reached.

LEACHING OF VALUES AND SECONDARY ENRICHMENT IN PRESENCE OF MANGANESE OXIDE— Leaching of gold values from the surface ores is of common occurance in the desert mining camps of Arizona. This leaching action isall the more certain where the presence of manganese oxides, sodium chloride and iron pyrites are in evidence as is the case in the Bull Dog ledges. It is also supported by the entire ABSENCE OF PLACER GOLD DEPOSITS which would unquestionably have been formed during the processes of erosion, had not the gold values been carried downward in solution.

The deepest working is slightly more than 100 feet beneath the surface. It seems reasonable to expect better values for several hundred feet deeper. The ore from the winze contains small specs of pyrites disseminated throughout its mass. These specs are almost completely oxidized but show enough sulphides to indicate that the zone of secondary enrichment will soon be reached. Specimens assaying from $50 to $200 per ton in gold require close inspection with a magnifying glass to disclose the free gold. The gold is very evenly distributed and hard to see on account of its light color due to the presence of silver.

EXAMPLES OF ENRICHMENT IN DEPTH AT OTHER GOLD MINES— In the Granite-Bimetalic Mine of Montana, manganese oxide is very prevalent in the outcrop and to considerable depth. The gold values are much better between 100 and 200 feet below the surface than they are above. In the Comstock lode, much manganese oxide is found in the upper levels and to a depth of 200 feet. A signif icant fact about the Comstock is that both gold and silver values increase as depth is gained. Tonapah, Bull Frog, Oatman and many

other camps in Nevada may be cited as examples, where there are no rich placers, and where a notable amount of manganese oxide is present in the oxidized ore. In these camps, as a rule, the outcrop and a shallow zone below carry less gold than the deeper oxidized ore. The same statment may apply to the Granite Mountain lode in Montana, and to the Butte deposits.

In the Exposed Treasure Mine, near Mojave, the proportion of gold to silver is about 1 Oz. of gold to 15 oz. of silver in the oxidized zone, but in the lower workings below the water-table the amount of gold is very much increased so that the proportion is 1 oz. of gold to 2 oz. of silver.

Finely divided gold and the presence of manganese oxide are favorable to leaching of the upper part of the oxidized zone, and where there is considerable fissuring and the ground is open, leaching of gold may extend todepths of several hundred feet.

To get closer to home it is only necessary to examine the Mammoth Lode, our neighboring mine, where the Granite ore deposits, which is the same as the Bull Dog Granite, only averages about 80 cents per ton above the 125 foot level, but which, has been determined to increase in value to an average of $2.30 per ton below that level.

Applying the same chemical processes of the leaching of gold and silver valuesand the consequent enrichment in depth to th Bull Dog lode, the same identical results should be obtained.

The conditions on the Bull Dog lode are such as to justify the assumption that an ore body with an average width of 10 feet and several thousand feet in length, with a value of from $10.00

to $20 in gold and silver will be encountered at a depth of 200 or 300 feet. This deposit should extend to a thousand feet or more in depth.

DEPTH OF ORE DEPOSITS-- It should be remarked here that the history of gold mining all over Arizona and the West has demonstrated that the ore shoots are productive to depths of at least 1,000 feet. That the richest zones are usually between 200 and 700 feet, so that is can be seen that this property has merely been scratched and only a very small percentage of ore extracted. All of the various operators have been able to see plainly the advixmbility and necessity of sinking the shaft, but their finances would not permit it and they have frittered away their time and small capital in the old workings in an illadvised impractical manner. The geological, chemical and mineralogical evidence supported by the rich ore encountered in the winze in the lowest level is such as to convince the most skeptical that the Bull Dog ledge has only been touched, and that ore deposits of great richness throughout the entire length of the vein and extending to considerable depth will be encountered.

BULL DOG CLAIM-- The principal workings of the property as well as the Stamp Mill, Cyanide Plant and Mine Machinery are upon this claim. The main shaft is 100 feet in depth with a 10 foot sump. At the 50 foot level there is about 700 feet of mine workings. At the 100 foot level there is about 800 feet of work done. In addition to this there are a numver of prospect shafts from 30 to 100 feet in depth, as well as numerous trenches, opencuts, etc.

This half mile or more of surface workings, while an unfortu nate.

waste of money has served the purpose of establishing the all important fact that the ledge extends the full length of the claim and dissipates any doubts as to its permanency.

SURFACE SHOWING- BULL DOG CLAIM-- The outcroppings of the ledge can be readily traced. In some places it is split up into several parallel veins with blocks or horses of granite between, in others the ledge extends above the surface 10 or 15 feet in height and has a width of ten feet or more. The gold values of the surface are low, only at a few points have high grade values been obtained.

50 FOOT LEVEL BULL DOG CLAIM-- When the property was taken over by the present organization, the water stood about 3 feet deep in the 50 foot level. This has all been pumped out and the workings upon that level made accessible.

About 700 feet of drifting and cross-cutting has been done. Stoping has progressed to a height of about 25 feet in places and going through to the surface in one instance. The mineralized zone at this level is fully determined to be 50 feet wide and extends for the entire length of the workings, with no sign of pinching out in either direction.

This mineralized formation consists of an intrusive, highly altered and decomposed granite. The main ledge is nearly vertical and has a width of about 15 feet, along the middle of the ledge there is a distinctly defined cleavage plane. The vein material is greatly crushed, in places loose and cavernous. Many horizontal open fissures are apparent, some of which are several inches wide and extend as far back as the eye can see. These open fissures indicate a considerable amount of rapid settling in this region. On each side of this main ledge are numerous quarts and spar stringers

or veins from several inches up to several feet in width. The main ledge is composed of calcite, siderite and quartz highly stained with manganese oxides.

A remarkable improvement in the size of the ledge is noticeable at the 50 foot level. There should be a continued widening and consequent improvement at greater depth is reached on account of the fact that all of the various veins and stringers for an indefinite distance east of the main ledge are dipping into it.

100 FOOT LEVEL -- The main productive ore shoot is known to continue downward from this level. It is exposed in the bottom of the drift for a distance of 70 feet and carries values of an average of $8 in gold and silver for about 4 feet in width, altho' the vein itself is some 15 feet or more wide. A number of lenses containing several tons each, have been mined at this level, which returned assay values of $50.00 to $200.00 per ton.

The dump to the west of the shaft contains most of the cull material from this drift and shows average values of $6.00 to $8.00 per ton. By hand sorting this dump a product assaying $23.50 can be obtained.

ENTERPRISE CLAIM -- This claim was formerly known as the Highland Boy. It has produced a considerable tonnage of $16 to $20 gold ore, but was only worked on a small scale. The vein is a quartz spar ledge 3 to 6 feet in width. It runs about parallel with the Bull Dog ledges and is probably part of the general mineralization. The deepest working is 60 feet in depth.

SUNSET AND MARY JANE -- The same formations of the Bull Dog and Enterprise continue through these two claims but only surface

prospect holes have been sunk. With proper development work these claims should yield some rich ore shoots.

EXTRA SESSION GROUP-- This group of 18 claims was taken up with a view of future value. A number of encouraging outcrops can be fround upon these claims and all of them will be of great value when the Bull Dog reaches a productive stage.

PHYSICAL VALUATION MINE WORKINGS AND EQUIPMENT:

3250 feet Mine Workings @ $8.00 per foot- - - - -	$26,000
10 H. P. Fairbanks Morse Engine-- - - - - - - - -	600
Small Hoist- - - - - - - - - - - - - - - - - - -	100
Pump Jack- - - - - - - - - - - - - - - - - - - -	500
Deepwell 6 inch pump outfit- - - - - - - - - - -	250
Air Compressor- - - - - - - - - - - - - - - - -	300
20 Ton Cyanide leaching Plant- - - - - - - - - -	1,500
Blacksmith Shop and tools- - - - - - - - - - - -	200
Powder House- - - - - - - - - - - - - - - - - -	30
Buildings- - - - - - - - - - - - - - - - - - - -	120
Miscellaneous- - - - - - - - - - - - - - - - - -	200
	$30,000

LOW GRADE ORE POSSIBILITIES-- The Bull Dog besides haveing possibilities for large high grade ore deposits is practically certain of having enormous low grade ore bodies and for the purpose of assurance in the matter of mining and milling costs, in which the ore will be caved or mined by steam-shovel; convey ed by an approved system of aerial or surface trams to the crushing and pulverizing plant; then amalgamated and floated by the oil flotation process and reduced to gold and silver bullion at the plant, several mining and milling costs are given in the following comparison, under conditions and in formation approximating as closely as possible those obtaining in the Goldfield- Superstition district.

The Alaska Juneau Gold Mining Company is treating 8,000 tons of ore per day. Of 1329 samples from their ore body, the

average value was $1.04 per ton, while their best ore deposit has a value of only $2.09 per ton, and one of their main ore bodies has a value of only $1.01 per ton.

The Alaska Gastineau Mining Company is mining ore, the average value per ton of which is $1.16, while the recovery is 81% of the value contained. The total cost for mining and milling per ton is $0.69. Upon a 6,000-tons-per-day basis this cost is reduced to $0.6425, or the milling cost alone is only $0.257 per ton. The actual profits were 25% of the gold bullion recovered with an underground stoping method of mining, which profit is less than would obtain by steam-shovel methods of mining which, however, are not applicable to that district on account of the geological character of the formation.

The total cost to the Utah Copper Company for steam-shovel mining, railroad transportation (26 miles), and milling, during 1915, was $0.8625. This is a copper ore and the milling cost is consequently much higher than for gold ore.

For comparison, the cost per ton of mining alone by steam-shovel methods, amongst several of the large successful mining companies, is as follows:

Utah Copper Company- - - - - - - - -	$0.1619
Chino Copper Company- - - - - - - - -	0.1946
Nevada Consolidated Copper Co.,- -	0.1524
Average cost per ton- - - - -	.1721

whilst the cost per ton of milling gold ore amongst several of the large companies, where the values are comparable with those of the Goldfield-Superstition district, is as follows:

Alaska Mexican Gold Mining Co------	$ 0.306
Alaska United Gold Mining Co------	0.293
Alaska Treadwell Gold Mining Co----	0.312
Alaska United Gold Mining Co------	0.273
Alaska Gastineau Gold Mining Co----	0.257
Average cost for 5 mills------	$ 0.288

In view of the many natural advantages, and considering the established cost of mining and milling in other developed sections where similar ore is encountered but where dissimilar conditions require enormous initial expenditures to overcome, it is believed that (upon the basis of 5,000 tons per day capacity) with the modern steam-shovel method of mining and approved reduction system, the following estimate of the cost of milling and mining the low grade ore from the Bull Dog property as well as its reduction to bullion can be readily attained,. This estimate of mining and milling cost follows:

Mining, per ton----------	$ 0.172
Milling, per ton----------	0.288
Possible stripping of overburden---	0.04
Tramming to mill----------	0.04
Development to keep ore reserve tonnage constant----------	0.06
	$ 0.60 per ton

With a recovery of 85% of the gold and silver it would require ore with an assay value of but 71 cents per ton to pay all expenses, while ore of a value of $1.40 per ton would yield a profit of nearly 40% which as a manufacturing industry, supplying an insatiable market from a vast reserve of raw material (in which light this project must be regarded), is seen to be a legitimate and attractive venture.

These figures are the estimate of the costs of large scale operations thoroughly systematized. By starting out with a 500 ton per day capacity and using this as a pilot mill and first unit, it should be possible to mine and mill this ore at an initial cost of $1.50 per ton, and would be a feasible commercial undertaking, with a well developed ore body which contained values of from $2.50 to $3.00 per ton.

ASSAY SAMPLES

No.	Description Samples	Assayer	Gold	Silver	Total
1	Tailings dump	Geo Demaine	2.40	2.40	4.80
2	do	do	1.00	.80	1.80
3	do	do	.40	.70	1.10
	Winze 100 ft level	do	57.80	1.10	58 .90
1	Surface dump	Geo Deihl	2.00	1.90	3.90
2	do	do	2.00	1.95	3.95
3	do	do	2.06	.75	2.81
1	North of well-open cut	Geo Demaine	32.00	1.00	33.00
2	Bottom 100 foot level near winze	do	19.60	.60	20.20
1	Edge of open cut stope	Geo Diehl	41.34		[illegible]
2	Open cut N of Blk. Shop	do	1.81		[illegible]
230	3 ft s of open cut stope	Art.Houck	3.20	3.05	6.25
231	12 ft do	do	2.80	3.00	5.80
232	Dump west of well	do	.20	.40	.60
233	" NW " "	do	.40	.50	.90
234	Genl small grab Mary J Dump	do	.80	.35	1.15
235	50 ft level N breast	do	.80	.30	1.10
236	" loose N end top of stope	do	.40	.15	.55
239	" Black spar 1'W of slip	do	.40	.20	.60
240	" E vein 1st X-cut N	do	.60	.60	1.20
241	" S drift 6' top at split	do	.50	.65	1.15
242	" 1st N of Fault 6' along E wall	do	.50	.40	.90
243	" N drift S end stope	do	.70	.80	1.50
S 1	100 ft level High Grade	Calo.Ass.Co-310	.00	[illegible]	310.0
S 2	" " " Winze "Wetzel"	Demaine	52.00	12.00	64.00
"3	50 ft N of drift	do	1.60	.25	1.85
" 4	" " " end of stope near shaft	do	1.60	.40	2.00
" 5	Surface- open cut at air shaft	do	5.00	1.30	6.30
" 6	Enterprise N of shaft	do	3.40	.30	3.70
" 7	Wilbur shaft E of dump	do	1.80	.50	2.30
" 8	Dump close to camp	do	----	----	1.80
" 9	Enterprise, average bot. drift	do	----	----	4.00
"10	Slimes Old dump	Diehl	----	----	4.50
244	50 ft L back drift at N X-cut	Houck	.40	.40	.80
245	" " " W back at Ladder	do	3.60	1.20	4.80
246	" " " Same farther W.	do	.20	.40	.60
247	" " " S X-cut soft granite	do	.30	.30	.60
248	" " " SW drift Big L ½ way in	do	1.80	3.00	4.80
249	" " " W wall soft granite	do	.20	.10	.30
250	" " "N breast vein & drift	do	----	----	----
251	" " " Fines Milo drift at fault	do	.30	.10	.40
252	Surface Dump W of shaft, N side	do	2.60	.60	3.20
253	" " " " " W "	do	1.00	.40	1.40
254	Sort from Surface Dump	Deihl	21.99	1.60	23.59

BULLION RECORDS-- The usual carelessness about small mines in preserving records was not absent in the case of the Bull Dog and explains the fact that the following three Certificates are the only ones available at the present time.

Description	Refiner	Fineness Gold	Silver	Net Value
8 tons from dump W of shaft	Mint	197	649	$82.45
From old Tailings dump, by present Cyanide plant	Selby	73	710	158.35
Last shipment from cyanide plant-contains also some Retort from Stamp mill plates	Mint	101	634	401.99

The interesting points brought out by these figures are-- the proportion of gold to silver by weight; the fact that amalgamation got a greater extraction on gold than on silver; and that the silver remaining in the tails from the plates is very readily extracted by a crude cyanidation process. The value of the cyanide heads was about $2.50 per ton, the tails have not been assayed.

CONCLUSION-- In forming a favorable opinion of the Bull Dog property consideration has not been confined to the record of production and the large tonnage of low-grade ore now blocked out. Investigation was extended to and revealed the exceptionally advantageous location and facilities for economical mining.

Of great importance also is the free milling character of the ore which permits the making of a finished product, governed by no outside disturbances or stock market fluctuations.

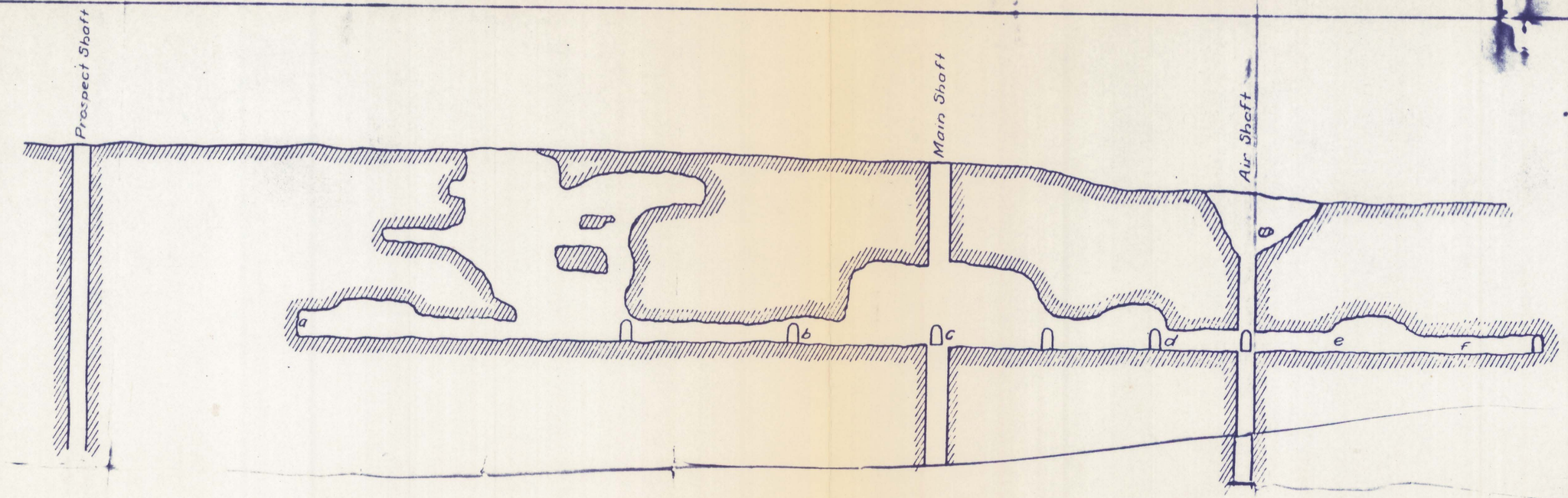
With the promise of enrichment in depth; with all the factors and conditions which have contributed to the present non-producing state of the property eliminated; with efficient management by

experienced mining men, installation of modern machinery and with adequate workingcapital, a big success can be confidently expected and the Bull Dog should take its place among the Big Gold Mines of the West.

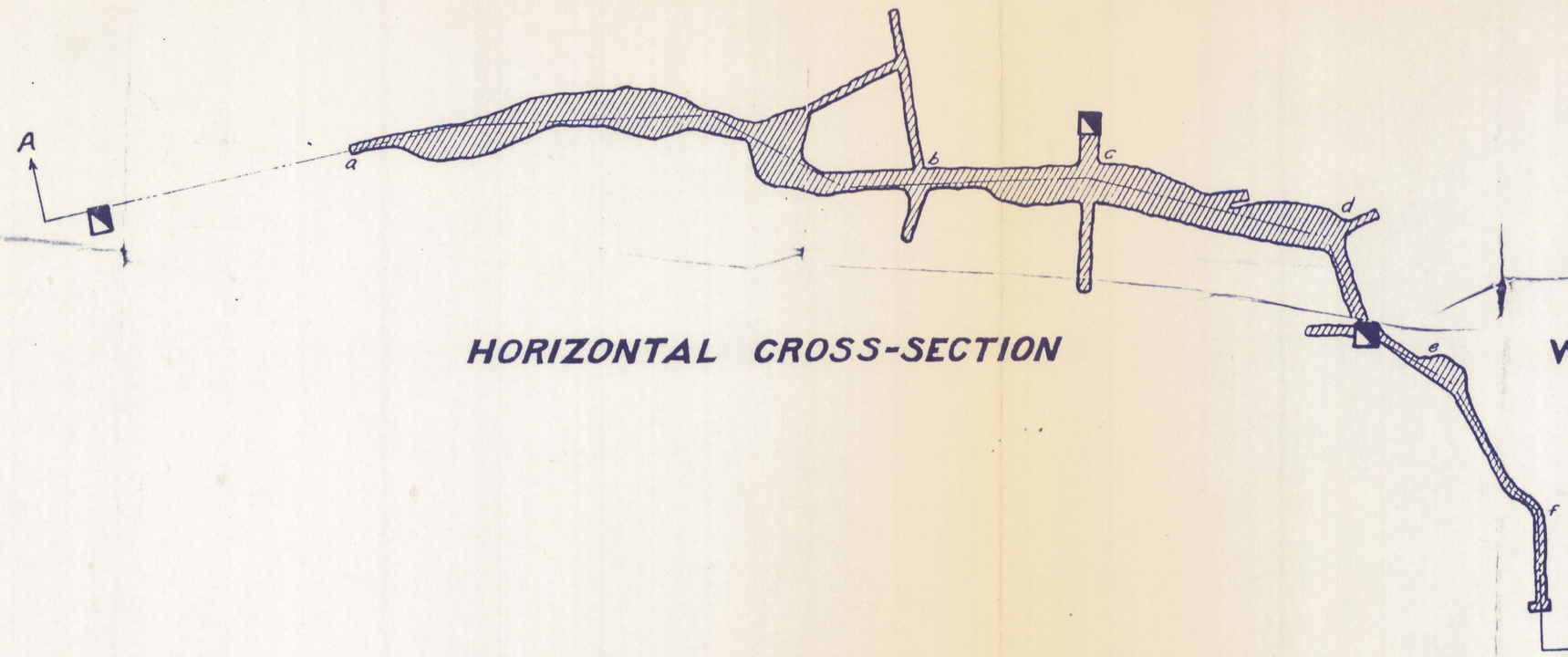
I herewith unhesitatingly state that it is my opinion based upon carefull weighing af all the evidence that development work upon the Bull Dog property will uncover millions of dollars in gold and silver ore deposits.

Respectfully submitted,

Alfred Strong Lewis, E.M.



VERTICAL CROSS-SECTION "A-A"



HORIZONTAL CROSS-SECTION

PRELIMINARY MAP SHOWING WORKINGS ON 50 FOOT LEVEL BULL DOG MINE

PINAL COUNTY
ARIZONA

Scale – 1" = 25'

July 1917