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

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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: GOLD HILL

ALTERNATE NAMES:
TRI-METALLIC GROUP

YAVAPAI COUNTY MILS NUMBER: 253B

LOCATION: TOWNSHIP 13 N RANGE 3 W SECTION 30 QUARTER SE
LATITUDE: N 34DEG 28MIN 15SEC LONGITUDE: W 112DEG 36MIN 05SEC
TOPO MAP NAME: WILHOIT - 7.5 MIN

CURRENT STATUS: DEVEL DEPOSIT

COMMODITY:
GOLD
SILVER
LEAD
SELENIUM
TELLURIUM
COPPER

BIBLIOGRAPHY:
USGS WILHOIT QUAD
ADMMR GOLD HILL FILE
YAVAPAI MAGAZINE PARIL 1918 P 4-8 SHARLOT
HALL MUSEUM PRESCOTT, AZ

C.D. Ammann
Letter

Geology of area in
Econ. Geol. V 56 #5
Aug. 1961 - p 916+

Mr. Fred D. Schemmer,
Prescott, Arizona.

Dear Sir:-

For your consideration and per your request I ~~will~~ have made an examination of your Gold Hill mining claims, and will submit herewith a report on conditions as I have found them.

CLAIMS and LOCATION:

The Gold Hill group consists of two unpatented mining locations (about 40 acres) named GOLD HILL and GOLD HILL #2, ~~and~~ ~~are situated~~, and are situated in the Copper Basis Mining District, Yavapai County, Arizona.

The claims lie within the southeast quarter of section 30 ~~28~~, Township 13N, Range 3W, Gila and Salt River Meridian. The discovery shaft on the GOLd Hill claim is approximently 1320 feet in a magnetic course W30N from the common corner between sections 29-30-31-32 ~~and~~ . The corners of the claims are shown on the accompanying map as tied to this discovery monument.

TITLE:-

Title is by mining location and is held by Fred D. Schemmer of Prescott, Arizona, who has purchased the interests of previously existing partners. The two claims were located on 1931 and recorded in Book 137 of Mines, pages 23 and 24 , records of Yavapai County Arizona.

MINING FACILITIES:

Climate — The altitude at the Gold Hill group is about 5000 feet and climate is excellent for all operations the year around.

Accessability — At present one can ~~not~~ drive a car ~~closer than~~ to a point about three-quarters of a mile from the claims. From that point

an old road in fair shape leads to the main Copper Basin - Skull Valley county highway, a distance of one mile. From this junction ~~the latter point is~~ it is five miles ~~xxxxxxxxxxxxxxx~~ to ~~xxx~~ Skull Valley, a station on the Santa Fe Railroad. It thus becomes about seven miles from the mine to the railroad, and the additional three - quarters of a mile of road needed, could be built at a cost of about $2000.

Water

All mine workings in that district have always contained ample water for mining purposes, and shaft #1 on the Gold Hill (an old shaft presumably about 50 feet deep) has its water level within 15 feet of the surface. It can therefor be expected that development of the mine will itself furnish sufficient water for ordinary operations, and that a shallow well would furnish water for domestic purposes. In case a ~~xxxxxxxxxxxxxxx~~ quantity of water were required for a large tonnage mill, an abundance can always be obtained at Copper Basin Wash. This would require about three - quarters of a mile of pipe line and 200 feet lift.

Power.

One of the lines of the Arizona Power Company approaches within one mile of the property and could be extended to the claims at a cost of about $1200 1200

GEOLOGY:-

The geology of the district is a granitic stock with a maze of later intrusions and flows. On the Gold Hill itself we have a quartz porphyry intrusive in contact with the pre-existing granite. The quartz - porphyry itself has been intruded by later and smaller dikes, both acid and basic, which were probably end-product phases of the same magma, filling shrinkage cracks and lines of weakness in the original intrusion.

MINERALIZATION:

The quartz-porphyry mass above mentioned is sufficiently mineralized to be ore. Economic minerals are gold and a small amount of silver. Small amounts of lead also occur and the precious metals are highly alloyed with tellurium and selenium. Quicksilver has also been detected in the ore and is not uncommon in the district.

I believe that this mineralization is intrinsic in the quartz-porphyry, rather than introduced by later intruding dikes. While no microscopic examination has been made of the material, the ore mass shows little evidence of having been a channel in which mineralizing solutions or gasses had precipitated, or of having been subjected to mineralizing replacement. Furthermore the contact line with the granite on the east is very definate and the granite is entirely unmineralized. No such definate wall would be probable if the entire mass had been subjected to the mineralizing action of later intrusives.

The ore formation thus belongs to the "vein-dike" class.

DEVELOPMENT:

Although there is about 400 feet of underground work on the property little can be determined as to the size, shape, or trend of the ore formation. We have a low hill, much of the surface of which is covered with overburden, so it cannot be sampled without digging a hole. Scattered along the hill in miscellaneous manner are several cuts, small shafts and prospect holes, all of which show ore. Entering the hill is a "Y" shaped tunnel, cutting the formation for 125 feet, with two winzes about ten feet deep - all in ore. Truly, well named "GOLD HILL", but considerable further development will be required before its limits can be determined.

Details of development are shown on the accompanying sketch. Shaft #1 was dug many years ago and there is no exact knoledge of what it disclosed. Water now stands within 15 feet of the surface. The dump however indicates that it is about 50 feet deep, and consists of the same characteristic ore material throughout. This dump was carefully sampled.

Other cuts and shafts on the surface have apparently been located without system or reason. Probably a little bedrock, outcropping through the overburden, led the prospector to dig. All show the same characteristic ore, varying possibly in phase, but of the same general nature.

A crosscut tunnel has been driven from a nereby gulch ~~xxxxxx the ore formation~~ in a southeasterly direction, crosscutting the ore formation for a distance of 125 feet, and cutting its east ~~xxxx~~ wall (the granite contact) at a depth of 50 feet. This tunnel is "Y" shaped with a shorter right hand fork as shown on the map. There was no apparant reason for starting this tunnel where it was started, or for continuing it in the direction as continued. That is, no particular seam or streak was followed, and the values, as shown by the assay map, are about as good one place as another.

SAMPLING, ASSAY VALUES and AVERAGES:

A large number of samples of the workings have been taken from time to time. Also considerable time has been spent in sampling, and panning the samples on the ground, instead of assaying. Samples taken anywhere and everywhere throughout the ore formation generally pan well, and indicate a good average value to the experienced panner. However, when this panning work was followed by assaying, results were usually disappointing. As a general rule all samples sent to Denver assayers averaged well, whereas those assayed by Arizona assayers showed very low values.

At this time it was not known or suspected that the ore

contained tellurium and selenium. Ores containing the precious metals alloyed with tellurium or selenium require special methods of assay. Such ores are very uncommon in Arizona and Arizona assayers do not expect them . They are very common however in Colorado and Colorado custom assayers are always on the lookout for indications of such alloys, and prepared to use proper methods when they are present.

The fact that the precious metals existed in this ore as such an alloy was not discovered until very recently when some samples were taken to the laboratory of the Columbia Metal Mines Co at Prescott for assay. Mr. A. J. Rowland assayer for the above company was formerly assayer and chemist for the Golden Cycle Mine in Colorado and particularly experienced in tellurium ores. He immediately detected the presence of the tellurium and selenium and ran his assays accordingly . Results were uniformly good and along the lines indicated by hand panning.

The writer was therefore employed to make a systematic sampling of the mine, together with supervision of such laboratory work as might be necessary, to determine the true values as indicated by the present development.

In assaying a telluride ore a highly oxidizing flux is used to throw as much as possible of the tellurium into the slag. An excess of litharge is used to make a very large lead button, and a large amount of silver is added to the charge. This dilutes the amount of tellurium alloyed with the metals in the button, and as the tellurium has more affinity for the silver than the gold, it alloys with, and carries off, the surplus silver, leaving the gold in true quantity.

Some interesting results were obtained in this laboratory work. For instance , several of the samples were run by ordinary assay methods as well as by proper telluride methods. Invariably, in such cases the sample run in the ordinary way would show only 10% to 25% of the gold shown by proper method. When 50 or 60 milligrams of silver were added to an assay charge, from 50% to 75% of this silver would be absorbed during the assay process, leaving a resulting button only a small fraction as large as the actual silver added. In one case we added a quantity of pure gold to an assay charge with ordinary flux, and 90% of the added gold was lost in the assay process.

This all goes to show the large amount of tellurium and selenium present in the ore, its effect on the assays, the care that must be exercised in obtaining a true assay, and the reasons for the heretofore erratic assay results, in spite of consistant good panning results.

In panning, the heaviest mineral obtained is a yellow substance formerly supposedto be free gold but now known to be an alloy low in tellurium. Next to this is a heavy gray concentrate, now known to be an alloy very high in tellurium. When the combination is fused together in an assay the resulting average is sufficiently high in tellurium to cause all the trouble above mentioned.

In sampling the mine it was planned to sample all ore exposures systematically, and cut large samples to neutralize any high grade spots. A wall of the tunnel was sampled horizontally, from portal to face, in twenty foot sections. Each prospect hole was sampled, and in the winzes a large sample was cut from top to bottom. Sample numbers are shown on the map herewith, and assay results are listed below. As each sample represents approximently a twenty foot section no weighting of the results is necessary in order to obtain

(this is correct spelling)

a true average. Following is a list of the assays.

Sample Number	Location	Width ft.	Gold Oz.	Gold Dollars (at $35.00)
1	Old prospect hole on hill	--	.08	2.80
2	Prospect hole #2	66	.10	3.50
3	Dump of 50 foot shaft	--	.21	7.35
* 4	1st 10 feet in tunnel (at ore margin)	10 2e	.03	1.05
5	2nd ten ft in tunnel (first of true ore)	10	.14	4.90
6	3rd 10 feet in tunnel	10	.12	4.20
7	4th 10 fet, to face right hand fork	10	.12	4.20
8	Winze in right hand fork	10(deep)	.34	11.90
9	1st 10 ft in left fork	10	.08	2.80
10	2nd 10 ft laft fork	10	.22	7.70
11	3rd 10 ft left fork	10	.12	4.20
12	4th 10 ft left fork	10	.56	19.60
13	5th 10 ft left fork	10	.10	3.50
* 14	6th 10 ft left fork, past contact into granite wall	10	.06	2.10
15	Short spur from left fork	10	.16	5.60
16	Winze from left fork	10(deep)	. 18	6.30
17	Prospect hole at contact on hill	--	.14	4.90
* 18	Prospect hole down hill possibly beyond ore limits)	--	.04	1.40
* 19	Acid intrusive in laft fork	specimen	.10	3.50
* 20	General sample all through underground works	--	.16	5.60
* 21	Small dump at tunnel portal (supposed to be quite high grade and t o have come out of winzes)	--	.42.	14.70
* 22	At contact in left fork (small sample)	nominal	.36	12.60

* Not used in computing averages.

The average of the above samples is :	.178	6.23

Silver values cannot be determined by fire assay on a telluride ore. A wet chemical method must be used. No attempt was made to run all these samples for silver but from such laboratory work as was done in hand concentrating and roasting the concentrates, it appears that the ore also carries from one to one and one half ounces of silver. Allowing one ounce of silver at 77cents it would bring the general average to exactly $7.00 per ton.

the size, shape and trend of the orebody and to place a tonnage of ore actually in sight to justify more extensive work and a reduction plant.

The first step necessary is a road, for any work would be very expensive without it, andthe cost of a road is not high.

As a second step I would advise that the surface be systematically trenched, with at least five trenches across the possible outcrop. These trenches should be drilled and blasted, and then accurately sampled in sections. A definate picture and accurate average of the surface outcrop will thus be obtained.

I would then advise running a drift in each direction from the approximent center of the present crosscut tunnel. The drift to the north might be made to connect with the old Shaft #1, and the one to the south might come out to daylight.

Then two crosscuts from proper points in these drifts could be run to either wall. We would then have a definate area of ore blocked out and an idea of its trend. A test shaft could then be put down for 100 feet below the tunnel level, to test out the action of the deposit with further depth.

If the above preliminary program proves out as expected probably 200,000 tons of ore would be developed, and the property would justify the preliminary unit elaborate reduction plant and a heavier program of development.

CONCLUSION:-

The Gold Hill property is of a type, and the ore of an average value, that makes some of the best paying gold mines of the United States. Expenditures for a moderate development pregram are well warranted, with every expectation that a large, moderate grade orebody will be developed.

Respectfully submitted

registered state of arix cert # 295 Mining engineer

METALLURGY:-

Laboratory concentration tests showed a concentration ratio of about 300 to one, with an extraction, by simple table concentration of over 90%. The resulting concentrates are therefore very high grade and small in quantity, and could be roasted and reduced to bullion at the mine. The extraction of the values from the ore thus becomes very simple and the required plant would be inexpensive to build and operate.

ESTIMATED COSTS:-

More development work, to determine the size, shape and trend of the orebody, must be completed, before a method of mining can be planned in detail. Such a method must be known before accurate costs can be estimated. It is quite probable that one of the very cheap methods such as power shovels, glory holes or a caving system may be feasible, and if so the mining cost might be less than $.50 per ton. On the otherhand, if the orebody has such shape and trend as to require a more expensive underground mining method, the mining cost should still be low, on account of the large size of the ore deposit, and could hardly be expected to exceed $1.00 per ton at the most.

Milling would be simple and inexpensive as above mentioned, and with a plant of a capacity of 250 tons per day or greater should not exceed $1.00 per ton.

Allowing $.50 per ton for miscellaneous and overhead, and a 10% tailings loss, the net profit thus becomes over $3.50 per ton.

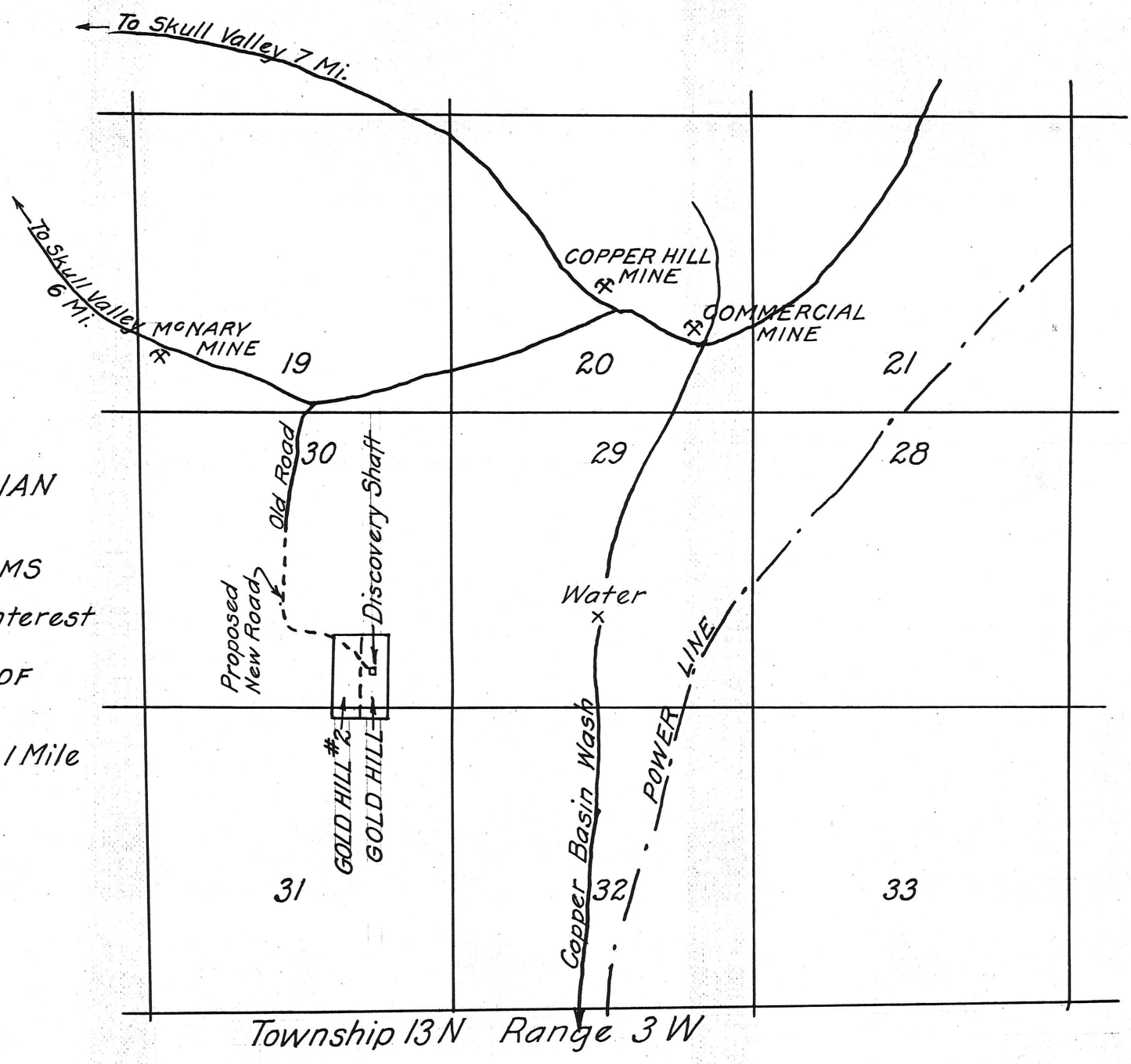
DEVELOPMENT SUGGESTED:

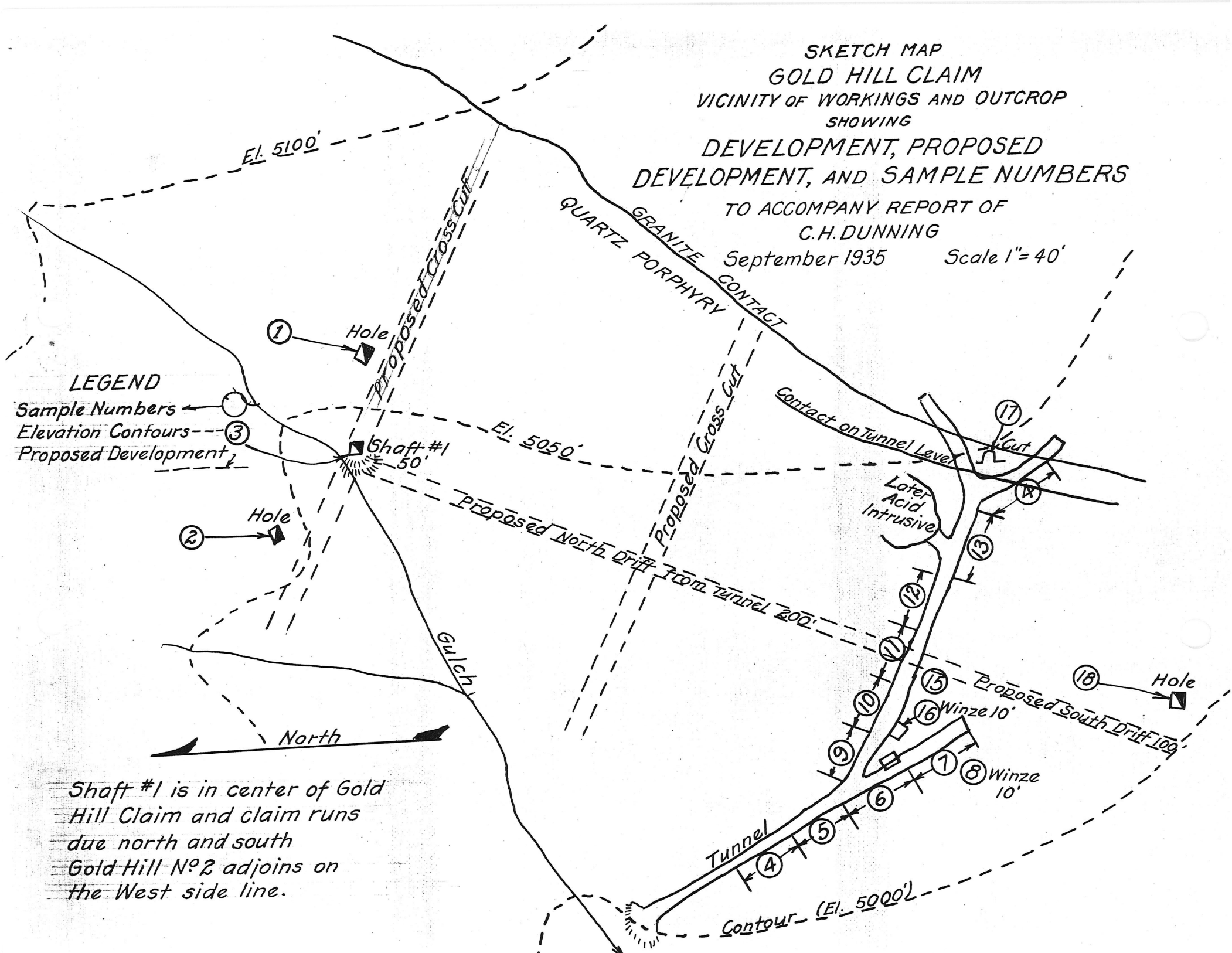
As a general rule development should be planned to determine

PORTION OF
TOWNSHIP 13N. RANGE 3W
GILA & SALT RIVER MERIDIAN
SHOWING
LOCATION GOLD HILL CLAIMS
and surrounding points of interest

TO ACCOMPANY REPORT OF
C. H. DUNNING

Sept. 1935 Scale 2" = 1 Mile




SKETCH MAP
GOLD HILL CLAIM
VICINITY OF WORKINGS AND OUTCROP
SHOWING
DEVELOPMENT, PROPOSED
DEVELOPMENT, AND SAMPLE NUMBERS
TO ACCOMPANY REPORT OF
C.H. DUNNING
September 1935
Scale 1" = 40'
El. 5100'
Proposed Cross Cut
QUARTZ PORPHYRY
GRANITE CONTACT
Proposed Cross Cut
Contact on Tunnel Level
Cut
Later Acid Intrusive
LEGEND
Sample Numbers
Elevation Contours
Proposed Development
Hole
Hole
Shaft #1
50'
El. 5050'
Proposed North Drift from tunnel 200'
Gulch
North
Proposed South Drift 100'
Hole
Winze 10'
Winze 10'
Tunnel
Contour (El. 5000')
Shaft #1 is in center of Gold Hill Claim and claim runs due north and south Gold Hill No 2 adjoins on the West side line.