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 Mining Collection

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MN-82-L-81

February 11, 1982

K&R claim group (Harquahala)
Yuma Co.

Mr. Timothy W. Atkinson
Cave Creek Mining Company
P. O. Box 589
Cave Creek, AZ 85331

Mr. Atkinson:

Your description of your proposed mining operation on private and public land is of a nature to qualify as a Notice of Intent to Conduct Mining Operations; surface disturbance under 5 acres.

If in the future you expand your operations beyond the 5-acre limit, please let us know in advance so we may prepare an environmental report to comply with the Surface Protection Act.

We wish you success in your operation. Feel free to call our Area Geologist, Richard Park, at 241-2947 if you have any questions.

Sincerely,

Marvin D. Durfee

M. Dean Durfee, Area Manager
Lower Gila Resource Area

RPark:fd

CAVE CREEK MINING CO.
P.O. BOX 1598/CAVE CREEK, ARIZONA 85331
(602)488-3702

mm-82-L-64
))

February 3, 1982

M. Dean Dunfee
U.S. Dept. of the Interior
2929 W. Clarendon Avenue
Phoenix, AZ 85017

Dear Mr. Dunfee;

In response to your letter dated January 28, 1982, I am submitting our plan of operations for our claims at the Harquahala Mine, prepared by our consultant, Ray Wreggitt. Should you have any questions, do not hesitate to contact me.

Sincerely,

Timothy W. Atkinson, Pres.

TWA/gn
Enclosures

BLM
PHOENIX DISTRICT
FEB 8 '82

	INFO	ACTI	INITIAL
DIST M.			
AST DM			
PA			
ADMIN			
OPER			
RES M.			
P & L.			
PRA			
LGRA	1		
ARA			

JANUARY 22, 1982

mm-82-I-11

M. Dean Dunfee

DEAR SIR:

FIND ATTACHED LOCATION AND SCALE DRAWINGS OF PROPOSED LEACH PAD AND SOLUTION PONDS FOR A GOLD MINING OPERATION USING THE HEAP LEACHING METHOD OF EXTRACTION.

THE ORE BODY TO BE MINED IS LOCATED APPROXIMATELY 8.5 MILES SOUTH OF THE TOWN OF SALOME, ARIZONA, ON THE MINING PROPERTY COMMONLY KNOWN AS THE HARQUAHALA MINE WE PLAN A 2000 TON PER DAY OPERATION, USING THE CYANIDE RECOVERY TECHNIQUE, 1 LB. + OF NACN PER TON OF ORE.

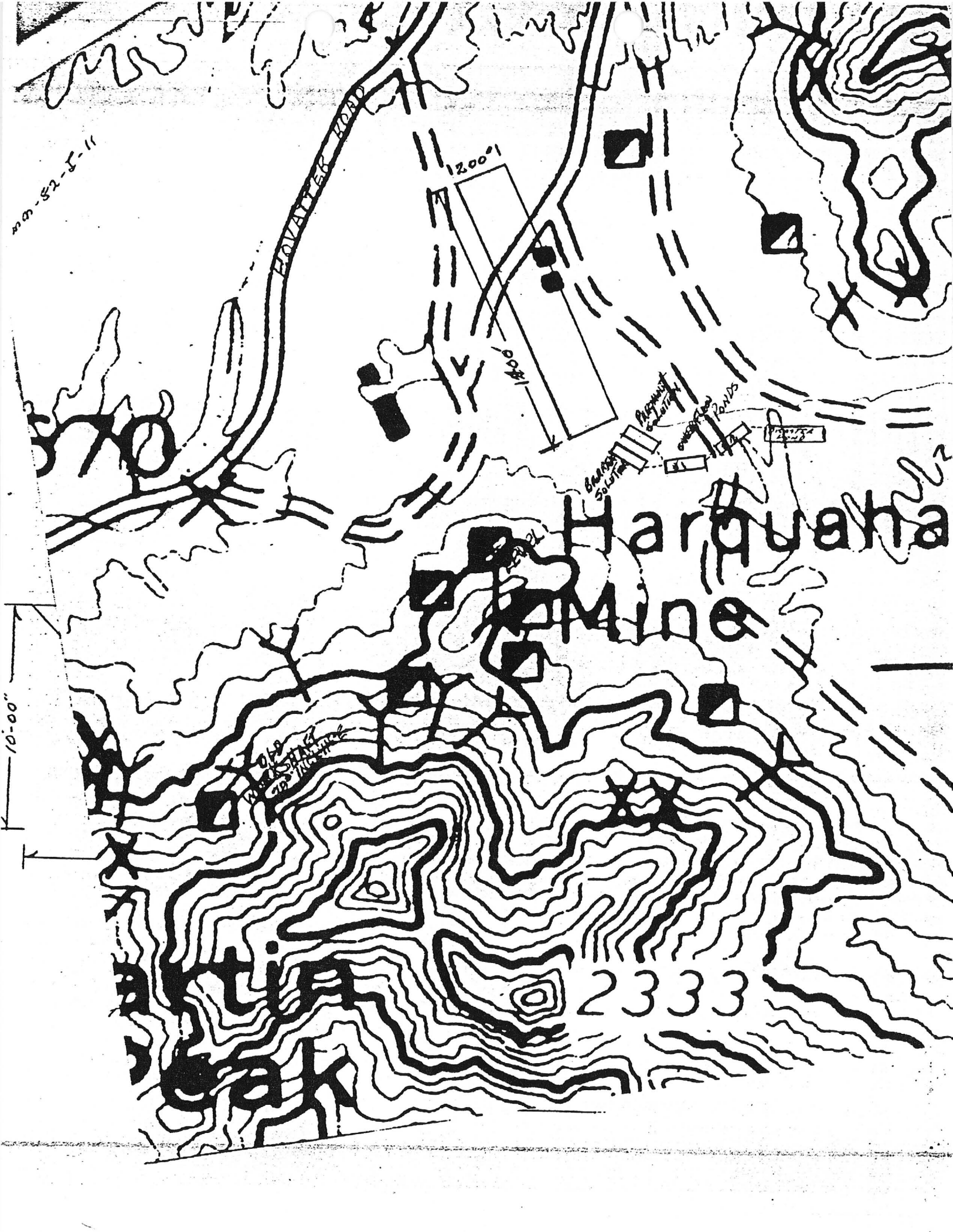
OUR TOTAL CHARGE OF SOLUTION AT ANY ONE GIVEN TIME WILL BE 120000 GALS OF APPROXIMATELY STRENGTH SOLUTION.

DUE TO THE FACT THAT OUR VALUES AND COST ARE TOTALLY IN OUR SOLUTION CHARGE, EVERY EFFORT WILL BE USED TO CONTAIN THIS SOLUTION.

ANY COMMENTS, CRITICISM OR OTHERWISE WOULD BE GREATLY APPRECIATED

RAY A WRIGHT

Cave Creek Mining Co.
P.O. Box 1598
Cave Creek, AZ 85331

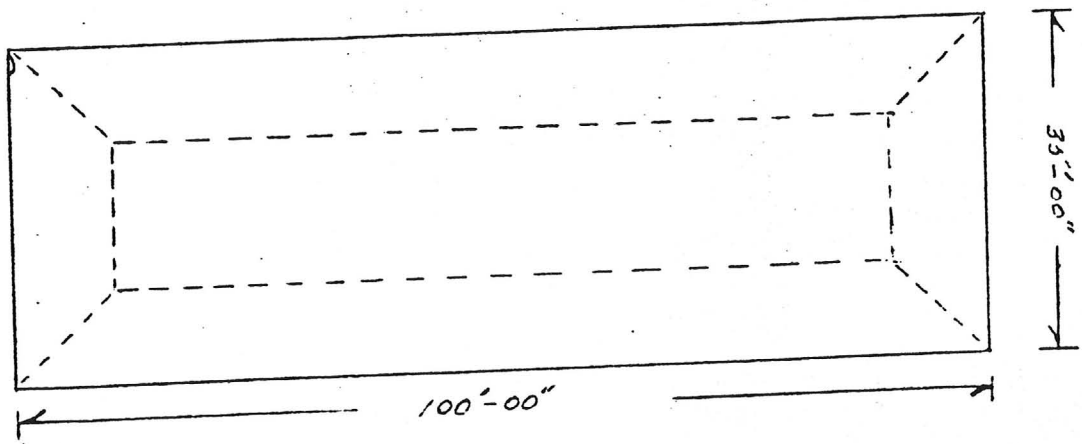

1200'
1800'
Harquahala
Mine
2333
10-00"

1 " SCREEN "

2 " OVERFLOW "

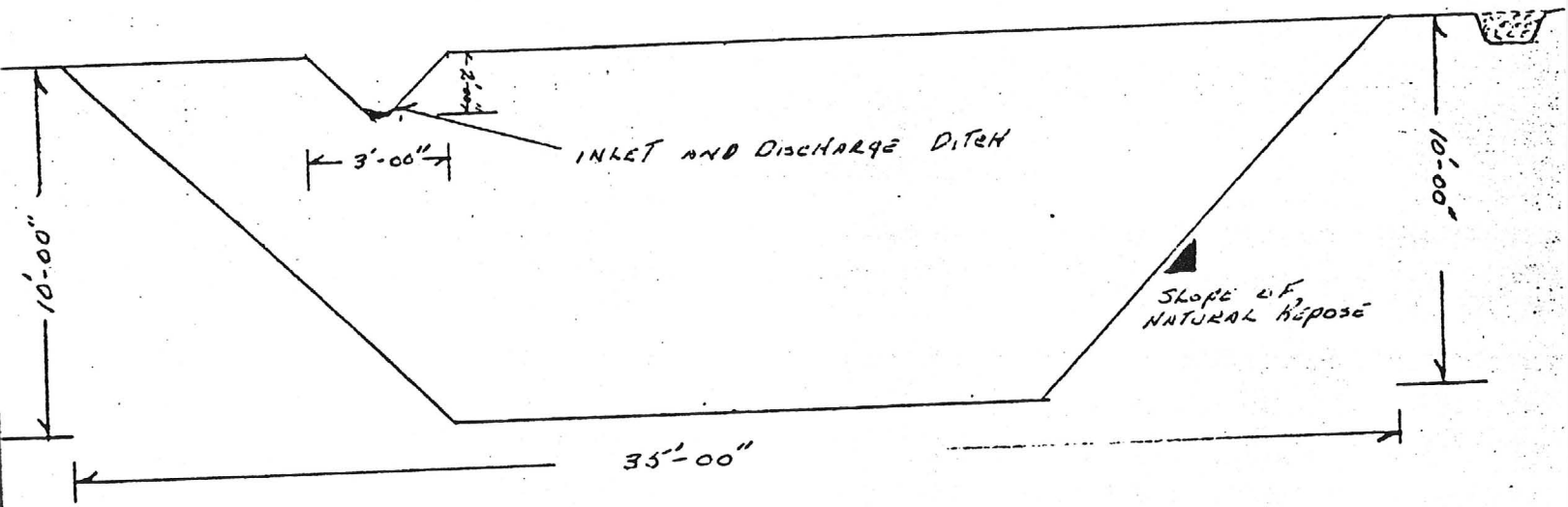
1 " DIAMETER CATCH "

mm-82-F-4



SCALE 1" = 20'-00"

CAPACITY 180000 GALLONS SOLUTION



ALL SOLUTION PONDS LINED WITH 20 MIL PLASTIC FORM FITTED TO ABOVE CONTOURS AND ANCHORED IN RETAINING DITCHES

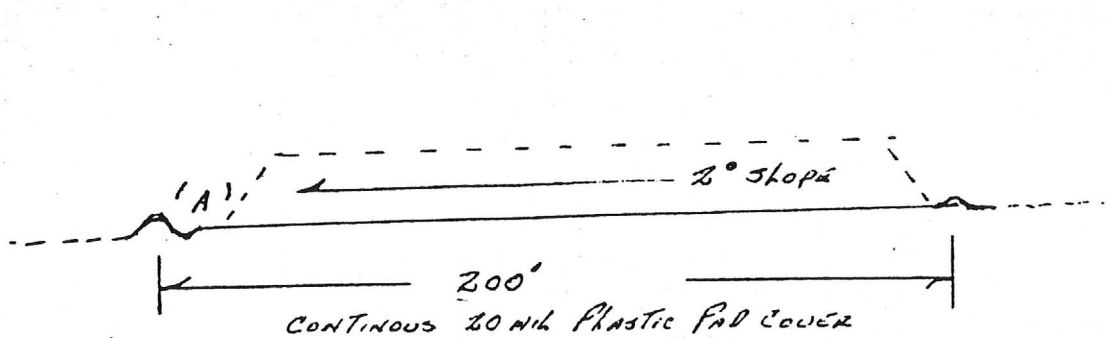
EACH SOLUTION POND TO HAVE A CAPACITY OF 190 000 GALS OF SOLUTION

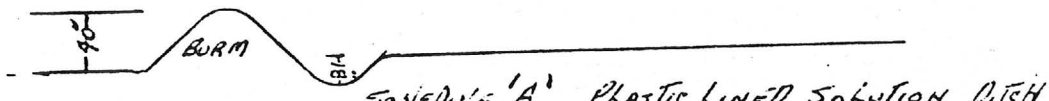
TOTAL CAPACITY 4 LINED PONDS AND 1 UNLINED DIAMETER POND, 1,200,000 GALLONS SOLUTION EQUAL TO A 4" RAINFALL

SCALE 1" = 5'-00"

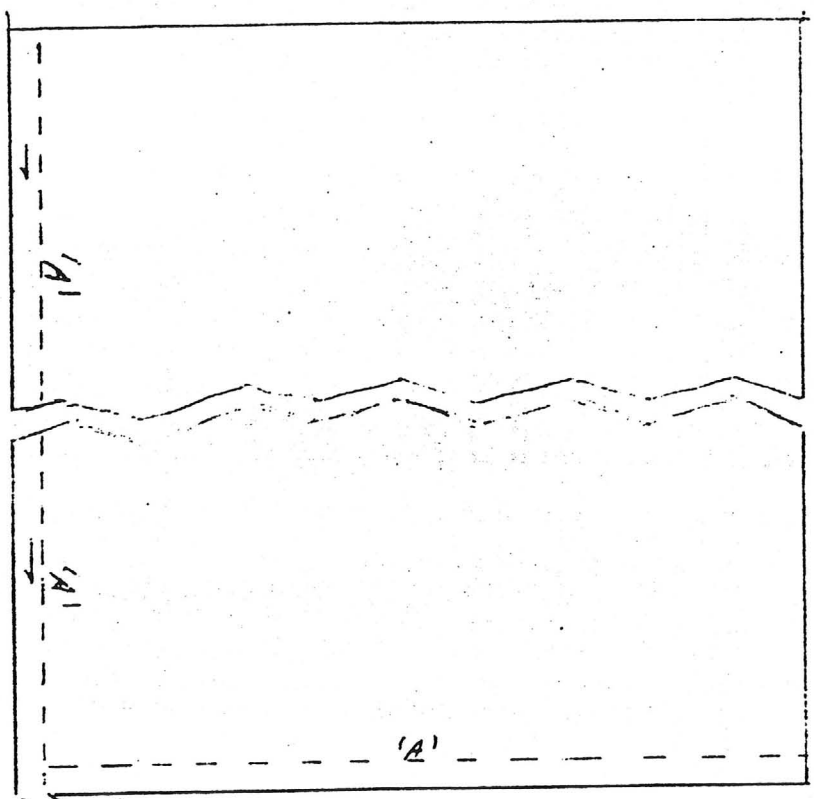
PRODUCTION LEACH PAD
200 TON CAPACITY
120000 GAL. SOLUTION REQUIREMENT

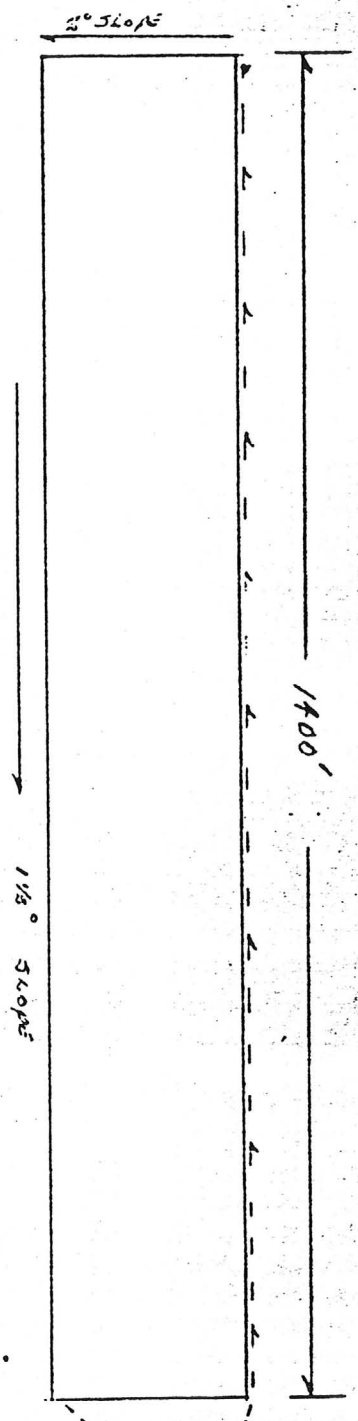
mm-82-8-11

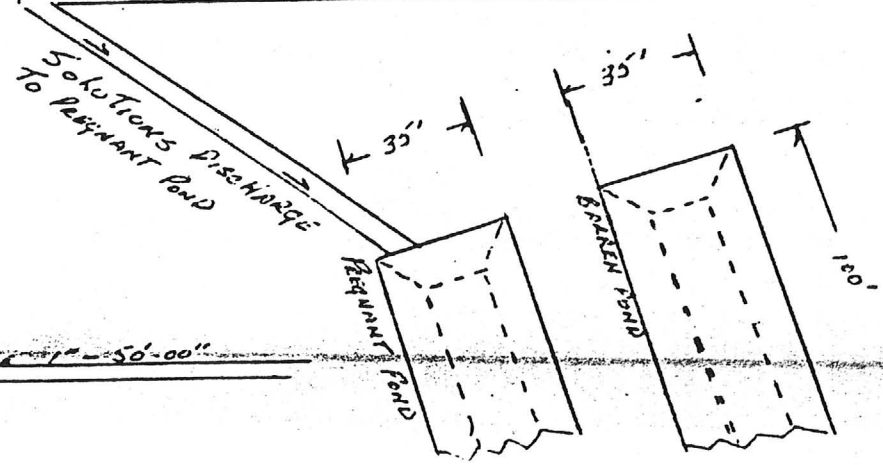


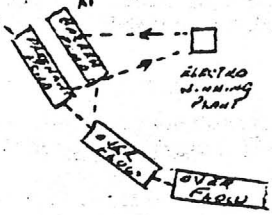


SCHEDULE 'A' PLASTIC LINED SOLUTION DITCH



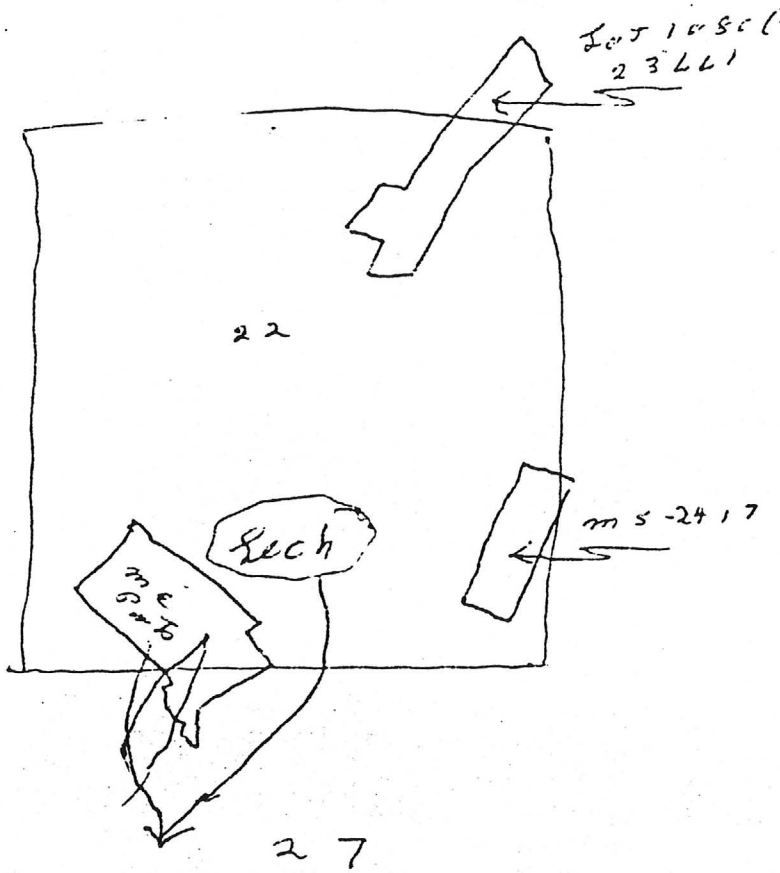






SCALE 1" = 50'-00"

mm-82-I-11



MN-82-L-77 07

January 28, 1982

Cave Creek Mining Company
P. O. Box 1598
Cave Creek, AZ 85331

Dear Sir:

This will acknowledge your notice of intent to conduct mining operations on your K and R claims. If subsequent operations result in total disturbance of over 5 acres, a mining plan of operations must be submitted.

If you have any further questions, feel free to call our Area Geologist, Richard Park, at 241-2947.

Sincerely,

Marvin D. Durfee

M. Dean Durfee, Area Manager
Lower Gila Resource Area

RPark:fd

Cave Creek C 1

Dean Durahy-Richards
241-2945

Illustration C

mm-82-I-~~AP~~ OJ

Sample format for "Notice" information - submitted in compliance with 43 CFR 3809.1-3.

INSTRUCTION FOR OPERATORS: Please complete in as much detail as possible. Additional sheets can be used, if necessary. Complete information should be furnished to the District Manager of the Bureau of Land Management office having jurisdiction over the land in which your operations are (will be) located, at least 15 calendar days prior to commencing operations.

1. Name and mailing address of claimant and operator (if other than claimant):
   Cave Creek Mining Co.
   P.O. Box 1598
   Cave Creek Az. 85331

2. (When applicable) Name of mining claims(s) and serial numbers assigned when you recorded your claim with BLM:
   K&R #'s 35, 34, 33, 32, 28, 27, 30, 29, 5, 6, 36, 37, 7, 8, 38, 39, 9, 10, 40, 41, 11, 12, 42, 43, 13, 14, 44, 45, 15, 16, 46, 47, 17, 18, 48, 49, 19, 20, 50, 51, 21, 22, 52, 53, 23, 24, 54, 55, 25, 26, 56, 57, 58, 59, 31

3. Describe the activities proposed and approximate date of start up (including description and location of access to be constructed, type of equipment to be used). Use sufficient detail to be able to locate activities on the ground. A map may be used along with this description.
   (1) 4 1000 Ton test leach pads (4 - 50'x60' pads side by si
   (2) If leach tests are positive, exploration drilling will proced on patented property to delineate the ore zone of approx. 500,000 tons of low grade Au ore. Approx. 20 drill holes of 200' centers.
   (3) Leach fields for 500,000 Ton ore will be on unpatented property (K+R #'s 5, 6, 8, 9, 36, + 38)

4. Will topsoil be saved, the land reshaped after disturbance, measures taken to control water runoff and erosion, toxic substances be properly disposed of, and will vegetation and wildlife habitat be rehabilitated?
   Unpatented claims with surface disruptions caused by exploration and mining test operations (4000+ Tons) will be recontoured.

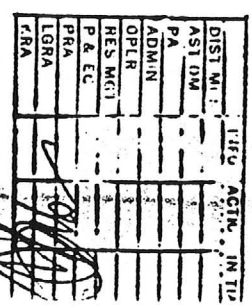


Illustration C, continued

mm-82-8-07

Check if:

_____ Construction of access will involve cuts of three feet or more on the inside edge.

I hereby declare that I, or persons I have authorized to do so, will complete reclamation of all disturbed sites during the course of my operations to the standards described in 43 CFR 3809.1-3(b)(4) and that all reasonable measures will be taken to prevent unnecessary or undue degradation of the Federal lands during operations.

Timothy W Atkinson
Signature of Claimant or Operator

1/12/82
Date

M[illegible] AND PROSPECT FIELD VISIT [illegible]A[illegible]MMARY

G

Sheet 1 of 3 (2 AND 3 BLANK) DO NOT COPIED

COMMODITIES Gold and silver

MILS ID No. _____ DATE April 28, 1982

ENGINEER Ken A. Phillips and Dick Beard

INFORMATION FROM: Roger Hall, Geologist, Cave Creek Mining Co.

PROPERTY SUMMARY

I. MINE NAME Harquahala

OTHER POSSIBLE NAMES _____

II. LOCATION: T 4N R 13W SEC(S) 15, 16, 21, 22 MINE DISTRICT Harquahala

ELEV. 1760' COUNTY Yuma TOPO QUAD. Hope 15'

DIRECTIONS _____

MAP ATTACHED _____

III. OWNERSHIP: NAME Cave Creek Mining Co. PHONE (602) 488-3707 (602) 488-37

ADDRESS: P.O, Box 1598, Cave Creek, AZ 85331

COMPANY NAME Subsidiary of Mineral Services of Nevada which is a subsidiary of Contractor Services Inc. (CSI) - West Virginia

PERTINENT PEOPLE Tim Atkinson, President

IV. PROPERTY AND HOLDINGS: _____

V. HISTORY: FIRST LOCATED: _____ OPERATED BY _____

DISCUSSION _____

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine HARQUAHALA MINE Date 6/9/64

District Ellsworth Dist. Yuma County Engineer Lewis A. Smith

Subject: Mine Visit 6/9/64 and interview with Grady Gulledge, Foreman.

LOCATION: 7½-9 miles by graded road S - SW of Salome.

OPERATOR: Harquahala Mining Co.

AGENT: Dave Obensteine, Pres. 4107 N. 44th Place, Phoenix WH6-2088.
Grady Gulledge, Mine Supt.

HISTORY: The mine was discovered in 1888 and up to 1929 $2,500,000 in lead and gold had been produced, a large part (est. at $1,600,000) having been extracted by Hubbard and Bowers (Bonanza Mining Company) in three years time (1891-1893). In 1893 the mine was acquired by the Harquahala Gold Mining Co., Ltd., for $1,250,000, which company sunk a new shaft and installed a 150-ton cyanide mill. This company exhausted the then known ore body and reworked the tailings by 1897. The British company produced $750,000 in bullion. The mine was sold back to Hubbard in 1899. Shortly thereafter the mines were idled and continued so until 1906. The Harqua Hala Mining Co. was organized in 1906 and produced $53,000 in gold bullion. In 1911 the amalgamation mill had a capacity of 40 tpd. From 1913-16 Yuma Warrior produced $30,000 from ore and $19,000 from reworked tailings. From 1922 to 1933 a small production by lessees was made. During 1934, Harquahala Gold Mines Company had a lease and retreated some tailings. In 1953, the mines were controlled by the Somind Mineral Corp., that erected a small mill to treat old dumps. The mines were taken over in 1958 by Rainbow Minerals, Inc. (Phoenix Group) but they did only a little development work. In 1960 Fletcher Merrell, of Salome, had the mines, they having been held for years by a Mr. Martin. David Obensteine, Pres. 4107 N. 44th Place, Phoenix, Ariz. (Harqua Hala Mining Co.) was in the office (6/16/64) with S. H. Glassmire, of Santa Fe, N. M. Consultants (214 College Street, YU2-0348 & YU2-0270) who is making a report on the Bonanza and Golden Eagle area. Obensteine's group took over about October, 1961. Since then this Company has done some exploratory work, from time to time. In October 1963, E. G. Williams reported that 8 men were working. In June 1964, 6 men were there uncovering an area south of the Bonanza shaft.

GEOLOGY: (Bonanza) The general area consists of a basal granite, exposed north of the Golden Eagle mine, quartzite grits; limestone and shale; a thin conglomerate; and shale and limestone with some conglomerate and dolomite, and some intrusion by dark basic dikes occurred. The rocks are more or less metamorphosed and complexly faulted. The ore deposits occur in a zone of faulting that strikes northward and extends through the limestone, shale, quartzite and basal granite. The main shear zone dips 45 deg. W and is joined by lesser faults that dip 45 deg. E. Ore shoots such as the "Castle Garden" stope occurred within these two sets of shear zones and ranged from a few inches to many feet wide (up to 60 feet). The bulk of the ore shoots occurred in an "a" shaped area 500 feet long and 450 feet wide on the south, all above the water table (170 feet below the surface). The gangue, here, consists of red hematite, with quartz, calcite, brecciated country rock, and a little gypsum. In places, large masses of gold occurred in close association with quartz. Very little silver was present. Below the water table the ore is pyritic. The granite that occurs on the 6 & 7 levels, is intensely sericitized. Most stopes are on the first 5 levels together with several thousands of feet of drifts.

A considerable tonnage of tailings, according to Glassmire, tested at $1.50 to $3.00 in gold and silver.

The Golden Eagle is about 1 mile northeast of the Bonanza, or Harquahala Mine. The main vein strikes N 20 deg E and dips 50 Deg SE and is in quartzite. A second vein that crops out to the NE is roughly parallel and dips 85 Deg. NW. Here the gangue is coarse-textured, gray-white quartz. Iron oxide is prevalent above the water table (300 feet on incline) below which pyrite, chalcopyrite and galena occur. Above the water table cerussite is sporadicly found. Workings include a 400 foot shaft (inclined at 45 deg.) and 450, or more feet of drifts on the lower level and stopes reaching from the 300-foot level to the surface. The ore shoots were numerous and pockety, but some were apparently over 15 feet wide. According to Bancroft (USGS Bull. 451) 2 samples of ore contained 0.25 and 4.84 percent copper, 1.32 to 2.88 oz silver, and 0.48 to 1.12 ozs ofgold per ton.

PLANS: A mill is seriously being considered, but, according to Gulledge, he has not received any plan to work by. Ebenstein said that they may lease the tailings to someone else. Present equipment consists of an old Loraine 3/4 yard shovel, and Rd 8 cat, 2-8yard Ford dump trucks, and a ½ yard front loader. The work is now concentrated in an area south of the Bonanza shaft where waste is being removed to expose the main vein. Sorting is being done in places. Gulledge reported some places that assay up to $30 per ton.

The history and geology is mainly extracted from USGS Bull 451, and ABM Bull 137.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Harquahala Mine | Date September 13, 1964

District Ellsworth Dist., Yuma Co. | Engineer Lewis A. Smith

Subject: Mine visit and conferences with David Obersteine, President of Harquahala Mining Co. and Grady Gulledge, Foreman. (959=1173)(Obensteine Home No.)

Gulledge stated that he had 10 men including himself. The work is concentrated upon opening up an area SE of the Bonanza shaft. This is being done by bulldozer and carryall, after blasting. The present cut is 40 feet wide, up to 20 feet deep, and 200 feet long and lies on the northeast slope of a hill. The material is strongly saturated by varied colored limonite on the fractures and in vugs. The limonite appears to be derived from pyrite that probably was associated with chalcopyrite or bornite. Certain bands contain considerable chrysocolla on the fractures. The limonite contains relief or residual rusty, gold colored pyrite in small flakes or grains. (This pyrite may contain chalcopyrite.) Assays, according to Obersteine, show appreciable gold.

While doing assessment work on the north group of claims (one mile N of the Bonanza shaft) oxidized copper bearing rock was uncovered over a considerable area. A bulldozer cut 125-150 feet long, 30-40 feet wide and up to 15 feet deep was made. South of this cut about 1/4 mile an old shaft dump also shows copper oxides. The cut showed copper oxides in rock joints and discontinuous ~~in~~ small lenses or veinlets. The rock is well shattered and contains considerable iron oxides, usually at a few feet below the old topographic surface. On the ridge, in which the old shaft was sunk, a "halo" band of rock, heavily saturated by limonite occurs in a crescent shaped outcrop. This limonite indicates fair copper and strong iron. The crescent is perhaps 150 ft. or more wide at its widest point and the inside of the crescent plunges under the main wash that lies between the hill and the dozer cut in the flat below and to the N. Some pits and minor cuts disclosed copper mineralization along some of the small tributaries to the main wash. It is not known whether the copper mineralization is continuous or sporadic in nature, even though it was found in places over a considerable area. It was suggested that a number of short drill holes on a small grid be sunk to get below the whipped-out surface and these might indicate whether the mineralization is sufficiently concentrated to warrant a more elaborate exploratory program. The exposures as now opened are too far apart to definitely permit any conclusions.

Three-fourths of a mile south of the first bulldozer cut a second bulldozer cut was made at the site of an old 35 foot shaft that was reported to have yielded some high grade silver ore. This cut is 20 feet wide, perhaps 100 feet long and up to 15 feet deep. Gulledge did not know what the results of samples taken in this cut are.

No definite plan has been developed for working the property.

Local areas, more reative than others, show malachite and chrysocolla. Some vugs were lined by clusters of brown jarosite crystals that are locally starting to convert to brown nodular limonite. The rock is strongly altered by kaolinization local chloritization and is only reactive in local places. It is, therefore, possible that a fair amount of copper could have been leached out and transported downward from the less reactive areas. This is indicated by local patches that contain "relief" limonite, a derivitive from chalcocite. The indications thus noted could easily be verified by a few well placed core drill holes. Some of the limonite is partly indigenous within the origin sulphide cavities but much has been transported to various distances and forms "halos" in the rock around the original cavities.

Memo Las 2/12/65

MEMO

HARQUAHALA MINE

YUMA COUNTY
ELLSWORTH DIST.

Mine Visit and Conference with LeVor Merrill, 7521 E. Mariposa St. Scottsdale and with David Obensteine 2/12/65)

Present work is centered in a basin that lies N and NW of the Golden Eagle shaft. Here a pit is being developed by bulldozers and has reached a maxim um depth of about 20 feet. The pit bottom is now about 35-40 feet in diameter. From the bottom 4 ramps to the surface are in a cross shape, the two arms of which are at right angles. One set of the two is NW-SE and the other is NE-SW. The ramps vary from 10 to 20 feet wide, but the SW one is about 30 feet wide. The muck has been pushed as far as 40-50 feet from the cut tops. Two RD 8 cats are being used to remove the muck. The cuts have exposed an intensely shattered and sulphuric acid-leached rock. The rock appears to be somewhat acidic in nature and could have been partly of rhyolitic composition but mainly appears to be severely altered granitic type that locally is somewhat porphyritic. Portions of it could be highly altered quartzite. Within the basin (1, or more miles long and 3/4-mile wide) no fresh rock was observed so that it would be hazardous to diagnose the rock type. However, according to Ariz. Bur. Mines Bul 137 (1934) p 130 the basal rock in the region is granite that as a rule is strongly sericitized. The fracture and jointing patterns appear to be typical of those found in some igneous or meta-igneous rocks or in rigid quartzitic rocks. The general geology of the area was described by Bancroft (U.S. Geol. Sur Bul 451 (1911) pp 106-109) as comprising the following sequence (in order, bottom to top): quartzitic grits; limestone and shale, thin conglomerate; and shale and limestone and limestone with dolomite and conglomerate. These rocks are, more or less, metamorphosed and appear to be complexly faulted. The Golden Eagle mine hill is mostly quartzite and this rock is the host rock for the Golden Eagle Vein and a parallel vein to the NE a short distance. The Golden Eagle vein strikes 50 deg W and generally dips 50 deg. SE, but the parallel vein dips 85 deg NW. The shoots in the veins are numerous but pockety (Ariz. Bur Mines Bul 137 (1934) p 131) ranging up to 15 feet in width. Stoping in places occurred from the 300 foot level up to the surface. The shaft is 400 feet deep, on a 45 deg. incline and has 450 feet of laterals mostly on the lower levels. Two samples, taken by Bancroft from sulphide ore in the lower levels showed 0.25 and 4.84 percent copper, 1.32 and 2.88 ounces of silver and 0.48 and 1.12 ounces gold per ton. The minerals here are pyrite, chalcopyrite and some galena.

Chloritization and epidotization are locally prevalent in the rocks overlying the granite rocks particularly near veins. Quartz veins and lenses are fairly common, although some of these are "bull" quartz. Schist remnants are observed west of the basin and it borders the basin rock. This schist area includes amphibolic, sericitic and quartz-mica types. in places the amphibolic rocks have locally been strongly chloritized or epidotized. No noteable quartz veins were observed in the basin rock, but local areas were silicified or chloritized especially where copper minerals were seen. Acidic dikes occur in the sediments bordering the basin.

Little mature oxidized capping was seen, most of it being of the type classed as Zone II at Morenci and elsewhere. Relict pyrite was observed in the bottom of the cuts, this was pitted and corroded. The overall impression was gained, from the limonites, that primary sulphide had been largely pyrite and chalcopyrite and that, deeper, these could be somewhat enriched within the basin area, but that the average copper content would on the whole probably be low, except in veins. The sulphides could carry both gold and silver, but gold would be predominant as was previously noted in the Golden Eagle. Merrill said that gold values were also reported from the 9th level of the Bonanza Shaft along with pyritic and copper sulphides. (This shaft is 1 mile S of the Golden Eagle). The rock fractures and openings are lined by red, yellow, or irridescent limonites that, in the main, are derived from pyrite, but some limonite is apparently derived from copper sulphides.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine HARQUAHALA Date 10/16/63

District ELLSWORTH Engineer E. G. Williams

Subject: Mine Visit

Mine was being reactivated at the time of visit. Eight men were working including the cook. Four machine men were drilling just west of the slump area over the old stopes. A bulldozer was cleaning out the entrance to an old underhand stope. The bulldozer and a large shovel were stock piling for future samples.

Grady B. Gulledge is mine Supt.
Don Shane, Metallurgist
Dave Obensteine, Pres. 4107 N. 44th Place, Phoenix, Arizona Phone WH 6-2088

Active Mine List Oct. 1963 - 8 men

MEMO

October 12, 1960

HARQUA HALA MINE

Travis P. Lane

Visited the Harqua Hala mine. A number of officers and stockholders of the Golden Eagle and Harqua Hala Mining Co., accompanied by their wives, were holding a meeting to formulate plans for the development of the project. Two men (Tom Saunders and L.E. Whitney) were working completing a survey of the property; and drilling of a water well was in progress. The results of the drilling are an agreeable surprise all around. The driller, Eli McCashin, Box 735, Salome, reported a good water formation penetrated at about 280' where water rose in the hole to 94' below the collar. Other important water strata were encountered at 310', 360' and 400'. The bit was pounding on quartzite and making only slight progress. The company feels it has developed an ample supply of water for substantial milling plant.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Harqua Hala Date August 31, 1960

District Ellsworth District - Yuma County Engineer Travis P. Lane

Subject: Mine visit.

Ownership: Fletcher Merrill
Wenden, Arizona

Lessee: Harqua Hala & Golden Eagle Mining Co.
6243 W. Georgia
Glendale, Arizona

Temporary address: c/o Harry Stewart, Atty.
Luhrs Tower, Phoenix

President: Fletcher Merrill

Sec.-Treas.: Rupert Johnson
6243 W. Georgia
Glendale, Arizona

I visited the property where I met and talked with Rupert Johnson who gave me the following information:

A group of 10 men, resident in the valley, recently joined together to form the Harqua Hala and Golden Eagle Mining Co. The people plan to incorporate but do not expect to sell stock to the public. They intend to proceed immediately with construction of a mill and mining plant to work the surface of the Harqua Hala deposit as a low grade pit operation. They are negotiating to purchase the Wickenburg mill of Mohave Mining and Milling Co.

L.E. Whitney, geologist, and Tom Saunders, metallurgist, both formerly with Mohave Mining and Milling Co. have been engaged by the company. Also, according to Mr. Smith, Rod Easley, Supt. for the Mohave Mining and Milling Co., will lend some assistance to the enterprise. LaVor Merrill, related to Fletcher Merrill, will be the supt. 2 men were working at the time of visit.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine Golden Eagle (Part of Harqua Hala Properties) Date June 3, 1953.

District Ellsworth Engineer Geo. F. Reed

Subject: Present Activities

Note: The Golden Eagle and Harqua Hala Mines are well covered in "Arizona Lode Gold Mines and Gold Mining" by Wilson, Cunningham & Butler, Ariz. Bur. of Mines, Bul. No. 137, 1934., pages 128 to 131.

Ownership:

According to Mr. N. T. Zuver who is in possession at the property, the two mines which are about a mile apart, are now owned by Somind Mineral Corp., Box 653, Salome, Arizona. There are about nine patented claims.

Present Work:

Mr. Zuver has two men working on mill construction. They have roughly the following flowsheet setup and are making test runs, adjustments, etc.:

Wood & Steel course ore bin, about 40 tons capac.

Jaw crusher about 4 by 10

Conveyor to fine ore bin.

Sintron feeder to screen.

Hammer mill taking over-size.

Screen and cone making three sizes of table feed.

Three economy tables in parallel.

The above machinery is run by individual motors pow ered from a 75 kw. butane engine fueled generator.

Mr. Zuver expects to treat dump ore and ore from underground in the South end of the Golden Eagle Mine. He estimates that this ore will assay about 12% lead and $5.00 in gold. He also states that there is reported by Frank Wicks about $20,000 tons of $20.00 gold ore in the mine.

The main mine workings of the Golden Eagle Mine are in quartzite. The vein strikes N20E and dips about 50 degrees SE. It is mostly iron stained to white or gray quartz on the upper levels. To the SW, it goes into limestone country and lead carbonate is visable in streaks and bunches. This is the area where Mr. Zuver plans to mine.

George F. Reed

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine: Harqua Hala & Golden Eagle — Date: March 20, 1968

District: Ellsworth District - Yuma County — Engineer: C. L. Hoyt

Subject: Interview with Mr. Grady Gulledge

Mr. Gulledge was in the office and brought us up to date on the status of the Harqua Hala mine. He reported that when Mr. David Obenstine gave up his control of the Harqua Hala and Golden Eagle properties in the latter half of 1966, they were taken over by a group who formed the Frontier Mining Company, with Mr. Braden owner of the Braden Machinery Co. of Yuma, as President, Mr. Jay Landis, Sales Representative for Braden Machinery Co. as vice president and general Manager. Mr. Duncan E. Harrison, vice president of the Planet Ranch and Metals Co. was also associated with this company. Frontier covered the area adjacent to the mines with new claims. The property was surveyed by Messrs. Cramer and Gulledge.

Control of these properties was transferred to the Colorado Fuel and Iron Company which is now remapping the claims and workings and is planning on doing some exploratory drilling. Mr. James Work is in charge of the property, Mr. Reed Erickson is the mine geologist and Mr. Gary Zahn is the metallurgical engineer. These are all staying at the Stamford Inn at Salome. Terms of the agreement between CF&I Co. and Frontier have not been released.

Mr. Gulledge also reported that the New Jersey Zinc Co. has just sent in to Salome a drilling crew, a large Joy drill and 4500 feet of casing. Location of the proposed drilling is unknown to him.

Soon after Mr. Gulledge left, Mr. Jim Brooks, field geologist for CF&I Co. dropped into the office. He confirmed the above information.

DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine HARQUA HALA MINE Date October 5, 1967

District ELLSWORTH DISTRICT, YUMA COUNTY Engineer Robt. F. Playter

Subject: Conference with Jay Landis, Industrial Sales Representative, Braden Machinery Co., 16th Street and Arizona Way, Yuma, and Lavor Merrill.

This company has the agencies for Caterpillar products and Deere Equipment Co. in Yuma.

Mr. Landis admitted when I raised the question that they are interested in the Harqua Hala and Golden Eagle Mines in the Ellsworth Mining District about 9 miles southwest of Salome. They are doing no work on the property at present, but are seriously trying to settle the legal difficulties that now exist. If they succeed they intend to do some work on the property and will probably endeavor to turn it over to one of the major mining companies. Besides an interest in the mine itself they are interested in selling heavy mining equipment.

Besides the above Mr. Landis gave me the following information he believes to be true regarding other mining activities in northern Yuma County.

(1) ✓Mr. Freeman Lamalino of Parker is reported to be starting a leaching plant, on copper ore, east of the Mineral Hill operation.

(2) ✓ Newmont Exploration Co. has taken an option on the old Swansea Mine near Bouse.

(3) ✓Miami Copper has optioned the old Planet Mine.

(4) ✓The old McCracken Mine, in Mojave County, north of the Mineral Hill operation is being reopened by a Canadian company, Magnum Consolidated Mining Co.

I shall endeavor to find out more about the above reports when I visit Salome, Quartzsite, and Parker.

Reports are current that the Harquahala will soon reopen.

CLH Conf. Salome 2/13/68

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

HARQUAHALA (F)

EVAN MECHAM, GOVERNOR
GERALD H. TELETZKE, PH.D., DIRECTOR

NOTICE OF INTENT TO (ISSUE) (A) GROUNDWATER QUALITY PROTECTION PERMIT(S)

Pursuant to Arizona Compilation of Rules and Regulations, Title 9, Chapter 20, Article 2 the Director of the Arizona Department of Environmental Quality intends to (issue) (a) Groundwater Quality Protection Permit(s) to the following applicant(s), subject to certain special and general conditions.

Public Notice No. 126-87AZGW
Harquahala Project (HARQUAHALA MINE (F)) (LEACH OF TAILINGS)
Andrew T. Swarthout
Socorro Mining Inc.
1802 W. Grant Road, Suite 110-8
Tucson, Arizona 85745
Groundwater Quality Protection Permit No. G-0017-15

The permittee shall be authorized to operate a nondischarge hydrometallurgical precious metal recovery facility utilizing the cyanide heap leaching method. The facility is located south of Salome, Arizona (T4N, R13W, Sec 22 and 27) in the Harquahala Mountain Range. The Groundwater Quality Protection Permit shall regulate the containment of the cyanide leach solution to be used in the operation of the heap leach facility. The heap pad and ponds (pregnant, barren and overflow) shall be constructed with flexible membrane liner system over a prepared subgrade to form an impermeable boundary between leach solution and land surface. The liner system shall have a leak detection and collection system between the upper and lower liner to be monitored for the presence of liner leakage. The facility shall monitor leach solution daily in the form of a water balance record and monitor the leak detection collection system weekly for liner leakage. The facility shall be protected for runoff associated with a 100-year, 24-hour stormwater event and shall fence the processing site to provide restricted access. Groundwater at the site is at an approximate depth of 100 feet below the land surface.

The permit (application)(Notice of Disposal) is available for public review Monday through Friday, 8:00 a.m to 5:00 p.m. at Arizona Department of Environmental Quality, Water Permits Unit, 2005 North Central Avenue, Phoenix, Arizona 85004.

Persons may submit comments or request a public hearing on the proposed action, in writing, to ADEQ at the above address within thirty (30) days from the date of this notice. Public hearing request must include the reason for such request.

Bonanza and Golden Eagle Groups

FPK 6-2-68

About 1912 Getchell reported title in Yuma - Warrior Mining Company, by deed of record or deeds in escrow.

1953 About 9 patented claims - owned by Somind Mineral Corp., Box 653, Salome a/c to N.T. Zuver, man in possession at property.

1958-59 Rainbow Minerals, Inc. operating.

TPL 3-24-59 Nelson T. Zuver owner, leasing to Rainbow Minerals Corp.

TPL 4-30-60 O.K. Gilliam of Salome has lease on tails from mine owner Fletcher Merrill whose wife came into possession through estate of a Mr. Martin several years ago.

TPL 8-31-60 Owner Fletcher Merrill. Lessee Harqua Hala & Golden Eagle Mining Co. Pres. Fletcher Merrill. Group of 10 men.

TPL 2-2-61 Company now known as the Golden Eagle Mining Co., David Obenstine, Pres.

TPL Obenstine left company in August 1961. Grace Randall, principal owner in the group in Oct. 1961.

TPL 6-8-62 LaVor Merrill owns mine and Obenstine has option from him.

EGW 10-16-63 Obenstine Pres. (Harquahala Mng. Co.)

LAS 6-9-64 Operator - Harquahala Mining Co., David Obenstine, Pres.

M.M.&P. 8-19-64 Harquahala Mining Co. has the Bonanza shaft. Group"headed by Dave Obenstine" took over Harquahala property in 1961. LaVor Merrill, 301 N. 39th St., Phoenix.

T4NR13W Sec. 22+27

Bouse, Arizona
March 27, 1948

Dear Joe:

I wrote Mr. Allison as you suggested telling him about my copper prospect at Swansea and also my claims adjoining the Harqua Hala bonanza mine. In this group the downward extension of the faulted Harqua Hala orebody must necessarily exist and a little drifting, crosscutting or diamond drilling from the bottom of a 300 foot shaft should locate the orebody in which case the Harqua Hala district would suddenly come to life and become a greater producer than ever before.

When you come over here I shall be glad to show you my properties and point out to you my idea of faulting at Harqua Hala where the block of ground containing the bonanza orebody simply slid off the mountain on my ground.

At Swansea I have a better surface showing than that at the Swansea mine and my geology is somewhat similar and better. I am fully convinced that I have the making of an important copper mine and I am personally doing all the digging on it that I possibly can.

I am enclosing a geologic sketch of the Swansea district where I own the Record group where I believe the chlorite schist contains a valuable orebody. The Eshom claims named Arizona, Phoenix and Yuma is where I have a mineralized limestone that is highly altered and favorable to mineralization as evidenced by the numerous outcrops of copper minerals and which would not be for sale at this time had I been a younger man. If you can find a capitalist who is not afraid of spending a little money we will make both Swansea and Harqua Hala boom as never before.

Yours sincerely,

C. B. Thompson

Note:- Thompson is a Mining Engineer -

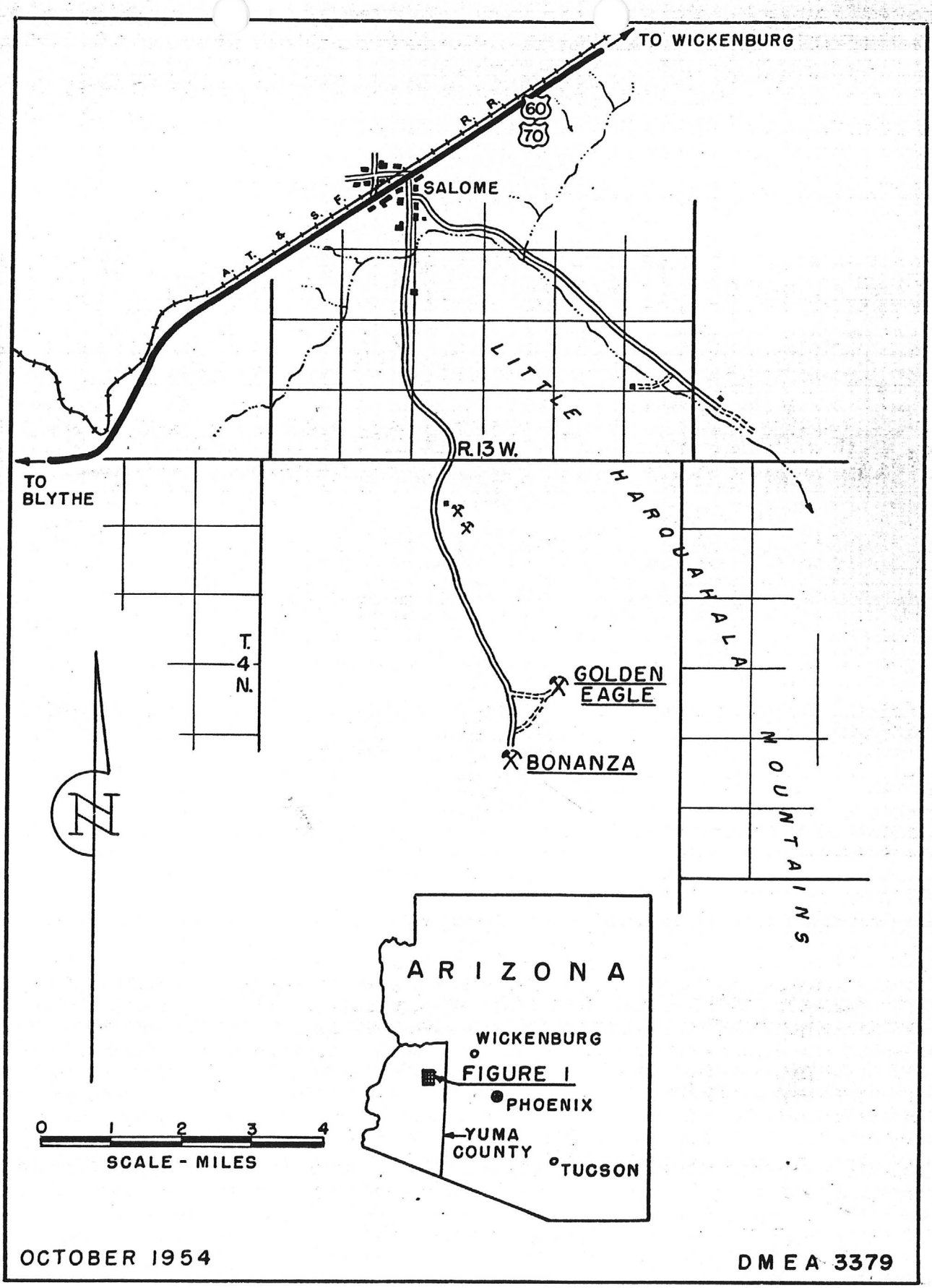
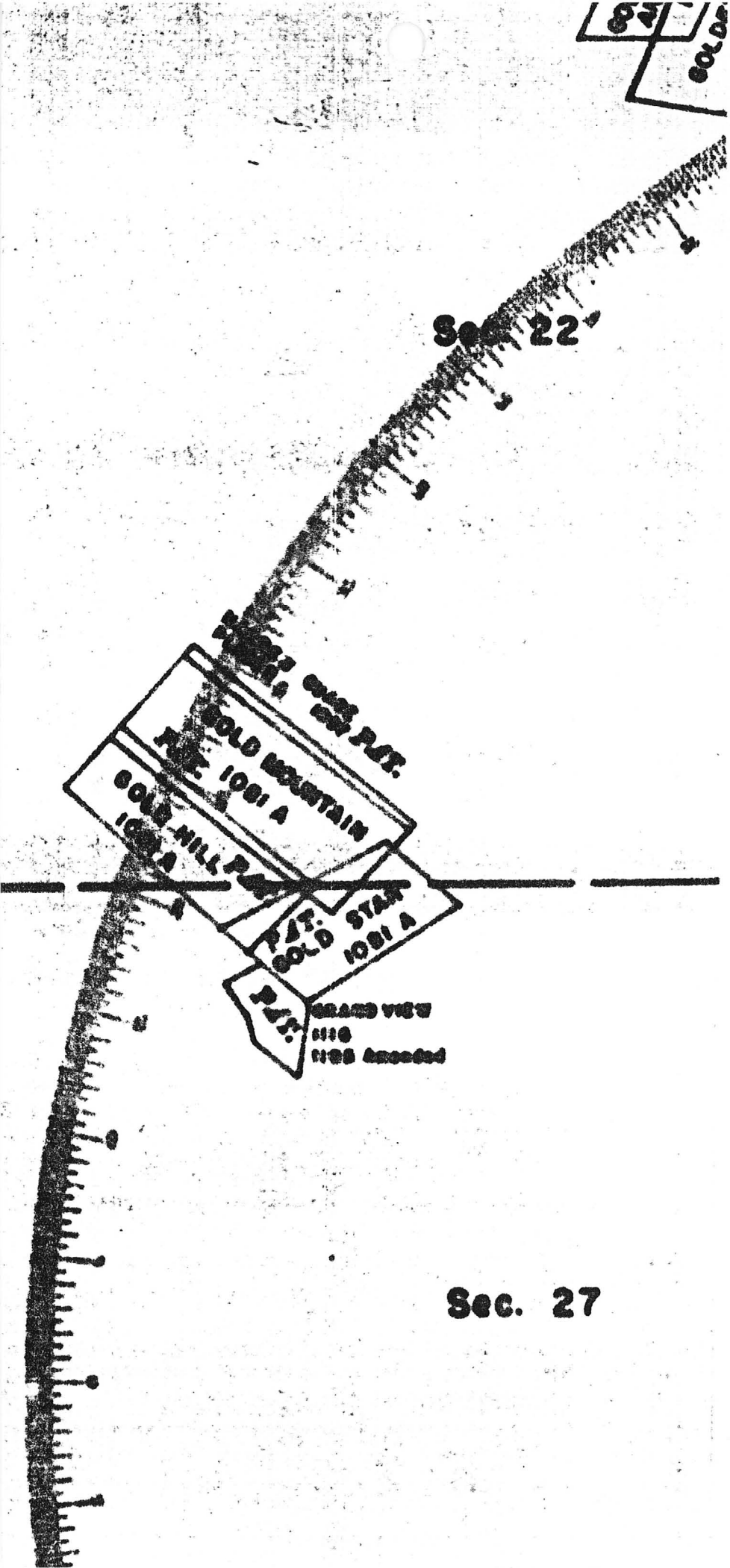


FIGURE 1. - LOCATION MAP - HARQUA HALA MINERALS CORP.
YUMA COUNTY, ARIZONA

Gold


Sec. 22
GOLD MOUNTAIN
GOLD HILL PLAT.
PLAT.
STAR
Sec. 27

CAVE CREEK MINING CO.
P.O. BOX 1598/CAVE CREEK, ARIZONA 85331
(602)488-3702

November 10, 1981

HARQUA HALA MINE TOUR

General Geology: Bancroft states the following succession of rocks is present: Coarse grained basal granite, exposed north of the Golden Eagle Mine, quartzitic grits; limestone and shale; thin conglomerates; and shale and limestone with some dolomite and conglomerate. These rocks are more or less metamorphised and complexly faulted. Darton has shown that the limestones, in part at least, are of carboniferous age. (300 million B.P.)

The Harqua Hala Mine (Bonanza) is located at the northeastern slope of Martin Peak in the southwestern Harqua Hala Mountains. The deposit occurs in a zone of faulting striking North-South and dipping approximately 45 degrees west. This above fault strikes through Dolomitic limestone, shale (siltstone, claystone), sedimentary quartzite (grit) and basal granite intruding from the Northeast.

Mine development consists of an inclined shaft and hundreds of feet of drifts on seven levels. Stoping in mass has occured on the upper levels. Exploitation of the quartzite and granite and siltstone is also a potential producer as well as certain portions of the dolomitic limestone. Alteration of the units is intense and consists of induced quartz, sericitization, Feo stain and vein and massive induced hemitite in the upper oxide zone. Oxidation has gone down to 400 feet and no sulfides were observed. Below the oxide zone disseminated sulfides occur and associated Au values increase according to R. Wreggitt. The mine workings are flooded below this depth. A conservative estimate of tonnage even after subtracting present workings would be approximately 10 million tons low grade Au.

Golden Eagle Mine visit: The Golden Eagle is approximately 1 mile northeast of the Harqua Hala deposit at the base of a low ridge. The main vein strikes approximately 200 degrees dipping approximately 50 degrees east and occurs in a quartzite similar to that at the Harqua Hala. Massive sulfides are present, iron oxides (FeOx), and a grayish white quartz.

According to Bancroft (Bulletin #451) workings at the Golden Eagle mine consist of a 400 foot incline at 45 degrees with about 450 feet of drifts on the lower level and stopes that extend from the surface to the 300 foot level.

Bancroft states that 2 samples of sulfide ore from the lower levels contained .25 and 4.84 % Cu, 1.32 and 2.88 oz/T Ag, and 0.48 and 1.12 oz/T Au.

Size and alteration of this mine is, to say the least, quite impressive. This is not a vein deposit but a stockwork type mineralization with large tonnage potential. Negotiations for optioning should proceed with all possible speed.

Roger M. Hall, Geologist

CAVE CREEK MINING CO.
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Economic Considerations
Project 104B

The Bonanza prospect is but one potential portion of the Harquahala project. It was from this hill that major production of high grade gold was exploited and it is the best starting point for an exploration program. Significant anomalies at other locations on the property deserve more investigation.

At the Golden Eagle there has been extensive drifting and crosscutting which has produced substantial amounts of gold, lead and silver. Large areas of hydrothermally alterred granites can be seen here and in a large prospect pit out in the valley approximately 1800 feet from the portal entrance. Future sampling and geologic work should proceed here in the near future.

Cat cuts in the valley to the west of the Bonanza hill prospect (approximately 2500 feet) have exposed alterred oxidized granite carrying low grade gold (approximately .08 Oz/Ton).

Other than Au the Harquahala shows anomalies of Cu, Pb, Zn, Mo, and Ag which would lead to further interests and depth. Further work with remote sensing methods, soil sampling, and deep drilling could locate a large porphry deposit at depth.

In conclusion, the Harquahala prospect should be explored for deposits other than just the enriched gold zones in the quartzites and granites. Substantial potential for porphry deposits exist here.

Roger M. Hall, Geologist

CAVE CREEK MINING CO.
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Underground Structure
Project 104B

A general view of the underground structure at the Bonanza is as follows, starting from top to bottom:

I. Upper levels (stopes and workings above 77' level)

a) Stopes and upper level workings.
b) Many zones of heavy fracturing with intense brecciation.
c) Fracture pattern is generally NE to NW dipping SW-W. Many areas show cross-fracture.
d) The stoped areas which are predominately quartzites lie north-south (240 feet) by east-west (170 feet). These stopes slope approximately 10 to 12 degrees southwest.

II. 77 foot level

a) Many areas show intense fracture, brecciation and leaching.
b) Both granites and quartzites are encountered here.
c) Bedding in the quartzites generally strikes NW-SE, dipping South (40 to 60 degrees). This structure seems to have no apparent relation to Au mineralization although copper oxides are following bedding planes in most places.
d) Fracture structure generally strikes NW-SE dipping SW-W approximately 35 to 70 degrees.
e) Tunnels 14C, 15, 16, which are quartzites show strong Au mineralization (approximately .10 Oz/Ton Au). These areas show strong fracturing with a small amount of disseminated iron pyrites along with secondary iron oxide staining and also towing fractures. Mineralization strikes apparently NE, SW and is most likely an independent ore block separated from the stoped areas.
f) Tunnels 13, 12, 12d and the incline, which are granites show average Au mineralization of approximately .07 to .08 Oz/Ton Au. Fracture structure strikes from NE to NW dipping west approximately 50 to 70 degrees, with some areas of intense leaching and brecciation.

III. 139 foot level

a) Consists of chloritic granites with zones of intense alteration.
b) Fracture structure is generally NW-SE and dipping eastwards approximately 30 to 60 degrees. This structure can be observed in tunnels 23,24, and 24 & 8.
c) Alteration here is weak unless cross fracturing is encountered. Granites are very weakly leached or no leaching is apparent at all.

It should be noted that structure here is reversed. Also fracturing is much less intense.

d) Tunnels 25 and 26 show strong anomalies and structure here is NW-SW dipping in a westerly direction from 25 to 55 degrees.

IV. 189 feet to water level

a) Consists of strongly alterred and leached granites with some small disseminated pyrites. Many zones are heavily fractured.

b) Fracture structure is generally NW-SE dipping in a westerly direction approximately 35 to 70 degrees.

A general review of the underground structure strongly suggests that primary hydrothermal solutions migrated upwards in an easterly direction up these westerly dipping fracture zones. Thus primary gold bearing iron pyrites were disseminated throughout the granite and quartzite units.

Shattering of these units in tertiary times have allowed meteoric solutions to percolate downwards therby oxidizing and secondarily enriching large areas in the workings.

Large areas in the upper stopes have been exploited for high grade gold in the past; but panel sampling suggests that much of the wall-rock previously left as waste is of ore grade values and easily leached by conventional cyanide methods.

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Geologic History
Project 104B

Paleozoic - Age Carboniferous 350-275 MYBP (Bancroft)

1) Dolomite - massive and finely crystalline, suggests migeosynclinal evaporitic environment.

2) a. Quartz arenite - stable environment of terrestial nature.
b. Intercalated limey fine grained units - stable underwater deposition.
c. Quartz arenite pebble conglomerate with quartz arenite matrix.

Upper Mesozoic - Upper Jurassic or lower cretaceous 180 MYBP (U of A)

1) Compositional granite - valley batholith. At the Bonanza this granite intrudes into the above Paleozoic quartz arenites, and by contact metamorphism, creates the quartzites which crop out on Bonanza hill.

Mesozoic - Cenozoic Era - Upper Cretaceous Laramide revolution

1) High angle normal faulting of both granites and quartzites
2) Faulting creates many smaller cross faults in these granites and brittle quartzites.
3) This faulting and crossfaulting shatters, shears and brecciates the country rock creating conduits for hydrothermal solutions rich in Au, Cu, Bi, Mo, Pb, and Zn.
4) These hydrothermal solutions deposit gold bearing iron pyrite throughout the fracture zones.

Cenozoic - Recent

1) Supergene fluids oxidize both the quartzites and granites to about 300 feet below the present surface using the same conduits followed by the preceeding hydrothermal solutions.

2) These oxidizing meteoric waters have created zones of intense secondary enrichment by leaching . The large N-S fault zone in the upper stoped areas has been exploited in the past for its high grade freemilling gold.

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Preliminary
Geologic Report
Project 104B

Location: The Bonanza Mine (104B), also referred to as the Harquahala Mine is located in the southwestern portion of the little Harquahala Mountains (T4N, R13W, sec. 22,27,28,21), in northern Yuma County, Arizona. Access to the property is over a Yuma County dirt road, which is in fair condition and is referred to as the Harquahala Mine Road. One would travel this road approximately 9 miles south of Salome, Arizona.

The geomorphology of the area consists of wide valleys with steep fault block mountains rising 600 to 1200 feet above the valley floors. The property is included in the basin and range province and the desert region of Arizona. Rainfall is under 6 inches per year which has created typical desert type vegetation. The elevation of the property is approximately 2,000 feet above mean sea level.

The Bonanza prospect, just one portion of Project # 104, consists of five patents with a net area of 45.829 acres. Surrounding these patents are 55 (K & R) unpatented lode claims, staked east-west, and generally running NE across the valley. Surprise Mines, a Nevada corporation owns the K & R claims and holds the lease to purchase on the patents.

The workings at the Bananza, at the NE base of Martin Peak are extensive. Thousands of feet of crosscuts and stopings have exploited high grade gold. Numerous pipe frame buildings are scattered about, and should be used for sample storage. Waste dumps and tailings abound around the workings. An extensive program of panel sampling of both surface and sub surface has been completed. Results have delineated grade gold values. Subsurface geologic and structural mapping has been completed at a scale of 1"=20'. The underground survey was done with a Brunton & tape. A surface grid (Brunton & tape) has been completed over and around the Bonanza at 100' stations. This surface grid was also used to geologically map the Bonanza and adjacent areas.

Sufficient ore grade anomalies have been discovered by panel sampling to suggest the existence of a large tonnage low grade dispersed gold deposit. As a result, a series of five rotary percussion holes are recommended to be drilled on three hundred foot centers. These holes are to be drilled directly over and around the aforesaid workings at the Bonanza.

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Local Stratigraphy - 104B

The stratigraphy in the vicinity of the Bonanza consists of five basic units. Two of these units have obviously been impregnated with small gold bearing iron pyrites. Secondary enrichment has also taken place in these quartzites and granites. Therefore starting from youngest to oldest these units are:

I. Mesozoic granite - Compositional porphrytic coarse grained granite. Phenocrysts of feldspars of orthoclase and plagioclase with much silica. Varying amounts of chloritic stain and moderate iron oxides in matrix.

Alteration: At the Bonanza alteration on this young granite can be observed in various locations from the 77' level down to the present water level approximately 190 feet below the portal entrance. Alteration in this granite is to sericite, impure kaolin, and both silica and chlorite inducement. Small iron pyrites are finely disseminated throughout and iron oxides follow fracture zones which are quite numerous here. Brecciation is readily apparent in many places and consists of alterred granite fragments in an iron clay matrix.

The highest grade gold samples were taken from this unit and if fracture trends are extensive, vast amounts of low grade ore could be expected to be encountered.

II. Carboniferous quartzites: Massive granular sedimentary quartz arenites and pebble conglomerates with intercalated thin beds (1" - 6") of light grey shaley units. Thermal metamorphism has created a granoblastic texture which could be mis-identified as some form of porphyritic intrusive. This unit is massive bedded and very brittle and forms craggy outcrops. Its colors range from maroon to orangish red.

Alteration: When mineralized these quartzites show intense shattering and brecciation with a very red clay matrix. Small disseminated iron pyrites abound in these zones and have been sunjected to surface weathering. Small amounts of copper oxides follow

both fracture zones and bedding.

The major production of high grade gold was yielded in these quartzites in the stoped areas on and above the 77 foot levels of the mine. The potential for zones of shattered quartzites in the Bonanza is quite apparent.

III. Carboniferous dolomites :

Fine grained crystalline carbonate. Color light to dark grey. Weathering light grey with iron oxides following small rock fractures.

Alteration: Portions of this unit show gossanous veins which carry some gold values along with base metals of lead and zinc. This unit is in contact with quartzites and granites at the Bonanza and might show some potential for Au replacement in certain areas near the mine workings.

IV. Carboniferous limestone :

Massive fine grained carbonate. Colors range from light to medium grey with a pinkish hue. Weathering light grey with iron oxides following fracture along with secondary calcite. Fossil corals and gastropods have been observed.

V. Quartz arenite:

A fine grained siliceous quartz arenite with calcite matrix. Weathers with a black desert varnish. Fresh surface is light beige in color.

Alteration: None observed on the surface, but this unit would be highly susceptible for replacement by mineralizing solutions and should be considered for further investigation.

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DRILL REPORT
PROJECT #104B

Drilling of the Bonanza mine commenced on April 4, 1982 and was abruptly terminated on May 21, 1982. R/CB holes numbered one through seven were drilled over and adjacent to the mine workings. A total of 1723 vertical feet was drilled.

METHOD

A reverse circulation drilling system with both a 5" tricone and a 5" percussion hammer was employed. Sample intervals were at 2½ foot intervals. The complete sample (50-54 lbs.) was collected into a plastic bag directly off the cyclone nozzle. This sample was then sent to the processing lab where it was split through a Jones splitter (one tier). Approximately one (1) pound was then pulverized through a disc grinder. The pulverized portion was rolled and split in half; one sent for assay, one for storage. The coarse drill fraction was then stored.

GEOLOGY

Primarily two major lithologic units were encountered; quartzites and granites. Thick sequences of quartzites were encountered on R/CB #'s 2, 117.5 feet; 3, 162.5 feet; 5, 172.5 + feet; 6, 155 feet.

These quartzites encountered in the drilling showed varying amounts of pyrite pseudomorphs (irregularly dispersed) in many places. Some leaching was seen as well as zones with deep maroon clays. These attributes are all indicative of low grade Au mineralization. Closer inspection of the chips was precluded due to the fact that the company does not possess a binocular microscope needed.

Recovery of sample chips in the quartzite zone ranged from 10-100% and averaged about 80%.

Granites were encountered below the above quartzites in all holes except R/CB #5 which was terminated due to economic considerations.

Granites encountered below the quartzites at R/CB holes #'s 1,3, & 2 showed no pyrite pseudomorphs or any signs of hydrothermal leaching. Some argillic alteration was apparent, as well as moderate chloritization. In hole # 2 a zone of intense chlorite rich granite was intercepted directly beneath the quartzite interface.

Holes #'s R/CB 1 & 4 showed thick intersections of argillic alteration with some anomalous gold values. Some moderate leaching and a very small amount of pyrite was observed.

Hole # R/CB 7 encountered strong gold mineralization at a depth of 221 feet and hit the entrance of tunnel 29. Chip recovery after this point was extremely bad, averaging 1-20%. The granite showed intense leaching (propylitic) with no granite texture retained. The clays showed moderate pyrite pseudomorphs with FeOx banding. Some areas showed moderate to strong chlorite and thusly less gold mineralization.

RESULTS

Assays, for gold only were very discouraging in the quartzite zone. Investigation of the underground has shown that fractured quartzite with irregularly dispersed pyrite pseudomorphs along with Cu oxides show strong low grade gold mineralization. Unfortunatly percussion chips leave no clue as to whether the quartzites are fractured. Gold mineralization in these quartzites is extremely erratic in nature. Underground sampling has shown that panel samples (4'X4') along with all the fines must be retained for accurate grade determinations.

The quartzites encountered in R/CB holes #'s 2,3,5, & 6 show alteration characteristics for low grade dispersed gold mineralization.

It must be remembered that a drill hole, basically a one dimensional sampling method, may not take an adequately (spacially) large enough sample to encounter this erratically dispersed gold.

Assays from the granite zones were discouraging in R/CB holes #'s 1,2,3,4, &6. R/CB holes #'s 2,3, & 6 showed chloritization and very little feldspar alteration, and almost no leaching. Pyrite solutions here probably percolated upwards along the granite quartzite interface. Thence these solutions percolated upwards through fractured and brecciated quartzites.

Holes #'s R/CB 1 & 4 showed an argillic type of alteration with some moderate leaching and very little pyrite pseudomorphs. These holes are probably on the east side of a projected range front fault striking North-west South-east, and therefore is one the underside of any potential ore body.

Hole # R/CB 7 encountered intensely leached and clay alterred granites, with disseminated pyrite pseudomorphs and FeOx banding. This intersection was at a depth of 221 feet and showed strong low grade gold anomalies.

CONCLUSIONS

Cross sections and fence diagrams from the drilling show the quartzite thickening to the South and Southwest. Pyrite (gold bearing?) bearing hydrothermal solutions have percolated up the granite-quartzite interface. Solutions here went upwards into shattered and brecciated quartzites leaving large zones of irregularly dispersed gold deposition. Subsequent leaching downwards created large irregular zones of high grade gold which seem to generally lie on North-South fault zones.

Drilling in the quartzites shows no strong signs of gold mineralization although alteration is apparent in many places. One can come to the logical conclusion that a five (5") hole has a very slim chance indeed of encountering this irregularly dispersed gold. Other evaluation methods must be employed.

Cross sections and fence diagrams show granites thickening to the Northwest, North and East. Alteration in this unit is from argillic and chloritic to propylitic (R/CB #7). Gold bearing solutions seem to have come up a major shear. These solutions dispersed outwards in fractured granite from 50 to 100 feet and present a large but hard to follow potential.

Gold mineralization is more evenly dispersed in this unit and can be correctly evaluated by conventionaldrilling methods.

Very large tonnage potential can be realized from alterred granites on the whole property. Alteration to ore grade is encountered in widely separated places on the surface showing extremely long strikes and unknown widths and continunity.

RECOMMENDATIONS

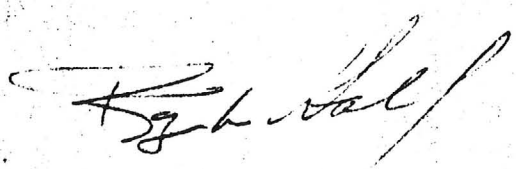
It is advisable to: (1) Resume drilling on a grid pattern over known underground anomalies at the Bonanza which are in the granites. Granite mineralization inclines toward the surface going Southeast from hole # R/CB 7. This would

evaluate near surface tonnage at the Bonanza mine. (2) Drilling in the quartzites is fruitless either because gold mineralization does not exist or that its erratic nature precludes intersection with a five inch hole. Two evaluation methods are advised: (1) Tunnel back to R/CB #6 from tunnel 14. Upon locating the hole, panel sample around it and see if assay results correlate with drill hole results. (2) Begin an exploration drift near holes R/CB 6 down to the 77 foot level This drift along with several crosscuts would accuratley determine grade values. (3) An extensive surface grid sampling system at the Bonanza and to the Northwest along with grid sampling at the Golden Eagle and to the North. This will help delineate future drill targets on the property. (4) An in depth study of drill chips under a binocular microscope to investigate alteration characteristics in the quartzites and granites. (5) Further underground geology of the Bonanza. Also thin section work to determine the displacement of gold in the rock.

There is obviously no easy or inexpensive way to conduct exploration on this property. Evaluations can only be made with extensive sampling programs, either panel and drifting in the quartzites, and drilling, to locate mineralization in the granites.

It is quite impossible to evaluate a property on unproven assumptions. Statistical methods mentioned above are needed to prove that an economic ore body does indeed exist.

Although there is still a very high risk of failure, present data of both surface and subsurface indicate a very good possiblity for a large low grade gold deposit.



Roger Hall, Geologist

CAVE CREEK MINING CO.
P.O. BOX 1598/CAVE CREEK, ARIZONA 85331 (602)488-3702

DRILL REPORT
PROJECT 1982

Drilling of the Bonanza mine commenced on April 1, 1982 and was abruptly terminated on May 21, 1982. R/CB holes numbered one through seven were drilled over and adjacent to the mine workings. A total of 1725 vertical feet was drilled.

METHOD

A reverse circulation drilling system with both a 5" tricone and a 5" percussion hammer was employed. Sample intervals were at 5' footage intervals. The complete sample (50-55 lbs.) was collected in a [illegible] directly off the cyclone nozzle. This sample was then sent to the sampling lab where it was split through a Jones splitter (one time) approximately one (1) pound was then pulverized through a disc grinder. The pulverized portion was rolled and split in half; one sent for assay, one [illegible]. The coarse drill fraction was then stored.

GEOLOGY

Primarily two major lithologic units were encountered; quartzites and granites. Thick sequences of quartzites were encountered on R/CB's #'s 4, 117.5 feet; 3, 162.5 feet; 5, 172.5 + feet; 6, 155 feet.

These quartzites encountered in the drilling showed varying amounts of pyrite pseudomorphs (irregularly dispersed) in many places. Some leaching was seen as well as zones with deep maroon clays. These attributes are all indicative of low grade Au mineralization. Closer inspection of the chips was precluded due to the fact that the company does not possess a binocular microscope needed.

Recovery of sample chips in the quartzite zone ranges from 1-100% and averaged about 50%.

Granites were encountered below the above quartzites in all holes except R/CB #5 which was terminated due to economic considerations.

Granites encountered below the quartzites at R/CB holes #'s 3, 6, & 2 showed no pyrite pseudomorphs or any signs of hydrothermal leaching. Some argillic alteration was apparent, as well as moderate chloritization. In hole # 2 a zone of intense chlorite rich granite was intercepted directly beneath the quartzite interface.

Holes #'s R/CB 1 & 4 showed thick intersections of argillic alteration with some anomalous gold values. Some moderate leaching and a very small amount of pyrite was observed.

Hole # R/CB 7 encountered strong gold mineralization at a depth of 221 feet and hit the entrance of tunnel 29. Chip recovery after this point was extremely bad, averaging 1-20%. The granite showed intense leaching (propylitic) with no granite texture retained. The clays showed moderate pyrite pseudomorphs with FeOx banding. Some areas showed moderate to strong chlorite and thusly low gold mineralization.

RESULTS

Assays, for gold only were very discouraging in the quartzite zone. Investigation of the underground has shown that fractured quartzite with irregularly dispersed pyrite pseudomorphs along with Cu oxides show strong low grade gold mineralization. Unfortunately percussion chips leave no clue as to whether the quartzites are fractured. Gold mineralization in these quartzites is extremely erratic in nature. Underground sampling has shown that small samples (1'X,') along with all the fines must be retained for accurate grade determinations.

The quartzites encountered in R/CB holes #'s 2,3,5, & 6 show alteration characteristics for low grade dispersed gold mineralization.

It must be remembered that a drill hole, basically a one dimensional sampling method, may not take an adequately (spacially) large enough sample to encounter this erratically dispersed gold.

Assays from the granite zones were discouraging in R/CB holes #'s 1,2,3,4, &6. R/CB holes #'s 2,3, & 6 showed chloritization and very little feldspar alteration, and almost no leaching. Pyrite solutions here probably percolated upwards along the granite quartzite interface. Thence these solutions percolated upwards through fractured and brecciated quartzites.

Holes #'s R/CB 1 & 4 showed an argillic type of alteration with some moderate leaching and very little pyrite pseudomorphs. These holes are probably on the east side of a projected range front fault striking North-West, South-east, and therefore is one the underside of any potential ore body.

Hole # R/CB 7 encountered intensely leached and clay altered granites, with disseminated pyrite pseudomorphs and FeOx banding. This intersection was at a depth of 221 feet and showed strong low grade gold anomalies.

CONCLUSIONS

Cross sections and fence diagrams from the drilling show the quartzite thickening to the South and Southwest. Pyrite (gold bearing?) bearing hydrothermal solutions have percolated up the granite-quartzite interface. Solutions here went upwards into shattered and brecciated quartzites leaving large zones of irregularly dispersed gold deposition. Subsequent leaching downwards created large irregular zones of high grade gold which seem to generally lie on North-South fault zones.

Drilling in the quartzites shows no strong signs of gold mineralization although alteration is apparent in many places. One can come to the logical conclusion that a five (5") hole has a very slim chance indeed of encountering this irregularly dispersed gold. Other evaluation methods must be employed.

Cross sections and fence diagrams show granites thickening to the Northwest, North and East. Alteration in this unit is from argillic and chloritic to propylitic (R/CB #7). Gold bearing solutions seem to have come up a major shear. These solutions dispersed outwards in fractured granite from 50 to 100 feet and present a large but hard to follow potential.

Gold mineralization is more evenly dispersed in this unit and can be correctly evaluated by conventionaldrilling methods.

Very large tonnage potential can be realized from alterred granites on the whole property. Alteration to ore grade is encountered in widely separated places on the surface showing extremely long strikes and unknown widths and continunity.

RECOMMENDATIONS

It is advisable to: (1) Resume drilling on a grid pattern over known underground anomalies at the Bonanza which are in the granites. Granite mineralization inclines toward the surface going Southeast from hole # R/CB 7. This would

evaluate near surface tonnage at the Bonanza mine. (2) Drilling in the quartzites is fruitless either because gold mineralization does not exist or that its erratic nature precludes intersection with a five inch hole. Two evaluation methods are advised: (1) Tunnel back to R/CB 6 from tunnel 14. Upon locating the hole, panel sample around it and see if assay results correlate with drill hole results. (2) Begin an exploration drift near holes R/CB 6 down to the 77 foot level. This drift along with several crosscuts would accurately determine grade values. (3) An extensive surface grid sampling system at the Bonanza and to the Northwest along with grid sampling at the Golden Eagle and to the North. This will help delineate future drill targets on the property. (4) An in depth study of drill chips under a binocular microscope to investigate alteration characteristics in the quartzites and granites. (5) Further underground geology of the Bonanza. Also thin section work to determine the displacement of gold in the rock.

There is obviously no easy or inexpensive way to conduct exploration on this property. Evaluations can only be made with extensive sampling programs, either panel and drifting in the quartzites, and drilling to locate mineralization in the granites.

It is quite impossible to evaluate a property on unproven mineralization. Statistical methods mentioned above are needed to prove that an economic ore body does indeed exist.

Although there is still a very high risk of failure, present data on both surface and subsurface indicate a very good possiblity for a large low grade gold deposit.

Roger Hall, Geologist

Harqu Hala Mine
Hope 15' approximate section 22, T. 4N., R.13W.
Yuma County

reference: Arizona Department of Mineral Resources, Harqu Hala Mine Yuma Co. (file)

present owner: ?

past owners: Pat Enyart. 2004 Carol Street, Tempe, AZ

Haraquala Mining Co.
Golden Eagle Mining Co.
Fletcher Merrill
LaVor Merrill
Nelso T. Zwan --- Somind Mineral Corp.
Warrior Mining Co.

includes the Golden Eagle Mine and the Bonanza Mines which are patented; also Queen of fortune, Big Al, New Yorker, and Jack Pot

History of the mine: Discovered in 1888
The mine was operating prior to 1895 and at the time was the only mine operating in the country. Estimated output for 1895 was at least $800,000 of gold. The area had extensive work. The ore brought in about $25 per ton. Total production of the mine was $4,093,291 (from an early undated report). The property was owned by thge Harqua Hala Mines and the Yuma-Warrior Mining Company.

By 1953 Mr N.T. Zwor of the Somind Mineral Corporatuib, Solome, Arizona was in possession of the property. In 1959 operatuins resumed at the mine by Rainbow Minerals, Inc. who leased the property from Nelson T. Zuver. In 1960 the owner of the property was Fletcher Merrill of Wenden who inherite the property from a Mr. Martin who supposedly held the property for many years. In 1960 the property was leased to the Harquahala and Golden Eagle Mining Co. which planned to work the property. The company later became the Golden Eagle Mining Co. and continued exploration work until August of 1961. In mid 1962 LaVor Merrill owned the mine and was planing to begin work soon. The mine was worked in 1963-1965. David Obenstine gave up his control of the property in 1966 to Colorado Fuel and Iron Company who began some exploration work under the Frontier Mining Corp. of Yuma, Arizona, Colorado Fuel and Iron left the area in 1969. The area was idle in 1970. Mrs. Pat Enyart of Tempe, Arizona was reported as the owner in a 1974 report. In 1975 the title of the property was clear. In 1976, George Milburn of Vancouver, BC had leased the property.

Geology: granite, quartzite, limestone, shale; the granite is highly impregnated with pyrite. Sedimentary rocks and granite ore are in contact with each other; the sedimentary rocks and granite in which the deposit occurs have a few feet of reddish quartzite grits for a base. Over this lies 100 feet of intercalated limestone and argillaceous shale. Above this is a thin conglomerate, capped by several humdred feet of schists and gray limestone. The whole series has been tilted.

Minerals: gold

mine patented claims

LABORATORY TESTWORK

HARQUAHALA PROPERTY, ARIZONA

Performed for

Cave Creek Mining Co.
P.O. Box 1598
Cave Creek, Arizona 85331

By

Kappes, Cassiday & Associates
1845 Glendale Avenue
Sparks, Nevada 89431

Kappes, Cassiday & Associates

P. O. Box 13687, Reno, Nevada 89507 702-356-7107

1845 Glendale Avenue, Sparks, Nevada 89431 - Telex 170049

28 May, 1982

LABORATORY TESTWORK PERFORMED ON

HARQUAHALA PROPERTY, ARIZONA

15 February to 21 May 1982

This report presents a summary of laboratory testwork performed during the period 15 February to 21 May, 1982 on samples of rock from the Harquahala Property in Arizona. The samples used for the testwork are divided into three categories in this report: 1) test heap samples, 2) dump samples, and 3) underground samples. Cyanide centrifuge tube tests currently being conducted on exploration drillhole pulps to determine cyanide soluble gold and silver are not included in this report. A separate report on the final results of the bucket leach tests will be issued after completion of all tests at a later date.

SUMMARY

Laboratory tests performed on two composite samples, from the unleached test heap at the Harquahala Property, indicated the head grade to be less than .02 ounces gold per ton. Based on test results, it was decided not to leach the test heap.

Samples taken from the dump at Harquahala showed several areas with fire assayable gold of .05 ounces per ton. Gold adsorption tests run on a sample of ash taken from the dump, resulted in 73 percent of the gold adsorbed onto the ash. Processing of dump material will require selective mining methods to avoid contamination of heaps with any ash material which would significantly affect recoveries.

Tests on underground samples indicated the gold is primarily contained on the fracture surfaces. Preliminary results of bucket leach tests indicate that heap leaching will be a viable treatment method.

TEST HEAP SAMPLES

Four samples, three from the unleached test heap and one from the leached test heap, were brought to Reno for testing. A description of the samples (2309 F, 2309 G, 2325 A and 2360), along with fire assays, are presented in Appendix A of this report.

Sample 2309 F, taken from the unleached test heap was a 2 Kg grab sample, taken from one location at the front corner of the heap, and is not representative of the entire heap.

Pulverized portions were prepared from each of the four samples and used for fire assays and cyanide centrifuge tests. The procedure used for the cyanide centrifuge tests is described in Appendix B of this report. Figure 1 presents the results of these tests. Fire assays and centrifuge tests on 2309 F were very noisy, probably due to the presence of coarse gold.

A cyanide bottle roll test (2369) was also run on a 300 gram portion of sample 2360, crushed to 100 percent minus 6 mesh. A description of the test procedure is presented in Appendix B. Results of this test are presented in Figure 2. Recovery was 50 percent of contained gold after 48 hours.

Fifty-pound portions of samples 2325 A and 2360 were used for bucket leach tests. A description of the leach apparatus and test procedure are described in Appendix B.

Test 2326 (sample 2325 A) was terminated after 9 days leaching, when atomic absorption analysis of the solution showed only .006 ounces gold per ton had been leached from the ore. Test 2367 (sample 2360) was allowed to run for 36 days. Preliminary results indicate .018 ounces gold per ton recovered after 36 days leaching.

FIGURE 1. HARQUAHALA TEST HEAP SAMPLES

CENTRIFUGE TESTS ON PULVERIZED SAMPLES

KCA SAMPLE NO.	TEST NO.	HEAD ASSAY Au oz/ton	LEACH TIME (HOURS)	FINAL pH	CYANIDE SOLUBLE Au oz/ton	CYANIDE SOLUBLE Ag oz/ton	Cu,ppm
2309 F	2310 A	.146/.239	1	10.6	.015	.02	29
2309 F	2310 B	.146/.239	1	10.6	.053	.02	31
2309 G	2310 C	.014/.013	1	10.7	.006	.01	30
2309 G	2310 D	.014/.013	1	10.7	.004	.01	31
2309 F	2310 E	.146/.239	15	10.5	.051	.02	36
2309 F	2310 F	.146/.239	15	10.5	.101	.03	40
2309 F	2310 G	.146/.239	15	10.5	.085	.03	41
2309 F	2310 H	.146/.239	15	10.5	.062	.03	42
2325 A	2327 A	.016/.016	1	10.5	.007	.03	30
2325 A	2327 B	.016/.016	1	10.5	.002	.03	23
2325 A	2327 C	.016/.016	24	10.6	.015	.03	32
2325 A	2327 D	.016/.016	24	10.6	.008	.02	27
2360	2368 A	.014/.016	1	10.5	.008	.03	44
2360	2368 B	.014/.016	1	10.5	.012	.02	44
2360	2368 C	.014/.016	24	10.4	.016	.03	56
2360	2368 D	.014/.016	24	10.4	.039	.04	57

FIGURE 2. HARQUAHALA TEST HEAP COMPOSITE #2360

48-HOUR CYANIDE BOTTLE ROLL TEST

MINUS 6 MESH MATERIAL

KCA TEST NO.	TIME LEACHING (HOURS)	pH	NaCN [1] GRAMS PER LITER (FREE/TOTAL)	CYANIDE SOLUBLE Au oz/ton	CYANIDE SOLUBLE Ag oz/ton	CYANIDE SOLUBLE Cu, ppm	TAILINGS ASSAY Au oz/ton	CALCULATED HEAD Au oz/ton	PERCENT Au RECOVERED
2369	1	10.7	---	.003	.00	8.3			23.08
	4	10.7	4.40/4.50	.003	.00	10.5			38.46
	24	10.7	3.95/4.05	.006	.00	18.0			46.15
	48	10.7	3.75/3.85	.007	.01	24.3	.007	.014	50.0

1 - Starting solution 5 gpl NaCN.

FIGURE 3. HARQUAHALA DUMP SAMPLES

CENTRIFUGE TESTS ON PULVERIZED SAMPLES

KCA SAMPLE NO.	HEAD[1] ASSAYS Au oz/ton	TEST NO.	TIME (HOURS)	FINAL pH	CYANIDE SOLUBLE Au oz/ton	CYANIDE SOLUBLE Ag oz/ton	Cu, ppm
2378 B	.063/014	2395 A	1	10.6	.021	.05	79
2378 B	.063/.014	2395 B	1	10.6	.035	.05	63
2378 B	.063/.014	2396 A	24	10.7	.021	.06	132
2378 B	.063/.014	2396 B	24	10.7	.040	.06	125
2378 C	.020/.010	2395 C	1	10.7	.013	.03	39
2378 C	.020/.010	2395 D	1	10.7	.013	.03	40
2378 C	.020/.010	2396 C	24	10.8	.010	.03	63
2378 C	.020/.010	2396 D	24	10.7	.024	.03	62
2378 D	.054/.050	2395 E	1	10.7	.036	.04	48
2378 D	.054/.050	2395 F	1	10.7	.031	.04	56
2378 D	.054/.050	2396 E	24	10.7	.073	.05	77
2378 D	.054/.050	2396 F	24	10.7	.077	.05	83
2378 E	.059/.046	2395 G	1	10.7	.049	.07	25
2378 E	.059/.046	2395 H	1	10.5	.060	.09	36
2378 E	.059/.046	2396 G	24	10.7	.055	.08	41
2378 E	.059/.046	2396 H	24	10.6	.058	.10	57
2378 F	.009/.004	2395 I	1	10.6	.009	.04	101
2378 F	.009/.004	2395 J	1	10.6	.007	.03	97
2378 F	.009/.004	2396 I	24	10.6	.008	.04	155
2378 F	.009/.004	2396 J	24	10.6	.005	.04	145
2378 G	.007/.004	2395 K	1	10.5	.004	.09	69
2378 G	.007/.004	2395 L	1	10.5	.007	.09	66
2378 G	.007/.004	2396 K	24	10.5	.006	.10	122
2378 G	.007/.004	2396 L	24	10.6	.012	.10	126

1 - Duplicate head assays.

DUMP SAMPLES

Seven bulk samples (numbers 2378 A - G) were taken from the Harquahala mine dump by M. Cassiday during the first week of March, 1982. A description of these samples is presented in Appendix A.

Pulverized samples were prepared from samples 2378 B - G for centrifuge tests and fire assays. Figure 3 presents the results of these tests.

A bucket flood leach test (conventional vat leach) was set-up using all of sample 2378 A (Test 2406). Recovery after 20 days leaching was .004 ounces gold per ton. The test was stopped on day 20, the rocks air-dried and then crushed to 2-inches. The 2-inch material was split in half and one half set-up as a 2-inch bucket leach test (2452). The remaining half was crushed to 5/8-inch and set-up as a second bucket leach test (2453). After 20 days leaching at the crushed sizes, an additional .005 ounces gold per ton (average of both tests) was recovered.

Bucket leach tests were also set-up on 20 Kg portions of as-received material from samples 2378 B, D and E. Figure 4 presents preliminary results of these tests. All three tests have been ended and tailings sent out for fire assays.

FIGURE 4. HARQUAHALA DUMP SAMPLES
BUCKET LEACH TESTS
PRELIMINARY RESULTS

SAMPLE NO.	TEST NO.	HEAD ASSAYS Au oz/ton	DAYS LEACHING	Au oz/ton RECOVERED
2378 B	2417	.063/.014	52	.009
2378 D	2418	.054/.050	52	.036
2378 E	2419	.059/.046	47	.064

In addition to the seven rock samples, a sample of material (2380 G), which appears to be ash, was taken from the dump. A 50 gram portion of this material was placed in a 250 ml polybottle with 100 mls of solution containing 10 ppm Au, 1 gpl NaCN and then agitated on the rolls. Atomic absorption analysis of the solution after two hours showed 66 percent of the gold in solution had been adsorbed. The test was then allowed to sit overnight and checked again at 24 hours.

Analysis of solution after 24 hours showed an additional 7 percent of the total gold in solution had been adsorbed.

Any attempt to process dump material will require selective mining techniques to avoid ash contamination in the heaps, which would drastically affect leach recoveries.

UNDERGROUND SAMPLES

Chip Samples. A total of fourteen underground chip samples (2317 A and B, 2380 A - F, H - K and 2381 A and B) were taken by M. Cassiday and brought to Reno for testing. Each sample weighed approximately 5 pounds. A description of these samples is included in Appendix A.

Pulverized portions were prepared from each of the fourteen samples for centrifuge tests and fire assays. Figure 5 presents the results of these tests. Only six of the fourteen samples showed fire assayable gold of .02 ounces per ton or greater

Bulk Samples. Samples 2422 A - C were underground chip sample composites, taken by R. Hall. Each sample weighed approximately 100 pounds. A description of these samples is presented in Appendix A.

Each of the three samples was split into quarters and three quarters used for a bucket leach test. The remaining quarter was crushed to 100 percent minus 6 mesh. Two 300 gram portions were split out from the minus 6 mesh material, pulverized, and used for centrifuge tests and fire assays. Centrifuge and bottle roll tests were also run on minus 6 mesh material from samples 2422 A - C.

FIGURE 5. HARQUAHALA UNDERGROUND CHIP SAMPLES

24-HOUR CENTRIFUGE TESTS ON PULVERIZED MATERIAL

KCA SAMPLE NO.	TEST NO.	HEAD ASSAY Au oz/ton	FINAL pH	CYANIDE SOLUBLE Au oz/ton	CYANIDE SOLUBLE Ag oz/ton	Cu,ppm
2317 A	2321 C	.340	10.0	.415	.42	45
2317 B	2321 D	.100	10.5	.078	.15	780
2380 A	2383 A	.008	10.6	.003	.01	13
2380 A	2383 B	.008	10.6	.017	.01	13
2380 B	2383 C	.883	10.5	.774	.22	305
2380 B	2383 D	.883	10.5	.737	.21	295
2380 C	2383 E	.007	10.8	.001	.02	31
2380 C	2383 F	.007	10.8	.001	.01	29
2380 D	2383 G	.017	10.6	.008	.05	154
2380 D	2383 H	.017	10.6	.009	.05	153
2380 E	2383 I	.011	10.7	.006	.01	33
2380 E	2383 J	.011	10.7	.004	.01	32
2380 F	2383 K	.190	10.9	.174	.05	8
2380 F	2383 L	.190	10.9	.204	.06	9
2380 H	2383 M	1.493	10.3	1.329	.21	220
2380 H	2383 N	1.493	10.3	1.380	.20	222
2380 I	2383 O	.061	10.6	.052	.03	19
2380 I	2383 P	.061	10.5	.027	.03	18
2380 J	2384 A	.005	10.9	.004	.01	22
2380 J	2384 B	.005	10.9	.003	.01	22
2380 K	2384 C	.060	10.2	.056	.00	275
2380 K	2384 D	.060	10.1	.055	.00	277
2381 A	2384 E	.009	10.6	.010	.01	14
2381 A	2384 F	.009	10.6	.009	.01	13
2381 B	2384 G	.031	10.3	.028	.01	36
2381 B	2384 H	.031	10.2	.031	.01	44

Figure 6 presents the results of centrifuge tests run on pulverized and minus 6 mesh material. There is a significant amount of noise in the fire assays, probably due to the presence of coarse gold. Test results, however, indicate good overall recoveries.

Figure 7 presents the results of the bottle roll tests run on 300 gram portions of minus 6 mesh material. Average gold recovery was good, averaging 84 percent for the three samples.

The tailings from bucket leach tests on samples 2422 A - C have been submitted for fire assay. Figure 8 presents preliminary results of these tests. Due to the possible presence of coarse gold, actual percentages of gold recovered will depend on results of tailings assays.

FIGURE 8. HARQUAHALA UNDERGROUND BULK CHIP SAMPLES

PRELIMINARY BUCKET LEACH TEST RESULTS

KCA SAMPLE NUMBER	TEST NUMBER	HEAD ASSAYS Au oz/ton	DAYS LEACHING	Au oz/ton RECOVERED
2422 A	2423	.041/.082	56	.079
2422 B	2424	.046/.212	56	.028
2422 C	2425	.529/.634	56	.243

A second set of underground bulk samples, 2478 A - C, was taken by drilling and blasting. A description of these samples is presented in Appendix A.

Each sample was screened individually at 2-inches and the plus 2-inch material used for bucket flood leach tests. Two 20 Kg and one 5 Kg portions were split out from the minus 2-inch fraction of each sample. One 20 Kg portion was set-up as a bucket leach test. The second 20 Kg portion was screened into 6 size fractions. Each size fraction was weighed, crushed to 100 percent minus 6 mesh if necessary, and two 300 gram portions split out and pulverized.

FIGURE 6. HARQUAHALA UNDERGROUND BULK CHIP SAMPLES
CENTRIFUGE TUBE TESTS

KCA SAMPLE NO.	HEAD ASSAY (Au oz/ton)	KCA TEST NO.	SIZE	TIME (hours)	CYANIDE SOLUBLE (Au oz/ton)
2422 A	.041/.082	2430A/2434A	Pulv	1	.079/.080
		2430B/2434B	Pulv	1	.087/.084
		2430G/2434G	Pulv	24	.082/.085
		2430H/2434H	Pulv	24	.084/.078
		2434 M	- 6M	1	.034
		2434 N	- 6M	1	.033
		2434 S	- 6M	24	.113
		2434 T	- 6M	24	.108
2422 B	.046/.212	2430C/2434C	Pulv	1	.116/.055
		2430D/2434D	Pulv	1	.033/.045
		2430I/2434I	Pulv	24	.206/.084
		2430J/2434J	Pulv	24	.053/.056
		2434 O	- 6M	1	.028
		2434 P	- 6M	1	.025
		2434 U	- 6M	24	.040
		2434 V	- 6M	24	.079
2422 C	.529/.634	2430E/2434E	Pulv	1	.407/.316
		2430F/2434F	Pulv	1	.389/.308
		2430K/2434K	Pulv	24	.516/.504
		2430L/2434K	Pulv	24	.469/.546
		2434 Q	- 6M	1	.264
		2434 R	- 6M	1	.210
		2434 W	- 6M	24	.302
		2434 X	- 6M	24	.728

FIGURE 7. HARQUAHALA UNDERGROUND BULK CHIP SAMPLES

BOTTLE ROLL TEST

ON MINUS 6-MESH MATERIAL

KCA SAMPLE NO.	TEST NO.	CYANIDE SOLUBLE Au oz/ton 1 Hour	4 Hour	6 Hour	24 Hour	48 Hour	TAILINGS ASSAY Au oz/ton	CALCULATED HEAD[1] Au oz/ton	PERCENT Au[2] RECOVERED
2422 A	2535 A	.085	.085	.085	.087	.091	.004/.006	.096	94.8
2422 B	2535 B	.020	.028	.030	.043	.048	.007/.024	.063	76.2
2422 C	2535 C	.172	.316	.320	.389	.411	.091/.086	.499	82.4

1 - Calculated head equals average tailings assay plus cyanide soluble gold.

2 - Percent recovery equals cyanide soluble gold divided by calculated head times 100.

FIGURE 9. HARQUAHALA UNDERGROUND BULK SAMPLES

Minus 2-Inch Fraction

SIZE ANALYSIS/FIRE ASSAYS/CENTRIFUGE TESTS

KCA SAMPLE NO.	SIZE	WEIGHT PERCENT	FIRE ASSAY[2] Au oz/ton	CENTRIFUGE TESTS CYANIDE SOLUBLE Au oz/ton 1 Hour[3]	24 Hour[3]
2478 A	+ 2"[1]	21.69	---	---	---
	-2" + 1"	18.64	.008/.007	.007/.012	.007/.005
	-1" + 1/2"	13.26	.008/.007	.013/.009	.009/.009
	-1/2" + 3M	12.16	.006/.007	.013/.010	.010/.009
	-3M + 10M	17.59	.010/.010	.012/.014	.009/.011
	-10M + 65M	12.54	.028/.025	.031/.032	.028/.031
	-65M	4.12	.074/.092	.091/.096	.088/.096
2478 B	+2"[1]	38.13	---	---	---
	-2" + 1"	23.96	.016/.021	.023/.023	.025/.020
	-1" + 1/2"	13.24	.014/.025	.028/.021	.021/.020
	-1/2" + 3M	10.51	.056/.045	.076/.053	.071/.048
	-3M + 10M	8.49	.048/.046	.052/.050	.049/.042
	-10M + 65M	3.82	.208/.320	.226/.224	.234/.224
	-65M	1.85	1.000/1.223	1.102/1.153	1.117/1.168
2478 C	+ 2"[1]	21.26	---	---	---
	-2" + 1"	26.36	.014/.014	.018/.015	.013/.014
	-1" + 1/2"	18.66	.018/.019	.015/.015	.015/.016
	-1/2" + 3M	11.39	.030/.023	.028/.025	.031/.024
	-3M + 10M	12.03	.078/.035	.087/.042	.083/.043
	-10M + 65M	6.97	.156/.169	.164/.169	.163/.166
	-65M	3.33	.620/.666	.633/.656	.654/.662

1 - All +2" material used for leach tests. No head assay taken due to large size of rock.
2 - Duplicate fire assays.
3 - Duplicate centrifuge tests.

FIGURE 10. HARQUAHALA UNDERGROUND BULK SAMPLES
MINUS 2-INCH SIZE FRACTION
BOTTLE ROLL TESTS
ON MINUS 6-MESH MATERIAL

KCA SAMPLE NO.	TEST NO.	CYANIDE SOLUBLE Au oz/ton 1 Hour	4 Hour	24 Hour	TAILINGS ASSAYS Au oz/ton	CALCULATED HEAD Au oz/ton	PERCENT Au RECOVERED
2478 A	2498 A	.019	.020	.022	.002/.004	.025	88.00
2478 A	2498 B	.018	.020	.021	.012/.006	.030	70.00
2478 B	2498 C	.062	.063	.063	.010/.006	.071	88.73
2478 B	2498 D	.059	.060	.060	.002/.005	.063	95.24
2478 C	2498 E	.045	.045	.046	.002/.004	.049	93.88
2478 C	2498 F	.052	.053	.054	.002/.002	.056	96.43

FIRE ASSAYS OF HEAD SAMPLES
MINUS 2-INCH FRACTION

SAMPLE NO.	Au oz/ton
2478 A	.026/.016
2478 B	.069/.056
2478 C	.053/.056

FIGURE 11. HARQUAHALA UNDERGROUND BULK SAMPLES

PRELIMINARY BUCKET LEACH TEST RESULTS

KCA SAMPLE NO.	TEST NO.	SIZE	HEAD ASSAY Au oz/ton	DAYS LEACHING	Au RECOVERED oz/ton
2478 A	2484	+2"[3]	---	13	.002[1]
2478 A	2485	+2"[3]	---	13	.003[1]
2478 A	2490	-2"	.026/.016	16	.015[2]
2478 B	2486	+2"[3]	---	18	.013[2]
2478 B	2487	+2"[3]	---	18	.014[1]
2478 B	2491	-2"	.069/.056	16	.081[2]
2478 C	2488	+2"[3]	---	18	.009[2]
2478 C	2489	+2"[3]	---	18	.004[2]
2478 C	2492	-2"	.053/.056	16	.076[2]

1 - Based on AA analysis of solution.
2 - Based on fire assay of activated carbon.
3 - All +2" material used for leach tests. No head assay taken due to large size of rock.

The pulverized portions from each size fraction were fire assayed and used for centrifuge tests. Figure 9 presents the results of these tests. Fire assays show a concentration of gold in the smaller size fractions indicating the gold is contained on the fracture surfaces. All size fractions appeared to leach well.

The 5 Kg portion split from the minus 2-inch fraction was crushed to 100 percent minus 6 mesh and four 500 gram portions split out. Two 500 gram splits were pulverized and submitted for fire assays. The remaining two 500 gram splits were used for cyanide bottle roll tests.

Figure 10 presents the results of the bottle roll tests. Average gold recovery was 89 percent.

Figure 11 presents preliminary results of the bucket leach tests on the plus 2-inch and minus 2-inch size fractions. All samples appear to be leaching well. No head assays are available for the plus 2-inch material.

Submitted by,

Michael W. Cassiday
KAPPES, CASSIDAY & ASSOCIATES

MWC/df

APPENDIX A

HARQUAHALA PROPERTY, ARIZONA

SAMPLE DESCRIPTIONS AND FIRE ASSAYS

APPENDIX A. SAMPLE DESCRIPTIONS AND FIRE ASSAYS

HARQUAHALA PROPERTY

KCA SAMPLE NO.	CCM SAMPLE NO.	HEAD ASSAY[1] Au oz/ton	[2] DESCRIPTION
2309 F	---	.146/.239	Grab sample lower front corner of unleached test heap (less than 5 lbs of minus 1/2-inch rock).
2309 G	---	.014/.013	Grab sample from backhoe cut into leached test heap (less than 5 lbs of minus 1/2-inch rock).
2317 A	---	.340/---	Underground grab sample from area indicated as high grade by R. Hall. Red iron oxide stained quartzite (less than 5 lbs of minus 2-inch rock).
2317 B	---	.100/---	Outcrop area exposed by dozer cut approximately 1/2-mile west of mine and test heap site. Many weathered pyrite casts and some copper staining (less than 5 lbs of minus 2-inch rock).
2325 A	TL-1, TL2-2,TL2-3, TL2-4, TL2-5, TL2-6, T12-7, TL2-8	.016/.016	Sample consisted of 8 bags of material taken from the unleached test heap by T. Atkinson. All 8 bags were combined and treated as one sample. (Total weight, approximately 150 lbs of minus 1/2-inch rock material.)
2325 B	SP-H-10	.044/.041	Dark purple/red iron oxide gossany (hard) material. Mostly fines, with some 1 to 2-inch pieces (approximately 26 lbs).
2325 C	SP-H- 9	.016/.003	Purple and white gossany quartzite (approximately 33 lbs.)
2325 D	---	.248/.289	Rusty-red gossany iron oxide stained quartzite (approximately 16 lbs.)
2360	---	.014/.016	Unleached test heap sample taken by D. Kappes (approximately 50 lbs minus 1/2-inch material).

APPENDIX A. SAMPLE DESCRIPTIONS AND FIRE ASSAYS

HARQUAHALA PROPERTY

KCA SAMPLE NO.	CCM SAMPLE NO.	HEAD ASSAY (1) Au oz/ton	(2) DESCRIPTION
2378 A	---	---	Hand selected large mine dump rocks (plus 2-inch minus 8-inch material). Both quartzite and granitic with some pieces having weathered pyrite casts and/or copper/iron oxide staining. (Approximately 150 pounds)
2378 B	---	.063/.014	Dump sample area "1" from end of dozer cut. Test heap sample site. Predominantly granitic type rock with some talc. Brown to pink in color. (Approximately 50 pounds of fine to minus 4-inch rock.)
2378 C	---	.020/.010	Dump sample area "1" from upper end of dozer cut. Test heap sample site. Predominantly grey-green granitic type rock, some with oxidized pyrite cast. (Approximately 50 pounds of fine to minus 4-inch rock.)
2378 D	---	.054/.050	Dump sample area "1" from backhoe cut on toe of dump. Mixed quartzite and granitic rock, grey-green to pink in color. (Approximately 50 pounds of fine to minus 4-inch rock.)
2378 E	---	.059/.046	Dump sample area "2" taken from old backhoe cuts into dump. Predominantly quartzite with little granitic type rock. Pink to brown in color, with oxidized pyrite casts in some of the quartzite. (Approximately 50 pounds fine to minus 4-inch rock.)
2378 F	---	.009/.004	Dump sample area "3" taken from old backhoe cuts into dump. Predominantly quartzite, pink to brown in color. (Approximately 50 pounds of fines to minus 4-inch rock.)
2378 G	---	.007/.004	Dump sample area "4" taken from old backhoe cuts into dump. Predominantly quartzite with minor talc. Copper stain, no pyrite casts. Pink to white with grey-green talc. (Approximately 50 pounds of fines to minus 4-inch rock.)

APPENDIX A. SAMPLE DESCRIPTIONS AND FIRE ASSAYS

HARQUAHALA PROPERTY

KCA SAMPLE NO.	CCM SAMPLE NO.	HEAD ASSAY (1) Au oz/ton	(2) DESCRIPTION
2380 A	200002	.008/---	Underground chip sample at the site of "CCM" sample point 200002. Grey-green granitic rock with some talc. (Less than 5 pounds of minus 2-inch rock.)
2380 B	200021	.883/---	Underground chip sample taken at the site of "CCM" sample point 200021. Highly altered granitic rock, pink to purple-grey with totally oxidized pyrite casts. (Less than 5 pounds of minus 2-inch rock.)
2380 C	200057	.007/---	Underground chip sample taken at the site of "CCM" sample point 200057. Quartzite, tan to grey in color. (Less than 5 pounds of minus 2-inch rock.)
2380 D	200017/200013	.017/---	Underground chip sample taken at the site of "CCM" sample points 200017 & 200013. Same description as 2380 B. (Less than 5 pounds of minus 2-inch rock.)
2380 E	200355	.011/---	Underground chip sample taken at the site of "CCM" sample point 200355. Granitic, slightly altered rock with oxidized pyrite casts. (Less than 5 pounds of minus 2-inch rock.)
2380 F	200052	.190/---	Underground chip sample taken at the site of "CCM" sample point 200052. Quartzite with veinlets of massive quartz. Fracture surfaces stained with brown to purple iron oxide. (Less than 5 pounds of minus 2-inch rock.)
2380 G	---	---	Grab sample of ash/carbon waste pile in area "2" of mine dump. (Less than 2 pounds.)
2380 H	200021	1.493/---	Underground chip sample of one foot wide vein through lower part of "CCM" sample point 200021. Highly altered granitic rock with purple to brown iron oxide staining. (Less than 5 pounds of minus 1-inch rock.)

APPENDIX A. SAMPLE DESCRIPTIONS AND FIRE ASSAYS

HARQUAHALA PROPERTY

KCA SAMPLE NO.	CCM SAMPLE NO.	HEAD ASSAY (1) Au oz/ton	(2) DESCRIPTION
2380 I	---	.061/---	Chip sample from edge of work shaft. Altered granitic rock with oxidized pyrite casts. Purple-brown to grey-green in color. (Less than 5 pounds of minus 2-inch rock.)
2380 J	200227	.005/---	Underground chip sample taken at the site of "CCM" sample point 200227. Grey-green granitic rock with very little iron oxide. (Less than 5 pounds of minus 2-inch rock.)
2380 K	200119/200120	.060/---	Underground chip sample taken from 6-inch wide red vein running through "CCM" sample points 200119 and 200120. Red to brown altered granitic rock. (Less than 5 pounds of minus 2-inch rock.)
2381 A	200289/200290	.009/	Underground chip sample taken at the site of "CCM" sample point 200289/200290. Predominantly grey-green granitic rock with very little iron oxide staining. (Less than 5 pounds of minus 2-inch rock.)
2381 B	200119/200120	.031/---	Underground chip sample taken at the site of "CCM" sample points 200119 and 200120, but does not include red vein sampled by KCA sample 2380 K. Grey-green granitic rock with some purple-brown iron oxide stains. (Less than 5 pounds of minus 2-inch rock.)
2422 A	HC-82-20A,B,C, D	.041/.082	Underground bulk chip sample taken by R. Hall for metallurgical testing. Fine grained, light green rock in contact with quartzite. Quartzite, grey to black in color; some brown iron oxide staining. (Approximately 113 pounds of minus 3-inch rock.)

APPENDIX A. SAMPLE DESCRIPTIONS AND FIRE ASSAYS

HARQUAHALA PROPERTY

KCA SAMPLE NO.	CCM SAMPLE NO.	HEAD ASSAY (1) Au oz/ton	DESCRIPTION (2)
2422 B	HC-82-21 A,B,C	.046/.212	Underground bulk chip sample taken by R. Hall for metallurgical testing. Mixed dark quartzite and granite. Some oxidized pyrite casts. (Approximately 107 pounds of minus 3-inch rock.)
2422 C	HC-82-22 A,B,C,D	.529/.634	Underground bulk chip sample taken by R. Hall for metallurgical testing. Dark grey-green altered granitic rock with oxidized pyrite casts. (Approximately 84 pounds of minus 3-inch rock.)
2478 A	Drum #1	.026/.016 (3)	Underground drilled and blasted large rock bulk sample. Fine grained green "talc" in contact with pink quartzite with quartz flooding. Blue copper stains and brown iron oxide. Highly altered rock which show signs of fault movement. (Approximately 306 pounds of minus 4-inch rock.)
2478 B	Drum #2	.069/.056 (3)	Underground drilled and blasted large rock bulk sample. Quartzite with small quartz veins; fractures coated with red-brown iron oxides. (Approximately 291 pounds of minus 5-inch rock.)
2478 C	Drum #3	.053/.056 (3)	Underground drilled and blasted large rock bulk sample. Quartzite with fine dark grey banding; large fractures coated with brown earthy iron oxides. (Approximately 294 pounds of minus 4-inch rock.)

(1) Head assays given are fire assays unless indicated otherwise.

(2) Reference description only; not geologically or mineralogically complete.

(3) Head assay of minus 2-inch fraction.

APPENDIX B

HARQUAHALA PROPERTY, ARIZONA

LABORATORY TEST PROCEDURES

APPENDIX B

LABORATORY TEST PROCEDURES

This appendix presents a description of the laboratory procedures used.

CYANIDE CENTRIFUGE TESTS

The following procedure was used for all cyanide centrifuge tests:

1. Weigh out 10 grams of pulverized (or minus 6 mesh) material and place in a centrifuge tube with 25 mls of 5 gpl NaCN.
2. Place on wrist-action shaker for specified time.
3. Centrifuge solution and filter with glass wool. Discard tails.
4. Check final solution for pH, Au, Ag and Cu. If pH < 9.0 re-run test and add 0.1 grams $Ca(OH)_2$.

CYANIDE BOTTLE ROLL TESTS

The following procedure was used for all cyanide bottle roll tests:

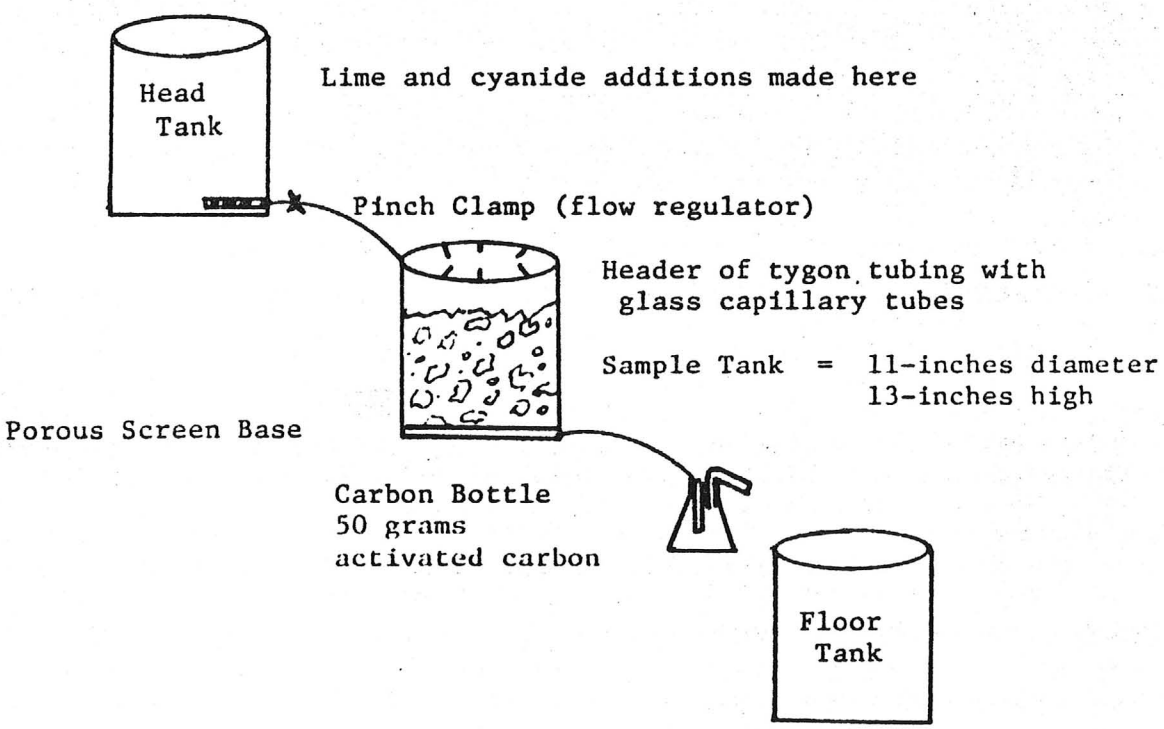
1. Weight out specified amount of material and place in appropriate size polybottle with 1-1/2 times (by weight) distilled water (i.e., 300 grams ore plus 450 mls distilled water).
2. Check pH and adjust to 10.0 if necessary with $Ca(OH)_2$.
3. Add appropriate amount of NaCN needed to give a solution containing 5 gpl NaCN.

4. Place on rolls and check solution at times specified for pH, NaCN, Au, Ag and Cu.

5. Filter tailings, dry in oven and submit for fire assay.

BUCKET LEACH TESTS

A diagram of the apparatus used for the bucket leach tests is shown below. The apparatus used for the flood leach tests is the same except there are no capillary drip tubes in the leach tank and an additional clamp is located on the outlet of the leach tank.



LEACH PROCEDURE

In the apparatus shown on the previous page, the center or leach tank, is filled with the rock to be leached.

Alkaline cyanide solution is continuously distributed onto the ore from a head tank, through a set of glass capillary drip tubes. Flowrate of solution dripping onto the ore is controlled using a pinch clamp, to approximately 12,000 ml per 24 hours, or .0031 gpm per square foot of top surface area.

Solutions exiting the leach tank flow continuously through a bottle of activated carbon, and then into the floor tank. The 12,000 mls of active solution in the system are recycled to the head tank every 48 to 72 hours, to give an average flowrate of .0012 gpm per square foot of top surface area.

In the flood leach tests, the leach tank is filled with alkaline cyanide solution from the head tank so that all rocks are completely submerged in solution. After 24 hours, the solution is allowed to drain slowly through a bottle of activated carbon and into the floor tank. Active solution is cycled back to the leach tank every 48 hours.

Floor tank solutions are checked every other cycle for cyanide and lime, and reagents added as necessary to maintain solutions at "target" levels.

Tanks are kept covered at all times to minimize evaporation and cyanide loss.

The charge of activated carbon is removed several times during the tests and assayed to determine the amount of gold and silver leached from the ore.

After completion of the test, the tailings are dried, weighed, and fire-assayed.

EXCERPTS FROM REPORT

MADE BY

L.W. GETCHELL, M.E.

Founder and Regent, Nevada Universtity, A.D. 1888.

Supt. and Manager, Manhattan Mines at Austin, Nv
from 1876-1890
and
Bernards Bay Mining and Milling company, at Bernards Bay,
Alaska, from 1893 to 1895

Consulting Engineer,
Alaska and Nova Scotia tp Mexico, from 1865 to 1912.

.....

THE BONANZA AND GOLDEN EAGLE GROUPS OF MINES. MINES COMPRISING THESE GROUP

The names of the Mines and mining locations, which form these groups are as follows:

BONANZA GROUP

"GOLD HILL"
"GOLD STAR"
"GOLD MOUNTAIN"
"NARROW GAUGE" (placer)
"GRAND VINN"

GOLDEN EAGLE GROUP

"GOLDEN ARK
"GOLDEN EAGLE"
"GOLDEN BELT"
"GOLDEN SCHMIT"

"BONANZA MILLSITE AND WATER RIGHT"

Above are patented, the following unpatented;

"TRAMWAY"
"NORTH POLE"
"EMMA" (leasehold interest for 99 years)
"YUMA"
"WARRIOR"
"IRONWOOD"

DISTANCE FROM RAILROAD

The nearest railroad stations to the mines are Salome, a distance of 6 1/2 miles, and Wenden, a distance of 10 miles.
Both stations are on the Arizona and California Railroad, a branch of the Atchinson, Topeka and Santa Fe Railroad running from wickenburg, on Santa Fe Presctott and Phoenix Railroad to Cadiz, California, on the main line of the Santa Fe.

Good wagon roads connect railroads with the mines

AREA

the superficial area covered by the various mines in these grounds

groups aggrefates 290 acres of mineral ground.

GEOLOGY OF THE DISTRICT

The geological features of this District are good, and very favorabl to the deposition of large bodies of gold ore,

the Mineral Zone or Belt within which these mines are situated extends in norhteasternly and southwesternly direction on the south from the Plomas Mountains, to and through the Haraqua Hala Range of Mountains on the north. This entire belt is marked on the surface by heavy mineralization.

In this District, Quartzites, Porphyrys, and Shales predominate, while lime and granitealso appear at various points in the vicinity of these mines.

OUTCROP

The outcrop of these mines is exceedingly strong, and well defined, and the vein matter can be traced from 200 feet to 1,500 feet on each claim, while the pay chutess can be traced in the surface in each individual claim for from 25 feet to 1,000 feet in length.

COUNTRY ROCK

The country rock in general throughout the District consists of Granite, Porphyry, Lime, Diabase, Quartzite, Shale, and Slate.

VEINS

The veins in this district, which carry the precious metals, generally run from the northeast to soutwest in parrallel groups to the course pf the mountain ranges of this section, the formation of which of which are coexsistent with the fractures originated thereon.

In their filling quartz predominates, but Lime is frequently encountered, and fragments if the rock are charged with Silica. The hardness of this filling depends upon the compactness and predomination of Silica, and is quite variable to the district.

The enclosing walls are Quartzite and Shale; the Quartzite being the east and the Shale the west wall.

Distance between the walls varies from 100 to 200 feet. Notwithstanding this fact, but very little timbering is necessary, even in the widest openings in the mines, some of which are 60 feet in width, except at a very few points , and then only to a limmites extent.

The extreme ruggedness of the mountain side, the strong pitch of several of the veins, and the elevation of the outcroppings, greatly facilitates the exploitation of many of these veins, in an expensive manner.

CHARACTER OF VEINS

The veins in this District are both contact and Fissure, and without a single exception, are strong, massive and well-defined.

WIDTH OF THE VEINS

The width of the veins in these mines, on the surface, along their entire course where exposed, shows the narrowesr vein to be 6 feet and the widest to be 70 feet.

The narrowest width of the oay ore, where opened up, is 2 feet, and the widest is 60 feet.

GANGUE

The Gange in general throughout these mines is a soft, yellowish white clay , and talc intermixed, stained with small particles of red and black oxide of iron and containing Porphyry, and varies in width from three inches to 10 feet.

This gangue at times carries sufficient values to pay in the mill, the values ranging from $3 to $4 per ton and even higher at times.

ORES

GRADE OF ORE

The values in the ire bodies ibn these mines vary from $3.75 to $75 per ton. While numerous bodies of very high grade ore have been encountered at various times in these properties, no account of the their value is obtainable, as they were milles with ordinary ores,

The general average value of the ores, therefore, as determined by all the data and records obtainable, show $25 per ton.

WIDTH OF DEVELOPED ORE SHAFTS

The ore chutes known to exist within the boundaries of these mines vary in width from 2 feet to 18 feet on the surface and from 2 feet to 60 at the depth of the lower workings.

In all cases where work has been prosecutes upon these properties, as depth is attained, the ore bodies have not only become wider, but carry great values, and their continuttity is fully demonstrated.

CHARACTER OF ORES

The general character of the gold and silver bearing ores, encountered in these mines, is freemilling.

The ores, with a few e xceptions, are sift, red oxide of iron, inter mixed with quartz.

The ore bodies have neem largely developed, in fact, the work done when all the circumstances are considered is phenominal, and made more profitable within the past few years by the fact that the old style of prospecting and developing these enormous bodies of ores have given way to more intelligent and scientific methods, aided by a far better understanding if the formations in which the pay ore is found.

WATER SUPPLY

Ample water suplu foe both mill and camp is obtained from Granite Creek near the town of Harrisburg, distant a direct line, 5 miles.

The pumping plant built upon the Bonanza MIllsite and the Water right is dry on the surface, but has a strong underground stream that is practically inexhaustible. It istapped by a well 26 feet deep. It is equipped with a powerful Dow Pump, with a capacity of 250,000 gallons per day of 24 hours and Pipe Line to mines and mill.

TIMBER

There is no natural timber upon these properties, but owin g ti the nature of the ground, very little timbering is required, as, with the exception of placing where necessary an occasional stull in the various portions of the workings, the ground stands well.

TITLES

The title to a portion of the mining properties comprising these Groups is vested in the Yuma-Warrior Mining Company by the deeds of record, and balance if the properties are conveyed by this company by deeds which are deposited in escrow subject to compliance with conditions of escrow contracts.

THE BONANZA MINES

These mines, which include the "Gold Mountain" , "Gold Hill" and "Gold Star" have never been opened below 290 feet on dip of the vein of 237 vertically from the surface; the workings above this level, however, have been quite extensive.

The vein, which in width is from 20 to 70 feet, was originally opened and worked through an incline shaft sunk on the vein and levels run from same.

The nature, immensity and value of these demonstrated ore bodies are fairly indicative of the manner of the ore occurances and the deposition in the property, and there is every reason to believe that further development will open new bodies of ore similar in size and value.

Tjhis "Bonanza" os a most remarkable property in many respects, when viewed with knowledge of its great production, under mist impracticable, expensive, and inefficient management, and the evidence of the immensity of the ore deposition apparment on either side, together with the fact that with all this great production of high-grade ore it has, in miner's parlance, "hardly been scratched", its deepest workings being, as said, only 237 feet vertically from surface. Also, the further fact that there is every reason to believe that development along proper lines will result in the opening if larger and richer ore bodies than were

encountered and taken out in the days when it became famous as the "Great Bonanza Mine".

GOLDEN EAGLE MINES

These mines, which include the "Golden Eagle", "Golden Ark", and "Golden Belt", are fairly well openes, with quite extensive workings, to a depth of 400 feet frim the surface. It is opened both by main Shaft on the vein from the surface to the 400 foot level, and a crosscut of adit tunnel, which is run easterly from a point on the surface between the blacksmith shop and the Engine Room. this adit, at a distance of 147 feet from the portal, cuts the footwall of the vein at a depth of 120 feet fromthe surface, and then continues across the vein 100 feet to the hanging wall and into the country rock 18 feet or a total distance of 265 feet from its poratal. On this first, or tunnel, level drifts have been run norht and south on the vein, the South Drift connecting with the Main Shaft and extending south for a distance of 400 feet from crosscut or adit. This drift was all in ore, which was stopped, except about 75 feet of the last 100 feet, which carried lesser values, although tje face of this drift is again in pay ore. There are on this level, various large and extensive satopes connect ed by crosscuts from the drift, showing that within the vein, which is 100 feet in width, occur various chutes or bodies of ore, in width from 2 feet to 32 feet.

The next, or intermediate level has been opened to the south and connected with the first level through stope. A crosscut is run from from this level west, which opens into two big chambers or stopes from which an emmense tonnage of ore has been mined. South of this big stope and a short distance from its end, a winze is sunk to a depth of 15 feet in pay ore.

On the second level drifts are run, north and south, in the ore and considerable stoping has been done.

On the third level drifts have been run north and south from the Main Shaft and the south drift cuts into an oe body in which there is a winze, in width about 10 feet, in depth 26 feet and neither wall, nor ore of this ore body has yet been reached, so that its width and extent are still to be determined, though it has the ear-marks of being the beginning of another large boby or rich ore.

On the fourth level, the drift is run south about 300 feet, being the same ore body as the upper levels, though here no considerable stoping has been done. There is no drift north on this level, but the existence of ore to the Main Shaft is shown by the presence of pre for the entire length of the third level. On this lecel is a croocut driven east throuth the hanging wall a distance of 40 feet, wher it cuts a vein of sulphide ore, 37 feet in width. This is the only crosscuttin of any extent to the east or hanging walll side of the Golden Eagle vein or lode, but it has determined the exsistence of a large and independent vein, which unquestionably extends to or very near the surface, and it can be opened

and worked both from the present levels, and from future deeper levels.

In addition to the considerable tonnage of ore remaining on these upper workings, the extending of the third and fourth levels south and the driving of the fourth level north and connecting of same through winzes and raises, will open a large tonnage of high grade ore.

There will also be made available an immense tonnage of ore through the opening up of this sulphide or independent vein, encountered by the crosscut from fourth level, as above mentioned.

This Golden Eagle vein or lode, by reason of its size and general character, is evidently one which will go to great depth, and, therefore, while the workings upon it would be extensive on a vein of lode pf ordinar size, the present workings have openes but a comparatively small portion of it. That is, these workings are relatively small and meagre when compared to ub connection with the vast and extensove ore bodies, and as all this ore has a general dip tp the south, hte workings have been chiefly in that direction, from the point where the vein was first encountered. This leaves practically all the ground to the north of the shaft and adit, virgin ground, to be openedby the extendind north of the several lower levels. These levels will unquestionably open equally large ore bodies, the exsistence of which are shown on the surface in the various shallow workings along the prominent and extensive outcrop. It was evidently ftom these shallow workings that considerable ore was taken by the original locators and the values extracted by the old Me Mexican arrastra process, and this necessarily had to be rich ore in order to be worked profitably in this manner. In fact, the surface openings on this chute to the north give every indication that when developed by these north levels the ore will prove to be of greater value than that in the chute already opened. Then, the sinking of the shaft and driving levels both to the south, in the present ore chutes, and to the north in the chute just mentioned, will certainly prove this Golden Eagle to be a mine of great magnitude and permanency.

TOTAL PRODUCTION

The foregoing abstrct from exsisting records (see pages 23, 24, & 25 of Report) shows that during these later years of operation there was mined and milled, -59,875.54 tons, giving total bullion return of, ----------$593, 291.54 to which, while no records are obtainable, are stated to have been - - $3,500,000.00
This gives a total production to date of - - $4,093,291.54

This production in the later years, so far as shown by the incomplet records, is quite remarkable, notwithstanding that the vast tonnage that was mined and milled in the earlier years, considerable of which is known to have been ore of extraordinary high value. However, the average mill recovery as shown, viz: $9.90 per ton, with the tailings still showing valuesof $10.00 to $20.00 per ton, clearly indicates both the high values of the ore contained in thore and the indifferent and inefficient methods of mining that prevailed during that period. It is futher evident that the estimated average values of the ore at $25.00 per ton is conservative.

It will, therefore, be readily seen that upon the introduction of modern metallurgical pracatice, the percentage of recovery can be increase from 40-50 **percent as formerly, to 95-98 percent, practicallly doubling the returns from the same character of ore.**

--PROPOSED DEVEVLOPMENT AND PRODUCTION --

Th proper exploration and development of these mines should include the sinking of present working shaft on Bonanza Mine a further 200 feet before crosscutting, easterly, to intercept vein on its dip, tthus insuring crosscut below the broken or fractured portion of vein.

This accomplished, the shaft can then be advanced to further depth and crosscuts and levels run on vein, which will undoubtably develop an immense tonnage of mill ore and probably a number of large lenses of rich of "bonanza" ore, such as were encountered in the upper workings.

In addition to the above, the "cave", should be opened, making immediately available the considerable tonnage of of mill ore practically alreday mined thewrein, ready for milling, and, also the further extending of the workings in the iron ore body already exposed in what is termed the "Iron Stope".

In the "Golden Eagle" Mine, the third and fourth levels should be extended north and south and connections made between same, also crosscuts run east on first, second, and third levels, to open up sulphide or independent vein. Then, the shaft should be advanced to further depth and the veins opened by drifts and crosscuts.

The prosecution of this work for a period of six to eight months would unquestionably make available a tonnage of mill ore sufficient to supply the mill, which has a capacity of 120 tons per day of 24 hours, for an equal period, during which time further tonnage could be opened, thereby insuring a continuoius supply for the mill.

This would give an estimated daily production as follows:-

RETURNS

Recovery from 120 tons of ore, of average value, $15.00 per ton, on basis 95% extraction, would be as follows:

In bullion - 75% or 11.25 per ton - - - - - -	$1,350.00
In concentrates, 20% or 6 tons at $60 ton - -	360.00
	$1,710.00

COSTS

Mining 120 tons of ore at $2.00 per ton,	$240.00
Milling 120 tons of ore at $1.00 per ton,	120.00
Hauling concentrates, 6 tons at $3.00 per ton	18.00
Smelter treatment and freight charges on 6 tons concentrates at $10.00 per ton,	60.00
Charge against all ore for future development of $1.00 per ton	120.00
	$558.00

Profit per day of 24 hours,	$1,152.00
Profit per month of 30 days,	$34,560.00
Profit per year of 300 days,	$345,600.00

The above figures of mining, milling, and smelter costs are most conservative, and do mot in any case give the mines any advantage, but rather the reverse.

. . . .

GENERAL EQUIPTMENT

The equiptment is full and complete, consisting of;
40-Stamp Mill, Air Compressor, and Air Drills. Steam hoists at

both Bonanza Minw and Golden Eagle Mine, with Aerial Cable Tramway from Golden Eagle Shaft to Mill. Blacksmith Shops, Assay Office, Camp, Office, and Store Buildings. Storage Oil Tanks at Railroad and at Mines and Mill. In fact, all machinery and tools necessary for mining and milling purposes

For detailed description, see pages 35 -44 inclusive of report.

RECOMMENDATIONS AND CONCLUSIONS:

The Bonanza Mine, with a record of having produced Four MIllion dollars $4,000,000.00 - with a depth of only a little over 200 feet, to my mind, has not as yet been scratched: a break was encountered at this depth and operations ceased, without any effort being made to go through this break, or fracture. I am confident by sinking, and then crosscutting the vein will be a big producer. From all indications, the Mine was badly managed to the extent of taking out and milling the ore as fast as it was found and without doing any exploration work.

I would recommend that the first work in the Golden Eagle Mine should be a connection from the raise on the 400 foot level to the winze from the 300 foot level in south drift, which would be in pay ore from the start; also, a crosscut should be run from the 300 foot level into the hanging wall to cut the sulphide vein which has been encountered in cross-cut from the 400 foot level and is pay ore at that point. It is reasonabl to suppose that this vein goes theough to the surface and would, therefore produce an immense tonnage.

The main drift on the 400 foot level should also be extended south to cut the ore chute known to exist but which has not as yet been reached on this level, and also a drift run to the north.

This mine is opened in good shape and practically every foot of development on the above-named levles would be in ore. Not a pound of ore has been extracted from the north side of the shaft below the 300 foot level in which ground ore bodies are known to exist. The main chute in this mine is over 350 feet long, running from 2 to 32 feet in width: therefore, I look for oit to go to great dedpth.

With the present Mill, Tramway, Hois ts, and equipment, - all being in first-class order and the showing in the mines, I have every reason to believe that this property will, with very intelligent management and systematic exploration, become a very large and profitable producer.

Iwould recommend installing concentrators to save the wolframite, which has heretofore been lost, therby adding a valuable product to the output. A cyanide plant should also be constructed, thus gettin all the values out of the ore before turing the tailings loose.

Furthermore, considering the comparatively small expenditure necess-ary, this is by far THE BEST PROPOSITION I have seen in a number of years.

Respectfully yours,

L.W. Getchell, E.M.