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MEETING WITH MR. JOHN R. BEEDER 480

MINERALS ENGINEERING COMPANY

July 2, 1977

Meeting started by looking at Magnetic Compilation Map of the Little Boquillas Ranch and describing drill hole data.

DRILL HOLES:

1) Hole C-1 (?), Contention Drill Site. Drill Site is near a bluff on the east side of the San Pedro River (Mr. Beeder located the site on air photo 5-8). The hole was drilled to a depth of 800 ft. It went through 800 ft. of St. David Formation and just encountered Paleozoic (?) limestone. The limestone was gray with flat shears. Cubes of pyrite were observed in the limestone and many of the cubes were replaced by limonite. Mr. Beeder also plotted the approximate location of the drill hole on the Magnetic Survey Sheet and said there is a trail to the drill hole.

2) Hole T71-4, Tombstone Airport Area. Drilled a 175 ft. hole on magnetic high and hit an intrusive of monzonite or latite composition, at 3 ft.

3) Hole T-4, Stronghold Area. This area has a magnetic high with Bisbee outcrops of arkosic quartzite. Mr. Beeder thought the hole depth was between 700-900 ft. The hole was barren and core showed some chloritic alteration. No Stronghold granite was encountered in the hole.

4) Hole T-3, Stronghold Area. Hole is located right by a windmill. Total depth on the hole was 200 ft. and hit granite, then tactite, granite, then tactite, etc. They gave this hole to the Forest Service for a water well. A letter dealing with this transaction is in the Little Boquillas Ranch Correspondence file.

5) Hole T-5, Stronghold Area. Lost the hole.

6) Hole T-7, Total Depth was a few hundred feet. drilled in Bisbee red beds all the way. (Mowry?)

7) DDH No. 1, Horse Ranch Area. Hit pyrite but no depth given.

8) Mr. Beeder said that depth to "Bedrock" (inferring basement) in T18S R21E (general area) is 187 ft. This information and other depth information in the Little Boquillas area is available from the Bureau of Reclamation in Phoenix.

9) Ray Drill Holes - Keller Ranch Area. These holes are just location holes for someone's claims (Mr. Beeder didn't know the people's names). This is a mag. negative area.

10) Wyatt area - Ground magnetics were run in this area, but the area was never drilled.

11) Hole T-1, Lewis Springs. Mr. Beeder plotted a trail to the drill hole on the Magnetic Survey Sheet. He also plotted the mud pit which is just NE of the Magnetic high and can still be seen. The hole encountered basalt rubble. They lost the hole. T.D.??

12) Hole T-2, Rafael Area. Drilled a hole in the bottom of the creek and hole T.D. was 600-800 ft. Again encountered basalt rubble and lost the hole.

13) T-1, Fairbank Area. Hit olivine basalt. We have T.D. and information on this hole. T.D. 803 ft.

14) Ground magnetic surveys were carried out in the Charleston area. Information should be somewhere.

15) Mr. Beeder suspects that we have a porphyry copper deposit on our land in the Charleston area. The following account and diagram describe what Mr. Beeder had to say about the area. Mr. Beeder drew an area on the Little Boquillas Activity Map outlining a large alteration zone (colored orange on the Activity Map). He believes that this large ("gigantic") alteration zone delineates a large porphyry copper deposit at depth and this could be one of the largest to be discovered in the region. The alteration zone extends westward to Uncle Sam Hill and may extend all the way to Tombstone. The Alteration zone is on line with all the Tombstone mines surrounding the Town of Tombstone. Westward, the alteration extends onto the Fort Huachuca Military Reservation. Related to the alteration zone are five breccia pipes in NW ¼ Sec. 29 T20S R22E and a breccia zone of silicified Bisbee in the S½ Sec. 2 T21S R24E (see diagram). ASARCO drilled holes just east of Tenneco's property (see diagram - blue crosses are ASARCO drill holes) on Seth Horne's (Seth Horne is head man for James Stewart Co. who owns claims north of Charleston Road - - Mr. Beeder says "James Stewart Co. is a good company to stay away from") claims which are just southwest of the breccia pipes. This general area is known as the Robber's Roost area. Of the holes which ASARCO drilled, Mr. Beeder knew total depths on two of the holes. One of the holes T.D. at 4000 ft. and the other T.D. at 7000 ft. The 7000 ft. hole hit chalcopyrite and Mr. Beeder claims that although the ore body is at 7000 ft., ore starts at 3000 ft. Mr. Beeder believes that ASARCO has hit a deep-seated deposit and that they're just going to sit on it.

Mr. Beeder says that there are streamers of alteration all through the

Meeting with J.R.Beeder, 7/2/77 (cont'd)

Uncle Sam porphyry. He and others who worked for Tenneco believed that the alteration crosses Tenneco Property and extends onto the Fort Huachuca Military Reservation. Although we don't have the data, they flew magnetics onto the reservation and found a magnetic low similar to the lows in the Charleston-Tombstone area. According to Mr. Beeder, most laramide intrusives show a magnetic low. They also ran I.P. and gravity on the area and got an I.P. high. Mr. Beeder found that the Fort is on state land so they acquired State Prospecting Permits and drilled a hole on the Fort (Sec. 10 T21S R21E). The hole went through 800 ft. of St. David Formation to "bedrock" (inferring plutonic rock). They T.D'ed just past 800 ft. and cut core from the bottom of the hole. The core contained 15% pyrite in a highly altered rock composed of silica and clay. Tenneco also drilled two other holes, however, they are on the ranch. They actually drilled these holes prior to drilling the hole on the Military Reservation. One hole drilled in the SW ¼ Sec. 2 T21S R21E showed decayed pyrite and altered rock. They lost the hole at a T.D. of 300 ft. after it caved. The second hole was drilled out on a flat in the NW ¼ Sec. 11 T21S R21E, and they encountered Schieffelin granodiorite and/or Uncle Sam porphyry (Mr. Beeder said they couldn't tell). They lost the hole but then recovered it and T.D. at 2000' (Mr. Beeder later said 2600 ft.). Five percent pyrite was prevalent throughout the hole. Mr. Beeder also drilled holes for Dick Hewlett (71 minerals (or mines?) - run by Hewlett and others) by the breccia pipes and also found the same alteration as described above. He says two schools of thought exist as to the location of a large porphyry copper deposit. One school believes it centers more easterly near the ASARCO drill holes, while the second school believes that it extends to the west onto Tenneco property and onto the Military Reservation. The San Pedro River and the Fort Huachuca Military Reservation may be sitting on top of a gigantic porphyry copper deposit.

Mr. Beeder says that we have the "cards" to this deposit because ASARCO would need us in order to ever develop it. Mr. beeder believes ASARCO will probably just sit on this property and hold it for the future. ASARCO would need Tenneco's land to flue the river. However, since the Charleston Dam Site is planned to be located exactly in the area of interest, Tenneco needs

a drill hole (probably deep and on the order of 4000-5000') to reveal the presence of copper so that they can be compensated for the area after it is inundated by the Federal Water Project. Also, the possibility exists that the deposit could be developed and development of the Dam Site would be stopped. Dam Site drill hole data is available (possibly from Arizona State Bureau or Bureau of Reclamation).

ADDITIONS & CORRECTIONS:

John King of ASARCO says that it is definitely a porphyry copper deposit.

16) Arizona State Burau of Mines & Mineral Resources. Mr. Beeder says to talk to Wesley Pearce for Oil & Gas hole data concerning the Little Boquillas Ranch.

17) Watley drilled a water hole just north of Mescal (NW Little Boquillas Map) and hit "bedrock" at 400-500' (inferring plutonic basement rock).

18) Concerning the Lower Diamond A Ranch, Mr. Beeder says that Phelps-Dodge has I.P. surveys covering the entire Lower Diamond A geologic map region and drilled all of the anomalies. Mr. Beeder gives Lower Diamond A Ranch a low minerals priority.

19) Mr. Beeder was interested in U_3O_8 occurrences on the Pedro Armendaris Grant and is interested in drilling. He would like to look at uranium on all the ranches on a "farm out" basis.

FI. .L REPORT CHARLESTON PROJEC
COCHISE CO., ARIZONA

LOCATION:

The area of interest involved in the Charleston Project is located on the west side of the San Pedro River near the site of the town of Charleston. Specifically, the area examined includes sections 2, 3, 10 and 11 of T.21 S., R.21 E., Cochise County, Arizona. All of section 2 of these lands is unsurveyed and is part of the San Juan De Las Boquillas Y Nogales land grant (Tenneco fee lands).

GEOLOGY:

Initial interest in this area was prompted by the Companies fee ownership land position and the discovery of an area of very intense hydrothermal silicification and pyritization just west of Charleston. This mineralization also included some wulfenite (lead molybdate) associated with limonite in oxidized vein material as well as a separate vein containing strong copper oxide staining and decayed sulfides. Most of the alteration and sulfide mineralization has affected volcanic rocks of the Cretaceous, Bronco group near the contact of these rocks with an irregular stock of the Laramide, Scheifflin granodiorite. The Scheifflin also contains considerable pyrite mineralization in this area and pyrite has been encountered in drill holes at depth. On the surface the Scheifflin appears to contain only a trace of pyrite except right in the contact zone where the granodiorite is strongly bleached and pyritized. Two prominent hills on either side of the San Pedro River are capped by remnants of a large and extensive sill of Uncle Sam porphyry which is believed to be a hypabyssal equivalent of the Scheifflin granodiorite. The Uncle Sam porphyry is only weakly altered here and contains only a trace of pyrite.

Several old prospect pits and shafts (which predate the perfection of title to the land grant in 1901) were found during the course of our field examination. Most of these are on fissure veins containing minor lead-zinc-silver mineralization. Another vein, exhibiting some copper oxide mineralization, cuts through the U. S. porphyry which makes up the bulk of the hill northwest of Charleston. This vein has been explored by short adits which are now caved.

Outcrops in the area are not extensive and alluvium, scree slopes and Bensen Lake beds cover much of the bedrock surface.

TO: MINERALS DATE JUNE 9, 1971

FOR: MR. W. T. WELLS, JR.

FROM: MR. W. K. WALLACE

RE: COPPER-ARIZONA

Drill hole T-71-2, situated about one mile west of the abandoned town of Charleston in Cochise County, Arizona, was abandoned at a depth of 479 feet due to an excessive inflow of water, which prevented further penetration by rotary-percussion air drilling methods. Altered, pyritized volcanic rocks were encountered to a depth of 415 feet, where a medium-grained altered and pyritized intrusive was encountered. The intrusive grades from a monzonite to a granodiorite in composition, and contains chloritized ferromagnesian minerals with 2-3% iron pyrite. The mineralization and alteration is of the propylitic type, which is commonly peripheral to most porphyry copper deposits. Argillic alteration is present adjacent to quartz filled fractures. Surface oxidation extends to a depth of 325 feet. The purpose of this drill hole was to test a deep-seated induced potential geophysical anomaly. The target depth is estimated to be approximately 2,000 ft. The geophysical work was recommended on the basis of surface alteration observed in the area.

Hole T-71-3A was drilled approximately 2,000 ft. south of Hole T-71-2. This hole was abandoned due to caving conditions and the loss of a hammer drill at a depth of 515 ft. Rock type encountered on this hole was medium-grained monzonite or granodiorite. The rock contains 2-3% pyrite. Surface oxidation extends to a depth of 215 ft.

Drill hole T-71-3B was collared 12 ft. west of T-71-3A and drilled to a depth of 669 ft. where excess cavatation and caving conditions forced abandonment of the hole by rotary-percussion air drilling equipment. The hole was cased and will be deepened in the future with conventional diamond coring equipment. Although the deep-seated conductive horizon remains to be tested, preliminary information suggests that potential mineral bearing ground could exist on or adjacent to company fee lands in the Charleston area.

Drill hole T-71-4 was drilled in the NW1/4 of section 30, T.20S., R.23E., about three miles southeast of Tombstone, Arizona. The hole was drilled to test a shallow magnetic anomaly underlying an alluvial covered area surrounded by Paleozoic limestone. Slightly altered quartz latite porphyry was encountered at a depth of eleven feet and continued to the total depth of hole at 175 feet. The latite has a high magnetic susceptibility and caused the anomaly. The drill rig was released and rotary-percussion drilling operations were terminated as of June 6.

Wayne K. Wallace

cw

DRILLING CO

1512 WEST PRINCE ROAD
TUCSON, ARIZONA 85705

HAMMER DRILLING SPECIALISTS. AIR-WATER—CORING

TO Mr. Wayne K. Wallace

Tenneco Oil Company, Minerals Division

Post Office Box 2511

Houston, Texas 77001

INVOICE NO. JA 231-1

DATE May 13 19 71

TERMS: DRILLING SERVICES - NET 10 DAYS
ALL OTHER CHARGES - NET 30 DAYS
1% PER MONTH WILL BE ADDED ON PAST DUE ACCO.

DATE	DESCRIPTION			AMOUNT
May 1 thru 11, 1971	Hole No. T-71-1 New Cuntland Acres Sec 12 T 19S R 25E		Total Depth 1,697 Feet	
FOOTAGE: 1,688 Feet				
500 feet	@ $ 4.50 per foot	$ 2,250.00		
498 feet	5.50 per foot	2,739.00		
500 feet	6.50 per foot	3,250.00		
190 feet	7.50 per foot	1,425.00		
				$ 9,664.00
RIGTIME: 13 Hours	@ $ 40.00 per hour			520.00
2 hours setting and cementing surface casing.				
11 hours coring.				
MATERIAL:				
feet 7" casing	@ $ 2.47 per foot	$ 54.34		
12 sacks cement	2.00 per sack	24.00		
1 sack Diaseal M.	11.56 per sack	11.56		
129 sacks mud	2.10 per sack	270.90		
350 gallons diesel	.25 per gallon	87.50		
1½ sacks Cellex	81.68 per sack	122.52		
9 sacks Mud Seal	9.53 per sack	85.77		
				$ 656.59
1 Diamond Core Bit				596.48
MOBILIZATION: Tucson to location.				
116 Miles	@ $ 5.00 per mile			$ 580.00
				$ 12,017.07
Less salvage on Diamond Core Bit used on Contention Project, Tombstone, Arizona - October 1970.				463.75
			Total	$ 11,553.32

(signed) Leon Whatley

Leon Whatley

Checked as correct - please pay

cc: John Beeder John R. Barden

PLEASE PAY FROM THIS INVOICE-NO OTHER STATEMENT WILL BE RENDERED

II. San Juan de las Boquillas y Nogales Grant and Vicinity

A. Ground Magnetics (vertical field) by Allen M. Rugg, TOC

1. Keller Ranch Area, 6/69, (1 in = 400 ft)
2. Tombstone Airport Area, 9/69 (1 in = 100 ft)
3. Contention Area, 4/70, (1 in = 400 ft)
4. Charleston Area DATA MISSING

B. I.P. and Resistivity

1. Tombstone Area, Canadian Aero Mineral Surveys Limited, 9/25/69, (3 lines)
2. Charleston Project, Mining Geophysical Surveys, 4/23/71, (4 lines)

C. Drill Holes

1. Contention Area

C-1 Sec. 16, T19S, R21E, 0 to 800 ft St. David Fm. just encountered pyrite mineralization in Paleozoic carbonate rocks T.D.'ed hole at 800 ± ft. Drilled on positive magnetic anomaly.

2. Charleston Area

H-1 SW¼ Sec. 10, T21S, R21E, 0 to 800 ± ft St. David Fm., 800 ft to T.D. ? Uncle Sam Porphyry and/or Schieffelin Granodiorite with 15% pyrite mineralization.

T-71-2 SW¼ Sec. 2, T21S, R21E, Altered rock with pyrite mineralization. T.D. 300 ft.

T-71-3 SW¼ Sec. 2, T21S, R21E, Uncle Sam Porphyry Schieffelin Granodiorite with 5% pyrite mineralization. T.D. 2600 ft.

T-71-4 NW¼ Sec. 30, T20S, R23E, Monzonite or latie intrusive (see drill log). T.D. 175 ft. Drilled on positive magnetic anomaly.

T-71-5 NE¼ Sec. 3, T21S, R21E, DATA MISSING

T-71-6 NW¼ Sec. 3, T21S, R21E, DATA MISSING

III. San Rafael del Valle Grant and Vicinity

A. Ground Magnetics (vertical field) by Allen M. Rugg, TOC

1. Fairbank Area, 10/68, (1 in = 500 ft)
2. Wyatt Area, 5/69, (1 in = 400 ft)
3. Nicksville Area, 8/69, (1 in = 1000 ft)
4. Hereford Area, 9/69, (1 in = 400 ft)
5. Lewis Springs Area, 9/69, (1 in = 400 ft)
6. Rafael Area, 10/69, (1 in = 400 ft)

B. I.P. and Resistivity by Canadian Aero Mineral Surveys Limited

1. Lewis Springs Area (included with Tombstone Area Report), 9/25/69, (9 lines)
2. Hereford (and Sala) Ranch Area(s), 11/17/69, (1 line in Hereford Ranch Area)

C. Drill Holes

T-1 SE¼ Sec. 36, T23S, R22E, Encountered Gila Conglomera and St. David Fm. from 0 to 798 ft, 798 to 803 ft olivine basalt. T.D. 803 ft. Drilled to test prominent positive magnetic anomaly.

T-1 NE¼ Sec. 5, T22S, R22E, Encountered basalt rubble, lost hole. T.D. unknown. Drilled on northeast side of positive magnetic anomaly.

T-2 NE¼ Sec. 21, T22S, R22E, Encountered basalt rubble. T.D. 600 to 800 ft. Drilled to test positive magnetic anomaly.

TENNECO

TENNECO OIL COMPANY - MINERALS EXPLORATION (COMPANY)

INTEROFFICE COMMUNICATION

TO:

DATE: APRIL 21, 1977

FOR:

FROM:

RE: T.O.C. GEOPHYSICS
MINERALS EXPLORATION

Geophysical Data at Tucson Office

Little Boquillas Ranch and Adjacent Areas, AZ

31 line miles of combination induced polarization and resistivity surveys (1968-69)

13 ground mag surveys covering approx. 8.5 sq mi - relative vertical magnetic intensity (1968-70)

6 T.O.C. aeromag surveys covering approx. 520 sq mi - relative total magnetic intensity (1968-69)

2 U.S.G.S. aeromag surveys (off ranch) - relative total magnetic intensity

Lower Diamond A Ranch and Adjacent Areas, NM

253 line miles of reflection and refraction surveys, 17.5 miles actually on Tenneco property - data can be purchased from Geophysical Service, Inc. which is a sub of Texas Instruments (1969)

4.6 line miles of seismic survey (type unknown) shot by Cities Service Oil Co., no in-house data other than line locations (1954)

1 T.O.C. aeromag survey on Steins Pass area, NM claims (1967); claims abandoned by T.O.C. in 1976

42 line miles of combination induced polarization and resistivity on Steins Pass area, NM claims (1973-74); claims abandoned by T.O.C. in 1976

Armendaris Grant and Adjacent Areas, NM

168 line miles of seismic reflection survey shot by Sun Oil Co. (1951); we have some interp but no raw data

Helicopter scintillometer survey (13 hrs flying time); raw data on 11 anomalous areas (1955)

90 sq mi U.S.G.S. residual magnetic intensity survey on ranch (1973)

Big Boquillas Ranch and Adjacent Areas, AZ

Helicopter scintillometer survey (22.3 hrs flying time); limited raw data (1955)

out of 120,000' in the Tombstone Area thesis Spangler 1969

TO: MINERALS

DATE JUNE 9, 1971

FOR: MR. W. T. WELLS, JR.

FROM: MR. W. K. WALLACE

RE: COPPER-ARIZONA

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cw

Wayne K. Wallace

TO: MINERALS EXPLORATION DATE: 10-5-81

FOR: JEFFREY L. WILSON

FROM: DAVID L. EMMONS

RE: LITTLE BOQUILLAS RANCH, COCHISE CO., AZ
RECOMMENDATIONS FOR RETAINING SURFACE OWNERSHIP

INTRODUCTION

Areas on the Little Boquillas Ranch which are thought to have significant, long-term and near-term economic mineral potential are hereby identified and recommended for exclusion from any surface sale (Plate 1). The total acreage that is recommended for exclusion is 92,484.46 acres.

Minerals evaluation of the Little Boquillas Ranch by the Tucson office began in 1976. Major contributions to the evaluation and exploration of the mineral potential included airborne magnetometer survey(s), airborne spectrometer (radiometric) survey, I.P. and resistivity surveys, color aerial photography, geological field work, geochemical sampling, and a comprehensive report entitled "Minerals Reconnaissance of the Little Boquillas Ranch and Adjacent Areas, Cochise County, Arizona". As a result of this investment of money and manpower, significant minerals leads have been defined and documented in what appears to be a scenario of good timing and long-range planning.

Excellent potential for a porphyry copper-moly deposit exists on Tenneco fee land. The sale of the surface would seriously jeopardize potential mining.

The surface sale of Tenneco's two Spanish land grants, the San Juan de las Boquillas y Nogales and the San Rafael del Valle, may divest Tenneco from the rights to gold and silver which are retained by the Federal government. Leases for rights to gold and silver are available only to "the owner of the land under the patent title" (Act of June 6, 1926, Circular No. 1107, Dept. of Interior, Gen. Land Office). The loss of such rights would stop Tenneco from developing precious metal veins at Charleston and would also have substantial negative impact on the exploitation of a porphyry copper-moly deposit with gold and silver byproducts.

LITTLE BOQUILLAS RANCH (cont'd)

Revenues from sand and gravel production have been obtained on the Little Boquillas Ranch. The rapid growth of Sierra Vista should significatnly increase the potential for sand and gravel revenues for Tenneco.

Table 1 summarizes what appears to be the major mineral commodities and areas of concern. Loss of surface in these general areas will have substantial negative impact on future mineral production.

Porphyry Copper-Moly Potential (Area 1)

The Little Boquillas Ranch is located in the southeastern Arizona copper province along the San Pedro lineament. Significant porphyry copper(-moly) deposits are located along or near the San Pedro lineament, including the Globe-Miami deposits, San Manuel, Superior, Bisbee and various others. Based on its regional setting, the Little Boquillas is in an excellent position for porphyry copper-moly mineralization.

A prime area for multiple porphyry copper-moly deposits on the Little Boquillas Ranch is along the San Pedro River (and lineament) between Lewis Springs and St. David. Thick (800 ft) Cenozoic sedimentary cover significantly decreases the exploration potential to the north and south. Area 1 has excellent porphyry copper-moly potential and is shown on Plate 1. This area should be exlcuded from sale until detailed exploration (including core drilling) can be completed. Additional I.P. and resistivity surveys are planned for this area in 1982.

Numerous mineral leads for porphyry copper-moly deposits are present in Area 1. Evidence for such mineralization is listed below:

1. Asarco has drilled a porphyry copper deposit two miles east of Tenneco fee land at Charleston. Porphyry copper deposits typically occur in clusters.

2. R. A. Newell (1974) completed a geologic dissertation and listed seven targets for potential porphyry copper mineralization. One such target is between Charleston and Lewis Springs on the east bank of the San Pedro River, immediately adjacent to Tenneco property. Asarco made a discovery on one of Newell's targets.

Table 1. Identified and potential mineral resources on the Little Boquillas Ranch, AZ.

TYPE OF DEPOSIT	AREA	GROSS MINERAL VALUE	RESOURCE CLASSIFICATION	RESOURCES
Porphyry Copper-Moly	1. San Pedro River Valley (from Lewis Springs to St. David)	$1 billion + (hypothetical	Undiscovered (potential for multiple deposits)	Unknown
Precious Metal Veins	2. Charleston	$2 million ± (hypothetical)	Undiscovered (Veins mined in past, no data on remaining resources)	Unknown
Metasomatic (Replacement) Base & Precious Metals	3. Dragoon	Unknown	Undiscovered	Unknown
Gypsite	4. Land Boquillas	$ 14 million $3.7 million	Identified Identified	722,000 tons 187,000 tons
Sand & Gravel	5. San Pedro River Valley & Nicksville Area	$10 million ($300,000 in royalties estimated for next 20 years)	Identified	Lessees: 1. Sierra Ready Mix & Contracting Co. 2. County of Cochise 3. State of Arizona 4. Young Block Co. Extremely large

LITTLE BOQUILLAS RANCH (cont'd)

3. Tenneco property is within the Tombstone silver mining district which has produced silver, lead, gold, zinc and copper. Prior to deep flooding and subsequent closure of the Tombstone mines, chalcocite was encountered and mined. Chalcocite is a supergene copper ore mineral indicative of a porphyry copper deposit.

4. Tenneco property is in near proximity to the intersection of the San Pedro, Tucson and Tombstone lineaments. The probability of discovering a porphyry copper-moly deposit is believed higher along or adjacent to regional lineaments and their intersections. The Charleston-Lewis Springs area has intersecting fractures, shears, faults and joints which are a major controlling factor in the emplacement of porphyry copper deposits.

5. Aeromagnetic surveys conducted by Tenneco detected magnetic "highs" and "lows" indicating potential mineralization.

6. I.P. and resistivity surveys conducted by Tenneco have defined areas of probable sulfide mineralization typical of porphyry copper-moly deposits.

7. Past exploration drilling by Tenneco has encountered sulfide mineralization and hydrothermally altered rocks. Sulfides were encountered in the Charleston area and 10 miles north in the Contention area.

8. Tenneco property contains Laramide (55-75 m.y.) plutonic and volcanic rocks which are favorable porphyry copper-moly host rocks. The majority of known porphyry copper deposits in southern Arizona are Laramide in age. Favorable rock types are present on the ranch and include granodiorite, quartz monzonite, intrusive breccias and intermediate to felsic volcanic rocks.

9. A hydrothermal system was active during the Laramide as indicated by an age date on hydrothermally-formed sericite at the Charleston Lead Mine (0.5 mile east of Tenneco fee land).

10. Hydrothermal alteration is present on Tenneco fee land in the Charleston area and includes propylitic, argillic and phyllic varieties. At least one Asarco drill hole

LITTLE BOQUILLAS RANCH (cont'd)

encountered phyllic alteration and potassic alteration with copper mineralization. These types of alteration are typical of porphyry copper-moly deposits.

11. Precious and base metal veins are present at Charleston and suggest an outer halo around a significant porphyry copper deposit as described by Lowell and Guilbert (1970) and Sillitoe (1973).

The gross mineral value of a porphyry copper-moly deposit is estimated at greater than $1 billion. This estimate is based on typical gross values for Arizona copper deposits. The value also includes estimates of byproduct, silver, gold, and other elements.

The large size of porphyry copper deposits (approximately one square mile) necessitates the disturbance of a large area of land for mining. The amount of land disturbed is often at least 2 to 4 square miles including mine, mill, dumps and tailings ponds. The sale of surface ownership over areas of potential mineralization would have a significant negative impact on the development of any mineralization that might be discovered.

Precious Metal Veins (Area 2)

At least twelve epithermal precious metal veins are present on the southern portion of the San Juan de las Boquillas y Nogales Grant near Charleston. The veins are located within the Tombstone mining district which is well known for its high-grade silver-lead-gold ores. Potential exists for similar high-grade mineralization in the veins on Tenneco fee land.

The veins on Tenneco property are "typical" epithermal precious metal veins. Silver content ranges from less than 1 oz/ton to over 10 oz/ton; gold content is up to 1 oz/ton. Vein thicknesses are small, 0.25-4.6 ft. Strike length of the veins is up to 1500 ft. No data are available on the vertical extent of mineralization.

The workings on the veins are 70-100 years old and are caved, partially flooded and dangerous. The only detailed data on the veins are from a report by Rodgers Peale (1949). It should be noted that Peale's sampling was of material that was left after mining, a much higher grade ore was probably mined. The veins have not been explored by drilling and significant potential exists for high grade ore shoots at depth and along strike.

LITTLE BOQUILLAS RANCH (cont'd)

The close proximity (400 ft) of three veins, the Footwall, Honolulu and Josephine, may make open pit mining of these veins possible. This potential would be enhanced if low-grade halos are present around the veins. "Halo-type" mineralization is currently being mined in Tombstone.

The estimated gross mineral value of a deposit is at least $2 million and perhaps many times more. This is a tenuous value based on the average value of a mine in the Tombstone district. The real value of the veins is in the exploration potential. Underground and surface mapping and sampling is planned for 1982 with a goal of defining drill targets for 1983.

Metasomatic (Replacement) Deposits (Area 3)

Metasomatic (replacement) deposits are present in the Dragoon Mountains. The mineralization occurs at and near the intrusive contact of the Stronghold Granite (22-27 m.y.). Minor metasomatic mineralized bodies are scattered throughout the Dragoon Mountains in roof pendants. Approximately 10,000 oz of gold has been produced from the deposits along with copper, lead and zinc.

The northeastern portion of the Little Boquillas Ranch contains 5 miles of the Stronghold Granite intrusive contact. The contact on the ranch is concealed by surfical material, thereby, masking potential mineralization. Magnetic, I.P. and resistivity surveys conducted by Tenneco indicate potential metasomatic mineralization associated with the contact. One Tenneco drill hole east of Tenneco fee land encountered metasomatized rock but no economic mineralization. In addition, a possible roof pendant of Bolsa Quartzite (Cambrian) and Abrigo Limestone (Cambrian) is present on the ranch. The Abrigo Limestone is an excellent host rock for metasomatic deposits and produces metals at various mines.

Additional I.P. and resistivity surveys are planned for this area in 1982. No surface rights should be sold in this area until additional geophysical surveys can be completed and any significant anomalies tested by drilling.

Gypsite (Area 4)

Gypsite has been identified on Tenneco fee land near the Boquillas ruins and near Land (Plate 1). Gypsite is an earthy material rich in gypsum and can be used to improve soil drainage, neutralize alkali and soften hardpans.

LITTLE BOQUILLAS RANCH (cont'd)

The Boquillas gypsite deposit contains approximately 187,000 tons of strippable gypsite, containing 70-80% gypsum and is present on Tenneco fee land near the Boquillas ruins. The deposit has been trenched and sampled on a 250 ft grid. Gypsite occurs as a flat-lying bed up to 4 ft in thickness with less than 1 ft of overburden. The gypsite deposit extends onto adjacent private property which may contain nearly 600,000 tons of additional resources.

The Land gypsite deposit contains approximately 722,000 tons of gypsite on Tenneco fee land and perhaps 2+ million tons on adjacent property. Only limited sampling of this deposit has been conducted. The deposit occurs as a flat-lying bed up to 10 ft in thickness and averages 4 ft in thickness. The western portion of the deposit contains 20-40 ft of overburden.

Commercial gypsite for agricultural use sells for approximately $20/ton in Arizona. Based on $20/ton, the gross value of gypsite on Tenneco fee land is $18 million. If the entire Boquillas deposit were acquired, its gross value would be approximately $15 million. Further study would be necessary to determine if Tenneco gypsite is suitable for agricultural use.

Area 4 is shown on Plate 1 and the surface covering these deposits should not be sold.

Sand and Gravel (Area 5)

Deposits of sand and gravel on Tenneco fee land are extensive. The main areas of sand and gravel deposits are along the San Pedro River and south of Nicksville. Sand and gravel resources developed in these areas might yield byproduct gold. Placer and vein gold are present in the Huachuca Mountains west of Nicksville and mountain drainages debouch onto Tenneco fee land.

Sand and gravel are produced on the Little Boquillas Ranch. Four leases are intermittently operated on the property (Table 1). Current royalties paid to Tenneco range from 7.4 to 18.95 cents per ton. Over 100,000 tons of sand and gravel have been produced since 1976.

The royalty value of sand and gravel from Tenneco fee land over the next 20 years is at least $300,000. The gross value of sand and gravel over this same period is estimated to be at least $10 million.

LITTLE BOQUILLAS RANCH (cont'd)

The location of Tenneco fee land in respect to the fast growing City of Sierra Vista greatly enhances the potential for profits from sand and gravel production. The close proximity of Ft. Huachuca provides another local market. A potential Federal damsite at Charleston could hypothetically consume millions of tons of Tenneco aggregate.

A detailed evaluation of the sand and gravel potential of the Little Boquillas is warranted. The study should define and document specific areas with exploitable resources of sand and gravel. Areas with maximum sand and gravel potential and minimal other value should be set aside for future exploitation. Sufficient sand and gravel should be identified and retained so that resources from Tenneco holdings could fill the local demand well into the next century. Therefore, Tenneco surface ownership should be retained along the San Pedro River and south of Nicksville until specific resource areas can be defined and documented.

Conclusion

Significant exploration potential is present and well documented on the Little Boquillas Ranch. The sale of any surface ownership should be weighed against the severe, negative impact on the potential for exploitation of its mineral resources.

Sincerely,

David L. Emmons
Sr. Expl. Geologist

DLE/cmc

Land Status map of Little Boquillas
in WFS files.

GEOLOGY AND ECONOMIC POTENTIAL OF THE CHARLESTON VEIN SYSTEM

LITTLE BOQUILLAS RANCH COCHISE COUNTY, ARIZONA

1982

HOUSTON INTERNATIONAL MINERALS CORP.
by
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Senior Exploration Geologist

December, 1982

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SUMMARY

The Charleston Vein System, a large hydrothermal alteration and fracture system, occurs on Tenneco's Little Boquillas Ranch (fee land) near the site of Charleston in Cochise County, Arizona. The quartz veins and alteration are hosted by the Late Cretaceous Bronco Volcanics. Six principle silver-gold-lead-quartz veins are present with several samples assaying >1 ppm gold and >25 ppm silver. Mineralization locally extends into the wall rock and stockwork mineralization is also present. The alteration assemblage consists of quartz, sericite, clays (kaolinite and others), alunite, along with manganese oxides, iron oxides, and pyrite. A distinct zoning of gold and silver was revealed by the rock-chip sampling. The Manila- Brunckow vein contains samples with >1 ppm gold while the Josephine, Honolulu, and Footwall veins contain primarily silver mineralization.

Ranchers Exploration and Development Corporation recently opened the Escalante Mine (1981), a major underground silver mine located in Utah. The Escalante vein deposit has a similar geological setting as the Charleston Vein System and is indicative of the economic potential of such deposits. The Charleston Vein System has the potential for 5 million tons of ore with grades of 0.05 opt gold and 6.0 opt silver. The potential deposit may be exploitable by bulk-tonnage, open-pit mining techniques.

The Charleston Vein System contains two main targets: (1) the intersection of the Josephine, Honolulu, and Footwall veins and, (2) the Manila-Brunckow vein. High-grade zones, stockworks, and wall rock mineralization can be expected. Owing to the potential for gold and silver ore deposit(s), three angle core holes are proposed to intercept mineralization below the water table. The estimated cost for drilling is $90,000.

PROPOSED CORE HOLES		
CHV-1	(45°)	T.D. 600 feet
CHV-2	(75°)	T.D. 600 feet
CHV-3	(45°)	T.D. 300 feet
	TOTAL	1500 feet

INTRODUCTION

Purpose

The purpose of this geological investigation was to evaluate the economic potential of the Charleston Vein System located on Tenneco's Little Boquillas Ranch (fee land) in Cochise County, Arizona. The objective was to determine if the vein system has potential for gold and silver mineralization of sufficient grades and tonnage to meet HIMCO's economic criteria, therefore, warranting evaluation as a HIMCO project.

Location and Property Holdings

The Charleston Vein System is located on the east side of the San Pedro River between Sierra Vista and Tombstone in Cochise County, Arizona. The vein system is on a Spanish land grant, San Juan de las Boquillas y Nogales, in projected section 1, T. 21 S., R. 21 E., and extends off of the grant into section 1, T. 21 S., R. 21 E., section 6, T. 21 S., R. 22 E., and section 36, T. 20 S., R. 22 E. Tenneco's mineral ownership is a result of the acquisition of Kern County Land Company and it's properties, including the Little Boquillas Ranch.

Previous Work

The silver-gold-lead-quartz vein system was mined and explored to varying degrees during the late 1800's and the early 1900's. Workings consist of vertical shafts (maximum depth is 430 feet for the Manila shaft), inclined stopes, adits, and shallow pits.

Previous geological evaluations include Spellmeyer (1927), Peale (1949), and Gill, Wilson and Emmons (1979) as a brief part of property evaluations. Spellmeyer's and Peale's work includes sampling, assaying, and mapping of the workings.

Current Work (This Study)

A total of seven days were spent conducting field work for this evaluation (June 21-25 and July 21-22, 1982). I was assisted by John W. Maddry on July 21 and 22. Field work included limited geologic and alteration mapping, rock-chip and mine-dump sampling, and sampling of underground workings where accessible.

Geologic mapping was done on enlargements (1"=200' and 1"=400') of existing color aerial photography (1"=1,000'). Data were then compiled onto an enlarged (1"=200') topographic base map (Plate 1) to include previous work and photogeology.

Eighty-one rock-chip and seven mine-dump samples were collected during the seven days of field work. An additional six samples were collected in November and are not included in the histograms or averages. However, these additional samples (samples 2983-2988) are in the appendix and on Plate 2. Sample descriptions and summarized assay results are presented in Appendix 1. Samples include both vein and wall rock. Most samples were collected from prospect pits and mine workings. All samples were assayed quantitatively for Au, Ag, and Hg by Skyline Labs Inc., Tucson, Arizona (Appendix 2), and semi-quantitatively (XRF scans) by Fluo-X-Spec Analytical Laboratory, Denver, Colorado (Appendix 3).

Four pulps were submitted to the Colorado School of Mines Research Institute (CSMRI), Golden, Colorado, for bulk X-ray diffraction (XRD) identification of the mineralogy (Appendix 5). The XRD samples include two vein samples and two wall rock samples. Previous XRD data are also included in Appendix 5.

GEOLOGY

Regional Setting

The Charleston Vein System is at the western edge of the Tombstone Mining District. The vein system is in the central portion of the Schieffelin Igneous Complex (Figure 1). This complex is a late Cretaceous plutonic and volcanic system and may represent a caldera type environment. The veins are approximately 7 miles southwest of the main Tombstone District and occur within a northeast-trending alteration zone which extends from Charleston to Tombstone. Alteration ranges from argillic to phyllic with clays, quartz, sericite, and pyrite (limonite and hematite near the surface), within a broad zone of propylitic alteration.

Six types of precious and base metal deposits are known to exist with-in the Tombstone District:

1. Deposits associated with north-south trending fissures, shears, and dikes.
2. Deposits associated with faults.
3. Deposits associated with anticlines and "rolls".
4. Deposits associated with northeast-southwest-trending fissures and shears.
5. The low-grade halos associated with the above types.
6. Porphyry copper deposit(s).

The Charleston Vein System is a type 4 deposit associated with northeast-southwest fissures and shears, with potential for halo type mineralization.

Rock Units

1. Bisbee Formation - The Bisbee Formation (early Cretaceous) consists of 3,000± feet of sandstone, mudstone, and lesser amounts of

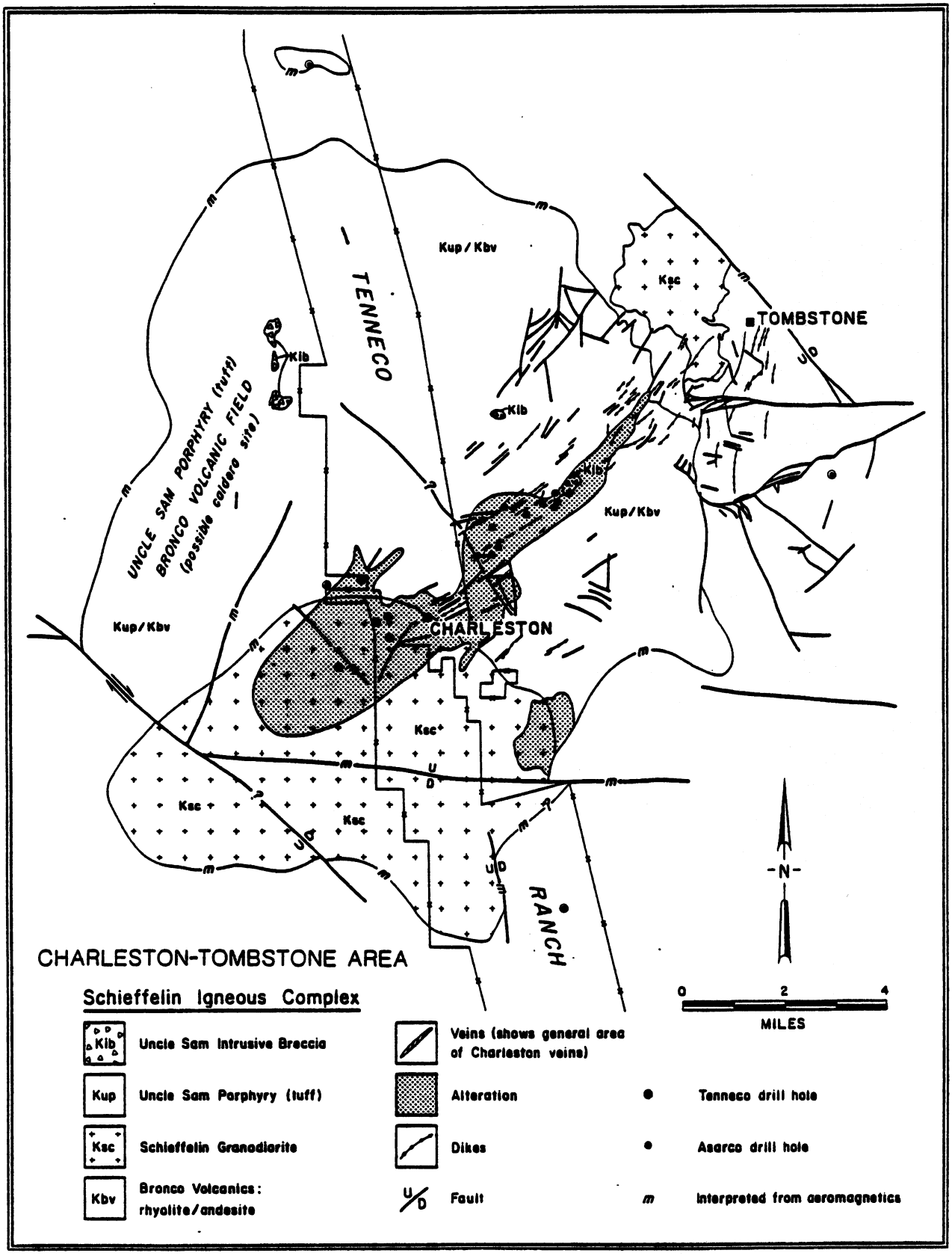


Figure 1. Charleston-Tombstone Area

limestone and conglomerate. It uncomformably overlies a Paleozoic section which is approximately 6,700 feet in thickness and is comprised of mostly carbonate strata with sandstone and shale. The Bisbee Formation is only exposed in a small southeastern portion of the map area.

2. Bronco Volcanics - The late Cretaceous Bronco Volcanics consists of a lower Andesite Member and an upper Rhyolite Member. The members interfinger locally.

The Andesite Member rests unconformably on the Bisbee Formation. South of the map area, near Bronco Hill, the member is probably 3,500+ feet thick; from cross sections in the map area the member is 2,000± feet thick; north of the map area the member is 1,200-1,400 feet thick as indicated by diamond drill holes (Newell, 1974, p. 40). Therefore, the Bronco Andesite thins northward. The andesite is typically greenish-gray to purplish-gray and locally contains volcanic breccias and volcaniclastic units with fine-grained matrix and rounded Cretaceous and Paleozoic clasts.

Overlying and locally interfingering with the Andesite Member is the Rhyolite Member. The thickness of the Rhyolite Member is approximately 900+ feet (Gilluly, 1956, p. 88). The rhyolite consists of tuffaceous deposits, flows, and possibly flow domes. The rock ranges from very siliceous with intricate flow banding to fine-grained tuffs and lithic tuff breccias with quartzite clasts.

3. Schieffelin Granodiorite - The Schieffelin Granodiorite is not exposed in the map area but is present 1,000 feet to the south.The intrusive is probably the heat source for the Charleston Vein System and probably the source of a portion of the mineralizing hydrothermal fluids. The age of the Schieffelin Granodiorite is late Cretaceous based on radiometric age dates: (a) 72 m.y. (K-Ar, Creasey and

Kistler, 1962, p. D1), (b) 76 m.y. (K-Ar, Marvin and others, 1973, p. 22).

The unit is more precisely termed a quartz monzonite with 10-30% quartz, 15-35% plagioclase (An 40-58), 20-35% K-spar, and accessory minerals of biotite, chlorite, hornblende, augite, magnetite, pyrite, etc. The rock is typically light gray to grayish-pink, medium-grained with porphyritic phases.

The Schieffelin is intrusive into Paleozoic strata, Bisbee Formation, and the Bronco Volcanics.

4. Uncle Sam Porphyry (Tuff) - The age of the Uncle Sam Porphyry (Tuff) is late Cretaceous based radiometric age dates:

a. 71.9±2.4 m.y. (K-Ar, Drewes, 1971, p. C75)
b. 71.9±2.7 m.y. (K-Ar, Marvin and others, 1973, p. 22)
c. 73.5±2.8 m.y. (K-Ar, Marvin and others, 1978, p. 246)

As shown by a comparison of these age dates with those for the Schieffelin Granodiorite, the two units are coeval. The Uncle Sam Porphyry is probably the tuffaceous eruptive equivalent of the intrusive Schieffin Granodiorite, both are the result of the same magma body.

The Uncle Sam Porphyry (Tuff) is typically reddish-brown, well-lithified rock which typically forms the higher relief in the area. The unit is composed of lithic and crystal fragments in a devitrified glassy matrix and is generally slightly welded to welded. The texture of the rock is cleary pyroclastic (Newell, 1974, p. 50) and was formed as an ash-flow tuff. Compositionally, the unit is a quartz latite with phenocrysts of quartz, plagioclase, K-spar, biotite, chlorite, and magnetite.

5. Hornblende Andesite - Dikes of hornblende andesite (Kha) have intruded late Cretaceous and older units along northeast trending

joints and fractures. The dikes dip steeply to the southwest and range in thickness from <1 foot to 20+ feet. Dike rock is typically a grayish-green feldspar porphyry with biotite, hornblende, chlorite, epidote, and magnetite.

6. Quaternary Deposits - Four different types of Quaternary surfical deposits are differentiated on the geologic map (Plate 1):

1. Ot - River terrace deposits of the San Pedro River.
2. Ql - St. David lake beds.
3. Qoa - Older alluvium, colluvium, and pediment gravels.
4. Qal - Modern alluvial sediments of the San Pedro River and the ephemeral washes in the area.

Structure

The late Cretaceous volcanic units were deposited unconformably on folded strata of the Bisbee Formation. The folds trend northwesterly and are present in the Tombstone area and near the Keller Ranch, 2 miles east of the map area. The overlying volcanic units strike northeasterly and dip 30-45° to the northwest. These strata are cut by northeast-trending mineralized and altered fractures, joints, and shears which dip 45-90° to the southeast. Therefore, the structures are bedding normal and were probably formed prior to tilting as vertical structures, possibly as a result of the intrusion of the Schieffelin Granodiorite (72-76 m.y.).

The main structural zone of the Charleston Vein System (Josephine, Honolulu, Footwall, and Manila-Brunckow veins) is large with a strike length of 6,000+ feet and an exposed width of 1,000± feet. Approximately 4,000 feet of the structural zone is on Tenneco fee land. This structural zone is part of a larger mineralization-alteration system which extends northeasterly from Charleston to Tombstone.

Minor(?) north-northwesterly cross structures are present which locally offset the veins and dikes, however, some north-northwest trending structures are mineralized with quartz stringers. These quartz-filled fractures may indicate that the north-northwest structures formed late in the mineralizing episode.

MINERALIZATION AND ALTERATION

The Charleston Vein System consists of six principal veins and at least six lesser veins. Some veins (ie. Josephine, Honolulu, and Footwall) have coalescing alteration envelopes. Pertinent data on the veins are summarized in Table 1.

The bulk of the veining is quartz mineralization in the form of open-space filling, breccia filling, and replacement. The quartz is typically massive with lesser amounts of banded and cockscomb textures. Significant amounts of brecciated wall rock are also included in the veins. Black calcite is common, particularly in the Manganese vein. The principal metallic minerals in the veins are hematite, limonite, galena, and manganese oxides (also carbonates and sulfosalts), which are often present as a 0.1-1.0 inch thick, 20+% galena zone near the footwall of the veins. Pyrite (1±%) is also present in the veins. Secondary copper minerals are often visible. XRD analysis (Appendix 5) has tentatively identified stetefeldite [$AgSb_2$ (0, OH, $H_2O)_6$] as one silver mineral from a high grade sample of the Josephine vein.

The veins typically range in thickness from <0.5 feet to 4.0+ feet, and average about 2.0 feet. They pinch and swell and change strike and dip. The veins occur in shears, fractures, and minor faults. Slickensides indicate oblique faulting with a major component of vertical displacement (normal?).

TABLE 1. Vein data summary, Charleston Vein System.

VEIN	HOST ROCK (at the surface)	STRIKE LENGTH	THICKNESS	STRIKE-N45-60°E DIP	Au ppm (range)	Ag ppm (range)	MINE DUMP ASSAYS ppm		MINERALOGY (vein)	ALTERATION (wall rock)
Manganese	Bronco Rhyolite	500 ft	1-3 ft	70-80°	<0.002-0.100	0.2-9.0	0.080 Au	9.0 Ag	Calcite (black), quartz, MnO_2 (pyrolusite?); rhyolite breccia clasts.	Vein enclosed in a narrow (1-2 ft. each side) "bleached" zone of argillic and sericitic alteration within a larger zone of propylitic alteration.
Manila - Brunckow	Bronco Rhyolite and Bronco Andesite	700 ft	1-5 ft	80-90°	0.011-7.400	1.8-170.0	0.450 Au Also sample: LBO-RG-520-79 1.48 Au OPT	1.8 Ag 4.54 Ag OPT	Quartz, calcite, natroalunite MnO_2, hematite, jarosite, sericite, CuOx's, vanadanite, wulfenite; pyrite at depth; rhyolite and andesite breccia clasts.	Vein enclosed in a wide (>50 ft.) "bleached" zone of quartz, clays (kaolinite, etc.), sericite. Local quartz stringers as stockwork. Hematite and limonite after pyrite.
Footwall	Bronco Rhyolite	1000 ft	1-2 ft	45-60°	0.006-0.500	3.8-290.0	0.034 Au	290.0 Ag	Quartz, MnO_2 (pyrolusite?) galena and PbO, green CuOx's, iron oxides, rhyolite breccia clasts.	Quartz, sericite, clays (kaolinite?), quartz as silicification, argillic alteration of hanging wall. Traces of limonite after pyrite. Alteration ("bleached") zone overlaps with the Honolulu and Josephine alteration zones, composite zone 1000 ft. x 2000 ft. (approx.), grades into propylitic alteration.
Honolulu	Bronco Rhyolite	1150 ft	0.5-2 ft	45-65°	0.004-0.200	0.2-585.6	0.195 Au	494.4 Ag	Quartz, calcite, MnO_2 (pyrolusite?), iron oxides, tr CuOx, galena, rhyolite breccia clasts.	Quartz, sericite, clays (kaolinite?), quartz as silicification, clays as alteration of feldspars, traces of limonite after pyrite.
Josephine	Bronco Rhyolite	700 ft	0.5-2 ft	70-82°	0.006-0.950	0.8-9140.	0.060 Au	65.0 Ag	Quartz, calcite, MnO_2 (pyrolusite?), Iron oxides, cerussite, galena, stibnite(?), stetefeldite(?), rhyolite breccia clasts.	Quartz and sericite, quartz as silification and veinlets (stockwork), sericite as complete replacement of feldspars, traces of limonite after pyrite.
Rattler	Bronco Andesite	1600 ft	0.5-1.5 ft	75-77°	0.150 (mine dump sample)	42.0 (mine dump sample)	0.150 Au	42.0 Ag	Quartz, MnO_2 (pyrolusite), galena, stibnite(?), specularite, limonite, minor CuOx. Vuggy texture with crustifications.	Vein enclosed in a narrow (1-2 ft. each side) "bleached" zone of argillic and sericitic alteration within a large zone of propylitic alteration, epidote on fractures.

NOTE: Au and Ag ranges include wall rock assay results.

Wall rock alteration consists of a zone of "bleaching" adjacent to the quartz veins. This bleached zone consists of clays, sericite, alunite, silicification, and quartz stringers. In the vicinity of the Josephine, Honolulu, and Footwall veins, the rhyolite is strongly silicified and forms a silica cap (supergene?). These envelopes of "bleaching" (argillization and sericitization) range in thickness from 5 feet at the Rattler and Manganese veins to 40+ feet at the Manila-Brunckow vein. The argillization- sericitization-silicification zone at the Josephine, Honolulu, and Footwall veins is approximately 800-1,000 feet wide due to overlapping of the alteration zones. Some manganese and hematite staining is present at the surface within this zone. Sharp alteration contacts are present in the Bronco Andesite.

A northeast-trending zone of stockwork fracturing with quartz and limonite, hematite, and manganese is present from ~~near the~~ northeastern end of the Footwall vein extending through the Manila-Brunckow vein. The stockwork zone is 2,000 feet by 400 feet and probably contains pyrite and other sulfides at depth.

Peripheral to the "bleached" zone are zones of propylitic alteration. The alteration consists of epidote and chlorite. The epidote is present along fractures and as "clots". Chlorite typically replaces biotite and hornblende.

A possible siliceous sinter deposit is present north of the Charleston Road (Sample Nos. LBO-JW-580a-81 and LBO-DE-580b-81). The rock is composed of rhyolite breccia fragments in a amorphous silica matrix (Appendix 5).

The age of sericitization at the Charleston lead mine, 1 mile north of the Charleston Vein System, is 74.5 ± 3 m.y. (Newell, 1974,

p. 57) based on a K-Ar age date of sericite. This age indicates that the alteration and mineralization are coeval with the Schieffelin Granodiorite.

GEOCHEMISTRY

Gold and silver assays are summarized in Table 2 and in histograms in Figure 2 and are shown on Plate 2. A total of 88 samples are included in the table and histograms. The arithmetic average (not weighted) for gold is 0.50 ppm (0.015 opt) and silver (not weighted) is 42 ppm (1.2 opt), excluding a high-grade sample that assays 9140 ppm (266.6 opt). The maximum gold content is 7.4 ppm (0.216 opt).

Examination of the gold histogram (Figure 2) of all samples, vein and wall rock, indicates that 26 (29%) of the 88 samples contain >0.2 ppm gold (0.006 opt) and that 12 (14%) contain more than 1 ppm gold (0.03 opt). Similarly, the silver histogram shows that 23 (26%) samples contain >25 ppm silver (0.73 opt).

Fifty-seven wall rock samples were collected and the gold and silver assays for these are shown in Figure 3. Sixteen (28%) samples contain >0.1 ppm gold (0.003 opt); the maximum is 2 ppm gold (0.06 opt). Twenty samples (35%) contain >10 ppm silver (0.3 opt); the maximum is 95 ppm silver (2.8 opt).

Table 2. Summary of quantitative Au, Ag, Hg assays from the Charleston Vein System, 81 rock-chip samples and 7 dump samples; total 88 Samples. Analyses by Skyline Labs, Inc., Tucson, AZ.

Element	Arithmetic Average	Range
Gold*	0.50 ppm	<0.002 - 7.4 ppm
Silver*	146 ppm (42 ppm)***	<0.2 - 9140 ppm
Mercury	0.18 ppm	0.01 - 2.0 ppm

* 1 sample was <0.002 ppm
** 2 samples were <0.2 ppm
*** Average excluding highest grade sample

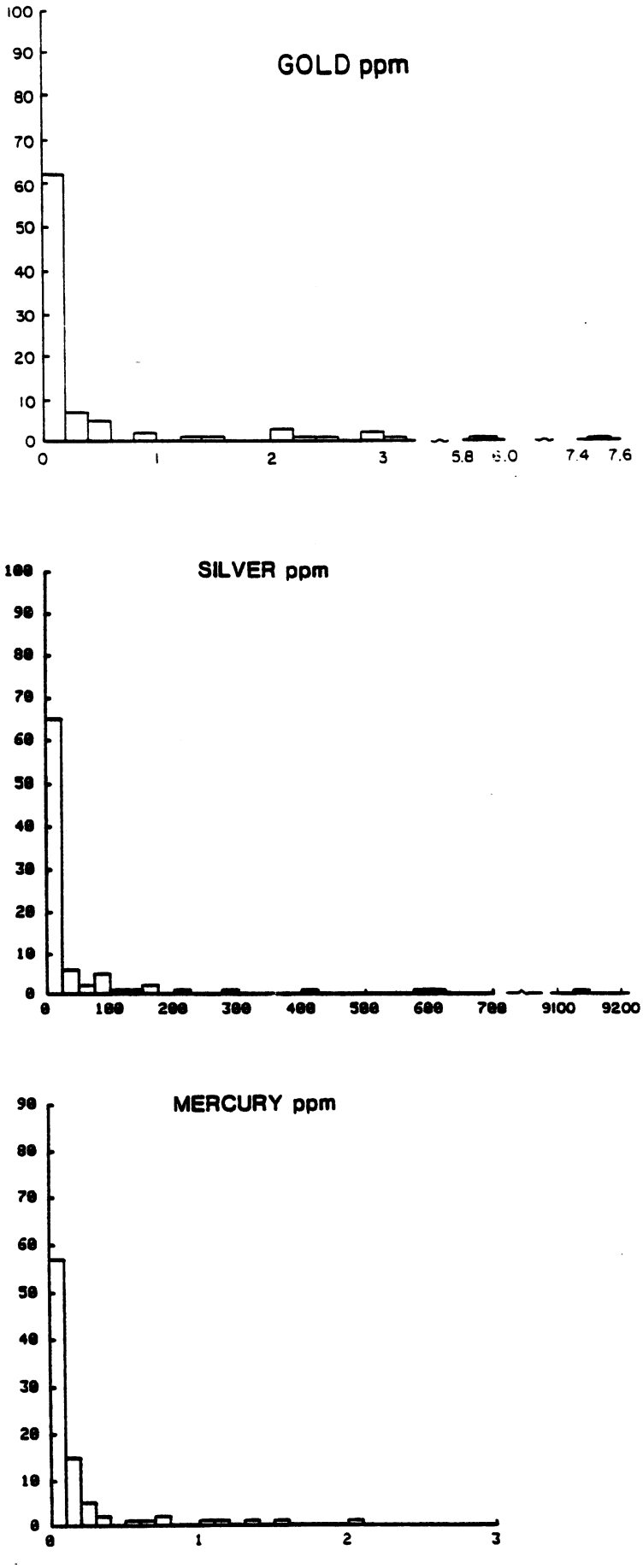
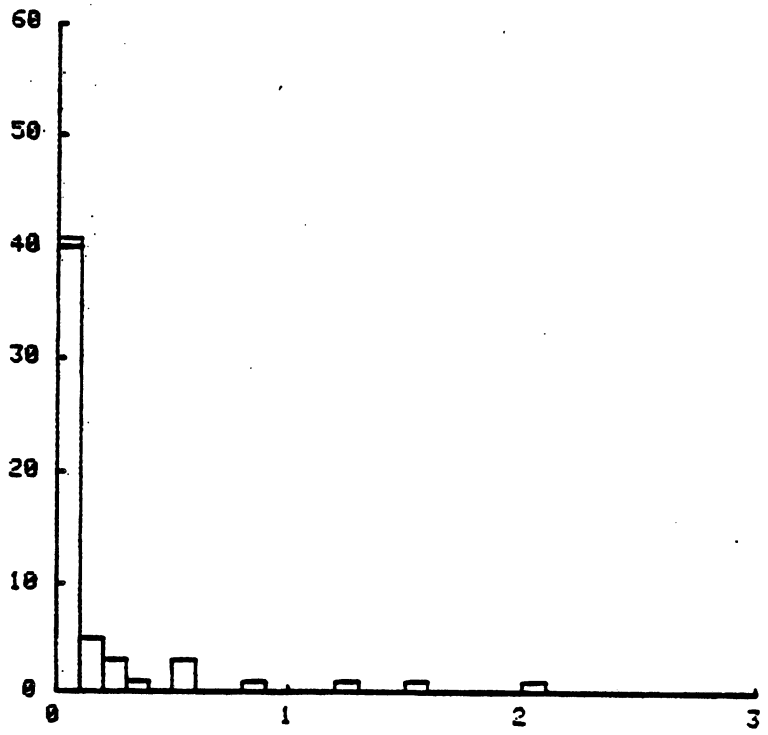


Figure 2. Histograms of gold, silver, and mercury, Charleston Vein System. Sample population is 88.

CHARLESTON VEIN SYSTEM WALL ROCK GOLD ASSAYS IN PPM



CHARLESTON VEIN SYSTEM WALL ROCK SILVER ASSAYS IN PPM

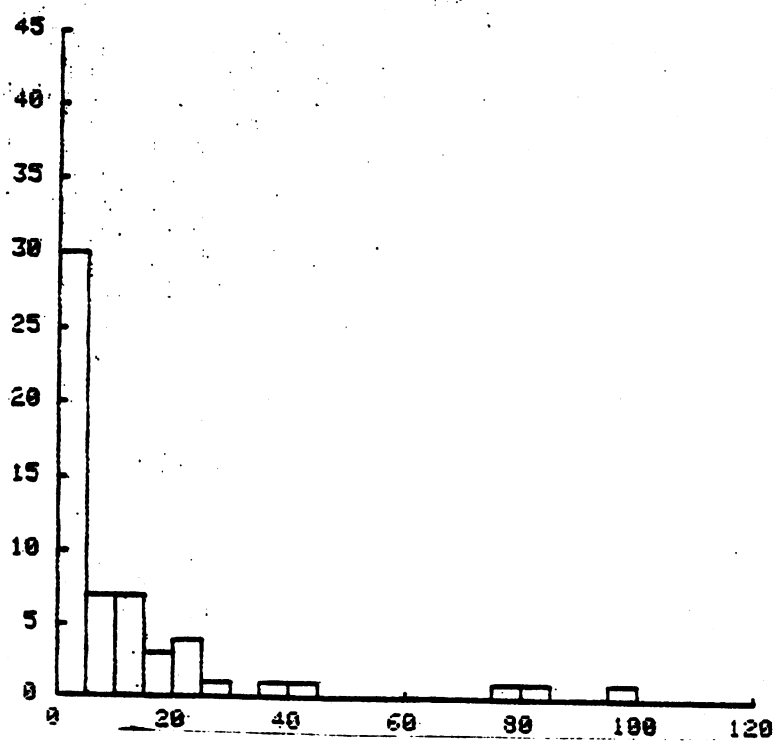


Figure 3. Histograms of gold and silver for wall rock samples, Charleston Vein System. Sample population is 57.

The Manila-Brunckow vein contains a zone of quartz vein and altered wall rock that is 5-6 feet thick and contains approximately 0.03 opt gold and 1.5 opt silver. The Josephine vein contains at one sample locality a 7 foot zone of wall rock that averages 0.6 opt silver. Similar zones are present on Honolulu and Footwall veins. The Manganese and Rattler veins appear to have less wall rock mineralization and alteration and therefore have minimal potential.

A distinct zoning of gold and silver is present from the Manila-Brunckow vein to the Josephine, Honolulu, and Footwall veins (Figures 4 and 5, Plate 2). The Manila-Brunckow vein contains several samples with >1 ppm gold (Ag:Au <100) while the Josephine, Honolulu, and Footwall veins do not contain any samples with >1 ppm gold (Ag:Au >100). Zoning maybe due to the fact that the Manila- Brunckow vein is hosted by or very near the Bronco Andesite (see cross section AA', Plate 1), while at the surface the other veins are hosted by the Bronco Rhyolite. Therefore, the grade of the gold mineralization at the Josephine, Honolulu, and Footwall veins may increase near and in the andesite at depth (see cross section BB', Plate 1). Data indicate that the Bronco Andesite is a more favorable host geochemically (ie., more reactive), however, the brittle nature of the rhyolite is more favorable for ground preparation by fracturing. Therefore, a significant target for the Josephine, Honolulu, and Footwall veins is their mutual interection at depth and their interection with the rhyolite-andesite contact (see cross section BB', Plate 1).

Mercury analyses were obtained on all samples and range from 0.01-2.0 ppm (Figure 2). The anomalous values are generally associated with more mineralized veins: Josephine, Honolulu, Footwall, and Manila-Brunckow (Figure 6).

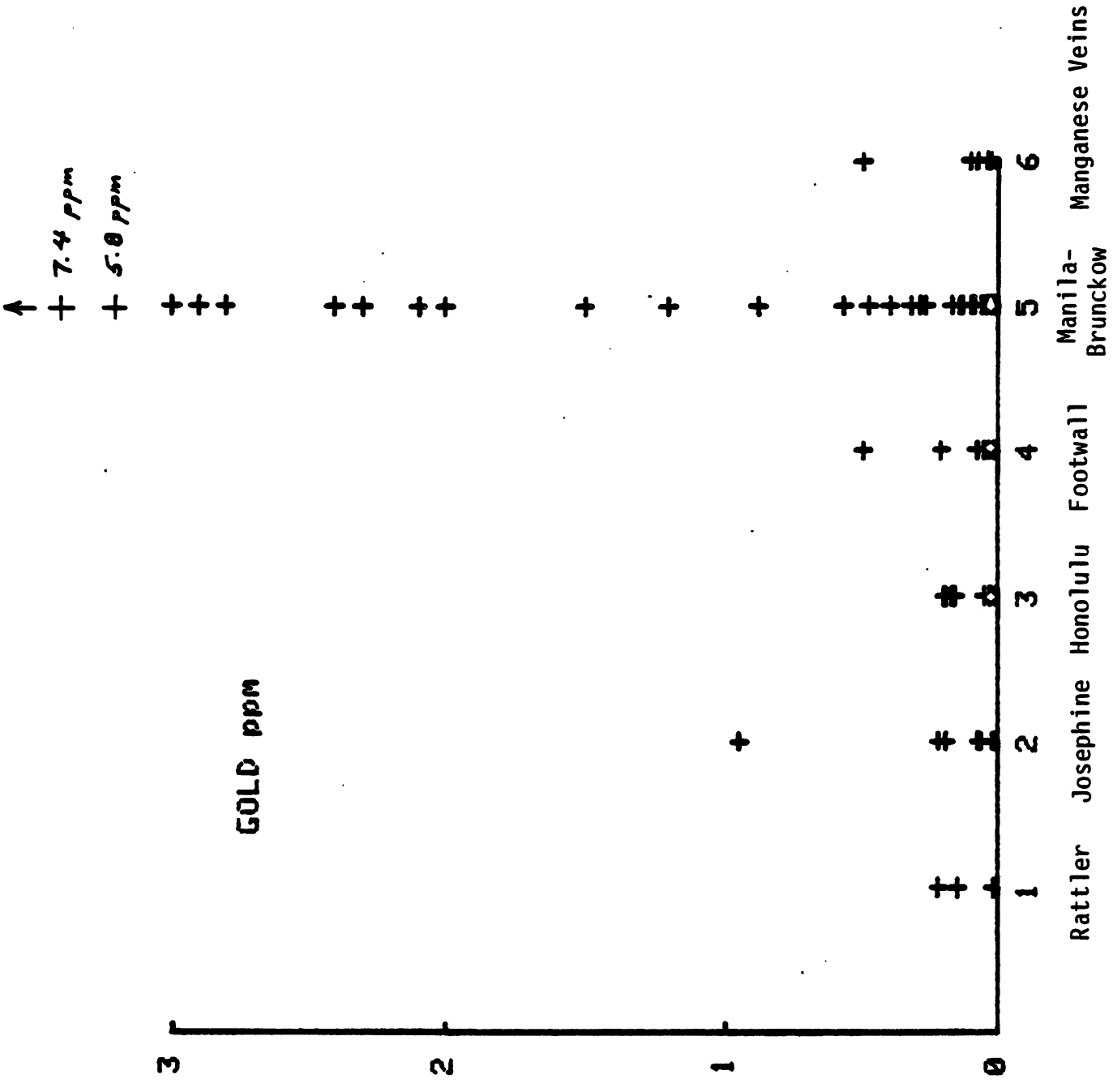


Figure 4. Cross plot of gold assays vs. vein

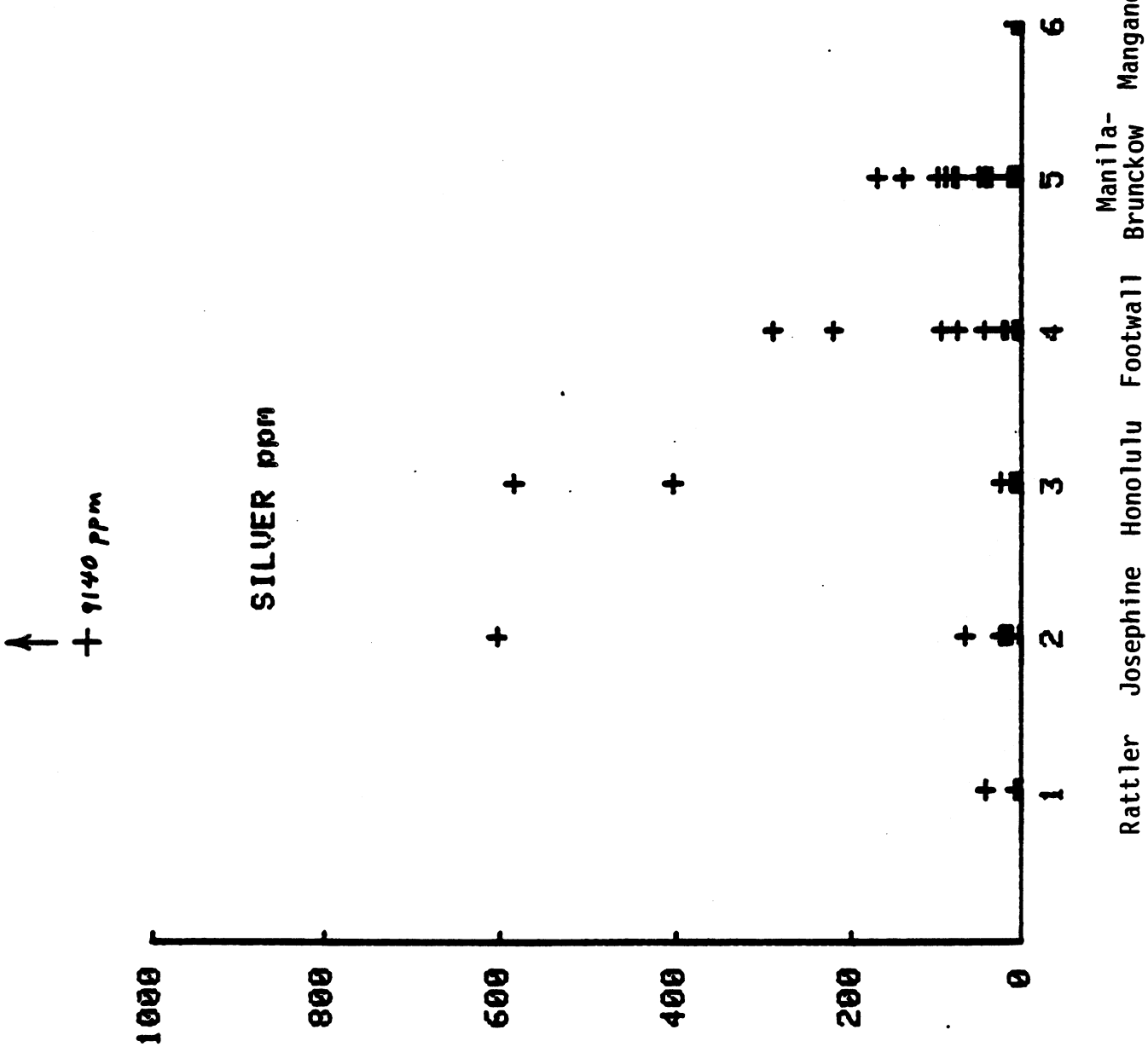


Figure 5. Cross plot of silver assays vs. vein.

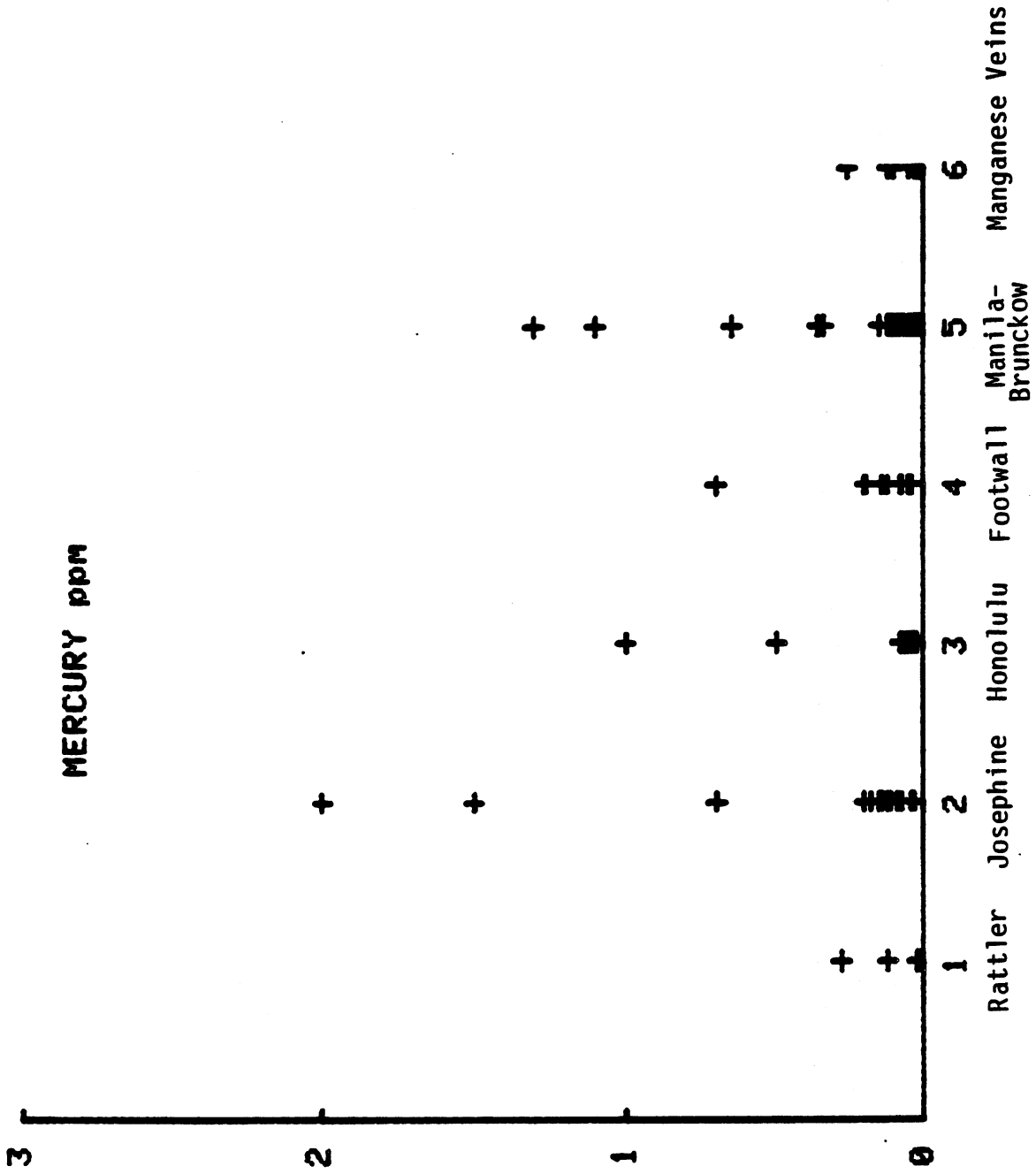


Figure 6. Cross plot of mercury assays vs. vein.

Table 3 shows the averages and ranges for selected elements from XRF semi-quantitative analyses. The data indicates significant lead, averaging 1.5%± and the sulfosalts andvanadates. Anomalous amounts of copper, zinc, molybdenum, iron, and manganese are also present.

Table 3. Summary of the semi-quantitative XRF scans (pertinent elements only) from the Charleston Vein System, 81 rock-chip samples and 7 dump samples; total 88 samples. Analyses by Fluo-X-Spec Analytical Laboratory, Denver, CO. n = number of reported values above detection limit. Arithmetic average is based only on reported values.

Element	n	Arithmetic Average (ppm)	Range (ppm)
Lead	87	14,500	31 - 200,000
Copper	88	1,465	26 - 14,000
Zinc	88	1,846	33 - 24,000
Silver	44	242	25 - 3,900
Arsenic	39	367	23 - 4,300
Antimony	49	1,290	35 - 30,000
Iron	88	21,800	2000 - 110,000
Barium	83	1,025	73 - 10,000
Vanadium	21	605	75 - 2,900
Molybdenum	28	144	10 - 1,400
Manganese	88	4,134	88 - 64,000
Titanium	64	958	160 - 11,000

Tellurium is also present and maybe in the form of gold tellurides. The maximum gold sample, 7.4 ppm Au, also contains 66 ppm Te.

Appendix 6 shows selected elements plotted versus the six principal veins.

GEOLOGIC AND ECONOMIC MODELS

Geologic Model

The alteration assemblage, "bleached" zone, associated with the Charleston Vein System is typical of the low pH assemblage described

by Buchanan (1981, p. 252) which generally accompanies precious metal mineralization in epithermal deposits (Figure 7). Hydrothermal alteration minerals at Charleston consist of sericite, quartz, clays (kaolinite), alunite, and pyrite indicative of a low pH environment and possibly indicative of boiling the hydrothermal fluids. A comparison of Figure 7 and cross section B-B' (Plate 1) shows other geologic similarities between Buchanan's model and the Josephine, Honolulu, and Footwall veins. The significance of Buchanan's model is that it indicates that the potentially productive veins at the Charleston Vein System are those with a significant low pH alteration assemblage. These include the Josephine, Honolulu, Footwall, and Manila-Brunckow veins in which erosion has not removed the mineralized zone above the boiling level, the precious metal horizon.

Escalante Silver Mine, Utah

The Charleston Vein System shares some important characteristics with the recently opened (1981) Escalante silver mine in southwestern Utah, operated by Ranchers Exploration and Development Company (Hogan, 1982, p. 1323). The pertinent characteristic of each are summarized in Table 4. The deposit contains reserves of 2.67 million tons of ore grading 12.5 opt silver with silver reserves of 33 million ounces. Daily production is 750 tons of ore yeilding 9000 ounces silver. The vein-type deposit is 5,100 feet long, 5-45 feet thick, and averages 19 feet thick. The silver-bearing quartz vein is hosted by Tertiary volcaniclastic beds of rhyolite composition. The vein is steeply dipping (N25°E/70°W).

One of the most important characteristics of the Escalante deposit in regards to evaluation of the Charleston Vein System is that at Escalante the silver is leached at the surface. The grade of silver minerali-ization varies with depth (Figure 8). Silver has been leached above the water table and enriched over a vertical distance of

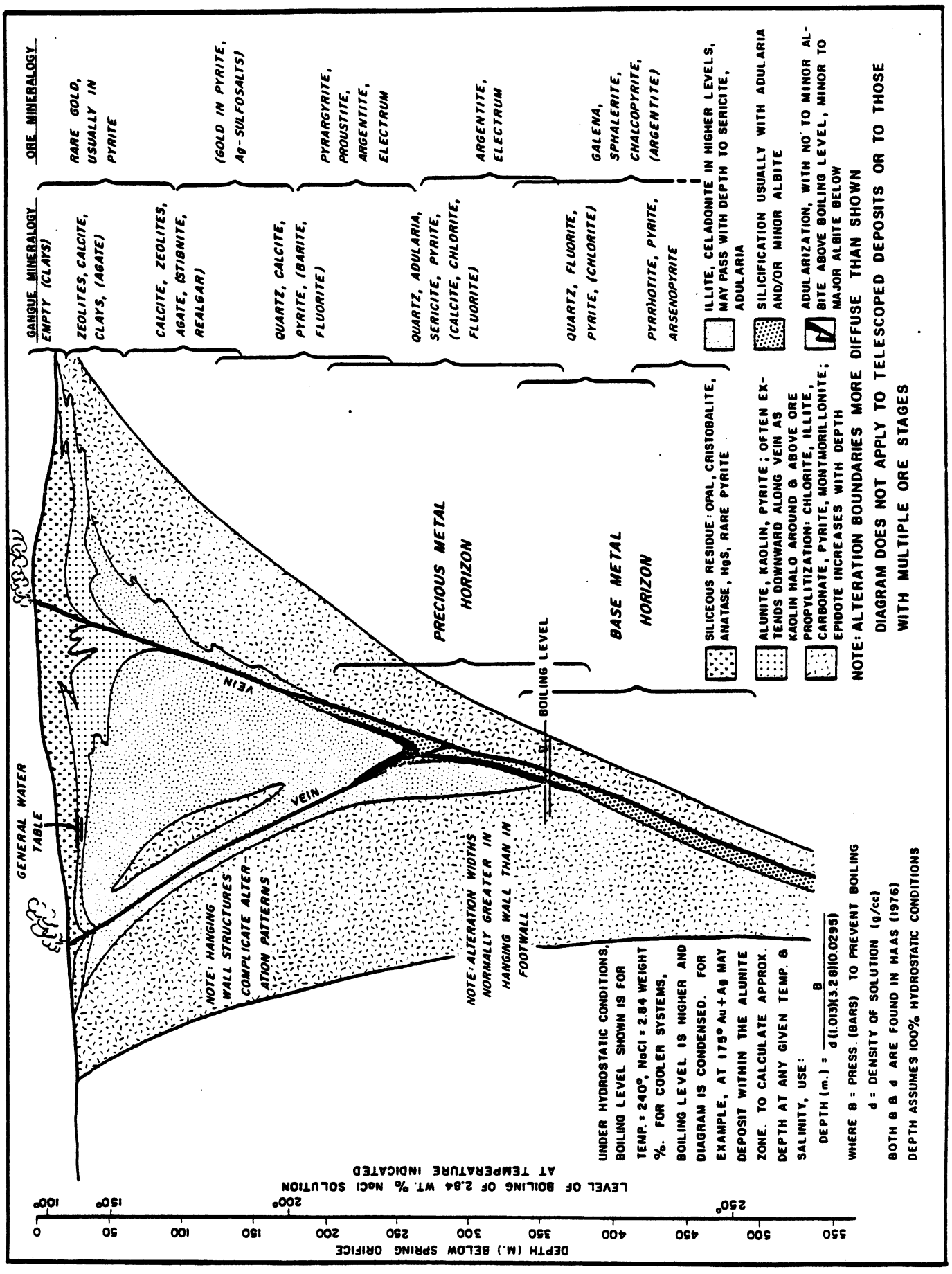


Figure 7. Buchanan's model of an epithermal precious metal system. (Buchanan, 1981,p 253)

TABLE 4. Comparison of the Charleston Vein System and the Escalante Vein Deposit.

	CHARLESTON VEIN SYSTEM	ESCALANTE VEIN DEPOSIT
Host Rock	Late Cretaceous rhyolite and andesite	Tertiary rhyolite
Ag Minerals	Ag-bearing galena, sulfosalts, chlorides (?). Stetefeldite [$AgSb_2(O,OH,H_2O)_6$]	Argentite (Ag_2S), Jalpaite (Ag_3CuS_2)
Vein Minerals	Quartz, galena, manganese oxides, hematite, limonite, calcite, barite, fluorite, secondary metallic minerals. Pyrite at depth.	Quartz, calcite, barite, fluorite, hematite, galena, cerussite, secondary metallic minerals above the water table.
Grade - Ag	2-4+ opt surface with high grade veinlets. Grade below water table unknown, no drill holes.	2-4 OPT surface to 150 feet depth. Water table at 130 feet grade increases to 12-18 opt from 150-550 feet.
Associated Elements	Pb, Zn, Cu, Au, Te, As, Sb, V, Mo, Mn	Pb, Zn, Cu, V, Mn, As, Sb
Vein Structure(s) Attitude	N55°E/45-90°SE	N25°E/70°W
Vein Structure(s) Strike Length	6,500 feet	5,100 feet

ESCALANTE SILVER MINE, UTAH

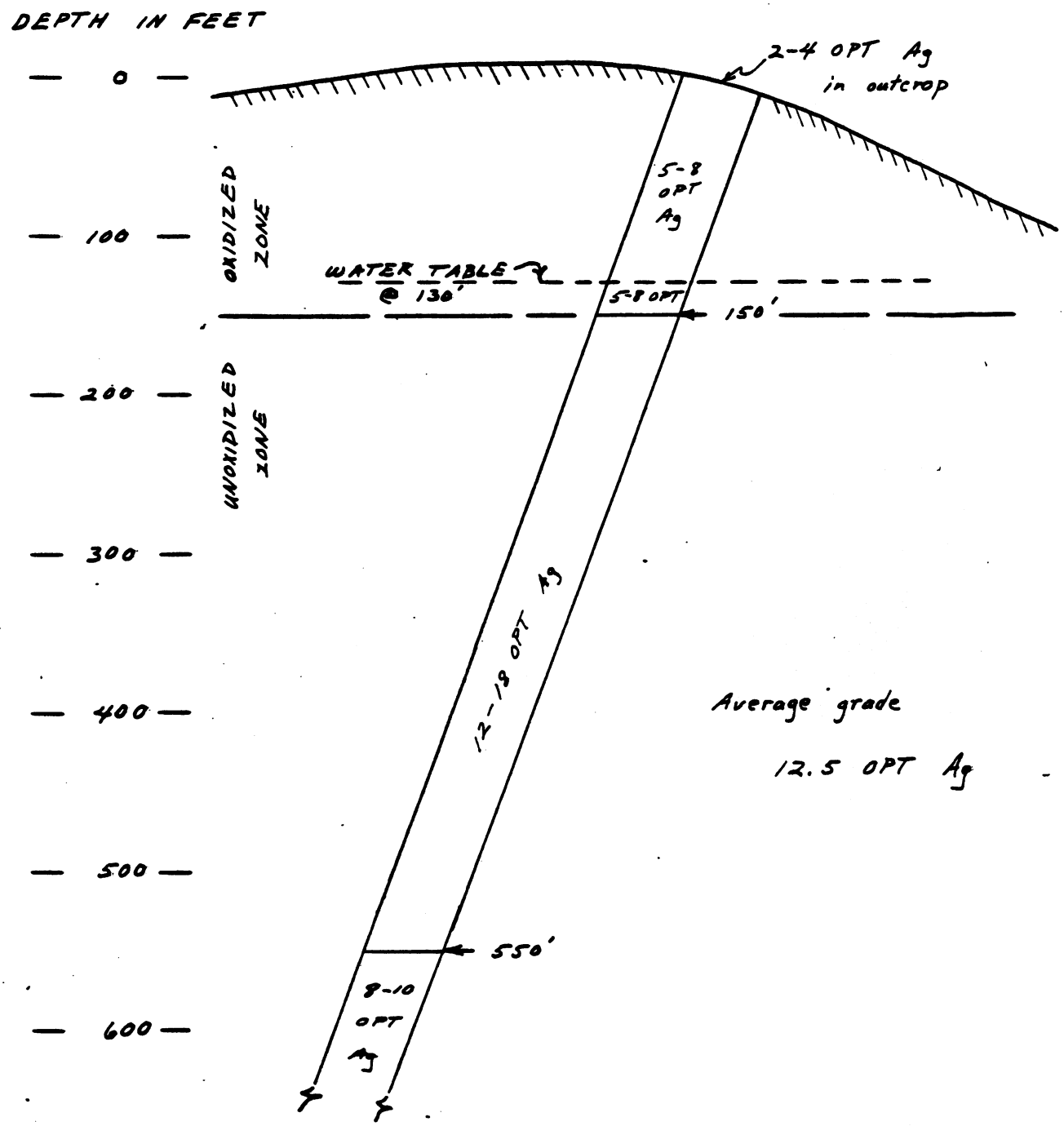


Figure 8. Escalante silver mine, relationship between silver grade and depth. (Hogan, and others, 1982, p1324)

400 feet below the water table. (Note: All Charleston Vein System samples are from above the water table, higher grades can be expected with depth.)

The Escalante deposit is being mined by underground methods, entirely mechanized, using rubber-tired equipment. Significant ground water flow is present. The mining technique and a pumping program were developed to control mine water. Approximatly 80% of the ore deposit is below the regional water table.

Charleston Vein System Targets

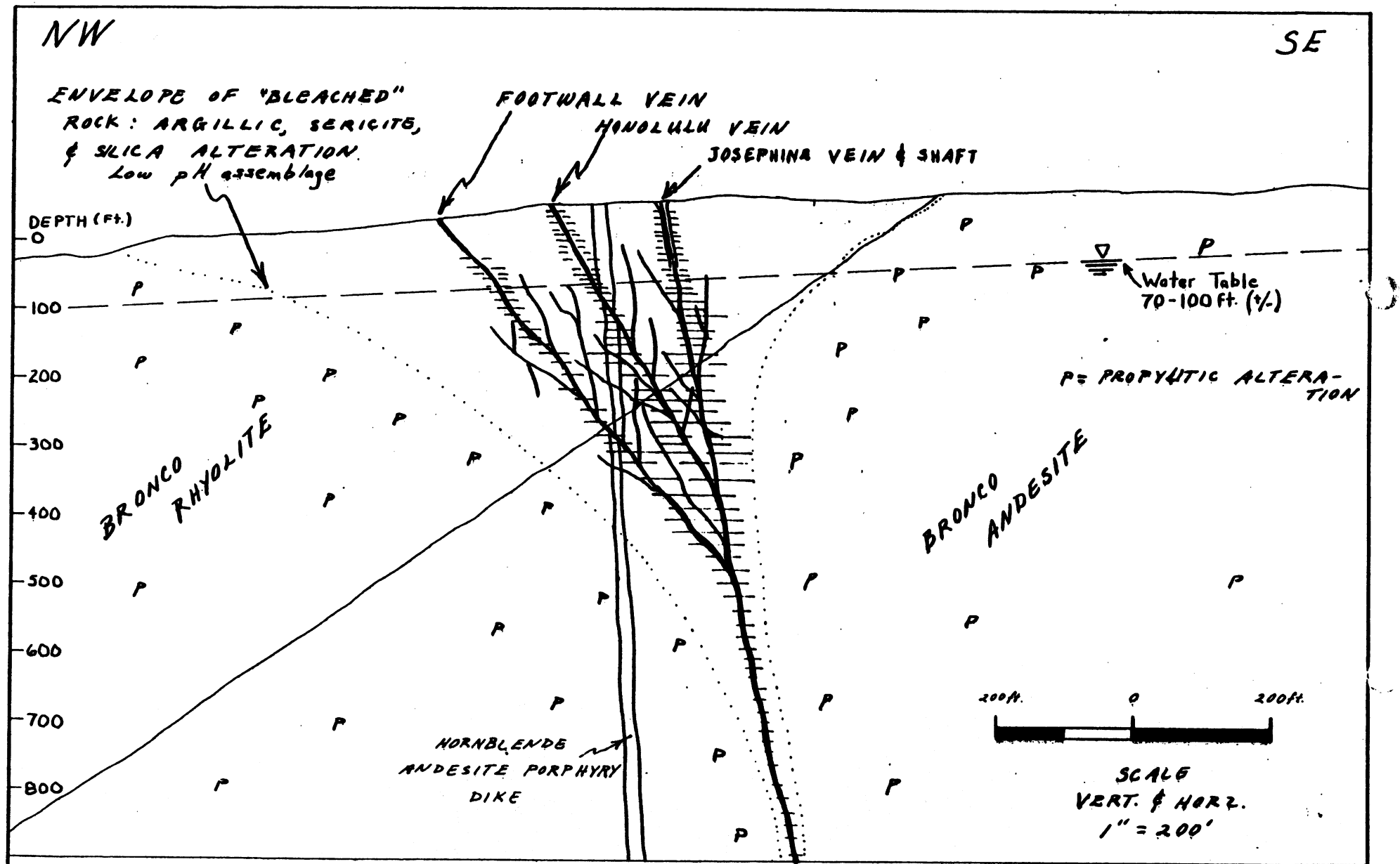
Two principle targets are present within the Charleston Vein System on Tenneco fee land:

1. Josephine-Honolulu-Footwall Vein Intersection: Based on surface and near surface vein attitudes, it is probable that these three veins intersect at a depth of 400-500 feet (Figure 9). The brittle nature of the silicified rhyolite has yielded wall rock mineralization. The rhyolite at the surface locally contains 0.5+ opt Ag and is probably leached. Supergene enrichment at and below the water table (70-100 feet below the surface) may produce grades significantly higher, 6-10 opt Ag(?). High grade, bonanza-type mineralization can also be expected. Therefore, a potential deposit (open pit) may have the following dimensions, tonnage, grade, and gross value:

$$\frac{2{,}000 \text{ feet} \times 400 \text{ feet} \times 50 \text{ feet}}{15 \text{ cubic feet/ton}} = 2{,}700{,}000 \text{ tons}$$

@ 6 opt Ag, 16 MM oz, $160 MM gross value @ $10 per oz.
@ .05 opt Au, 0.13 MM oz, $67 MM gross value @ $500 per oz.
TOTAL $227 MM gross value

The amount of gold mineralization may increase at or near the rhyolite-andesite contact.



HYPOTHETICAL CROSS SECTION OF THE FOOTWALL, HONOLULU, & JOSEPHINE VEINS SHOWING POTENTIAL TARGET

HYPOTHETICAL MINERALIZED ZONE — TARGET

Figure 9

2. Manila-Brunckow Vein: This vein consists of two subparallel quartz veins (as exposed) seperated by 5-20 feet of altered and mineralized wall rock (Figure 10). Therefore, the mineralization is over a greater thickness than just a single vein. A potential deposit may have the following dimensions, grades, and tonnages exploitable by open pit mining:

$$\frac{1{,}000 \text{ feet} \times 400 \text{ feet} \times 20 \text{ feet}}{15 \text{ cubic feet/ton}} = 500{,}000 \text{ tons}$$

@ 4 opt Ag, 2 MM oz,	$ 20 MM gross value	@ $10 per oz.
@ 0.1 opt Au, 0.05 MM oz,	$ 25 MM gross value	@ $500 per oz.
TOTAL	$ 45 MM gross value	

3. Other buried targets could also be present and pursued if these targets proved to be of economic significance.

CONCLUSIONS AND RECOMMENDATIONS

The Charleston Vein System is a large hydrothermal precious metal system on the western edge of the Tombstone Mining District. Potential exists for significant economic deposits associated with quartz veins and low-grade, halo-type mineralization in altered and fractured volcanic rock. The target with the most potential on Tenneco fee land is the probable intersection and halo type mineralization of the Josephine-Honolulu-Footwall veins. Significant supergene enrichment of the silver values can be expected at and below the water table (70-100 feet in depth).

Owing to the potential for a gold and silver ore deposit(s) and the inability to test these targets without drilling, three angle core holes are proposed. Two moderately deep holes on the Josephine-Honolulu-Footwall veins and one shallow hole on the Manila-Brunckow

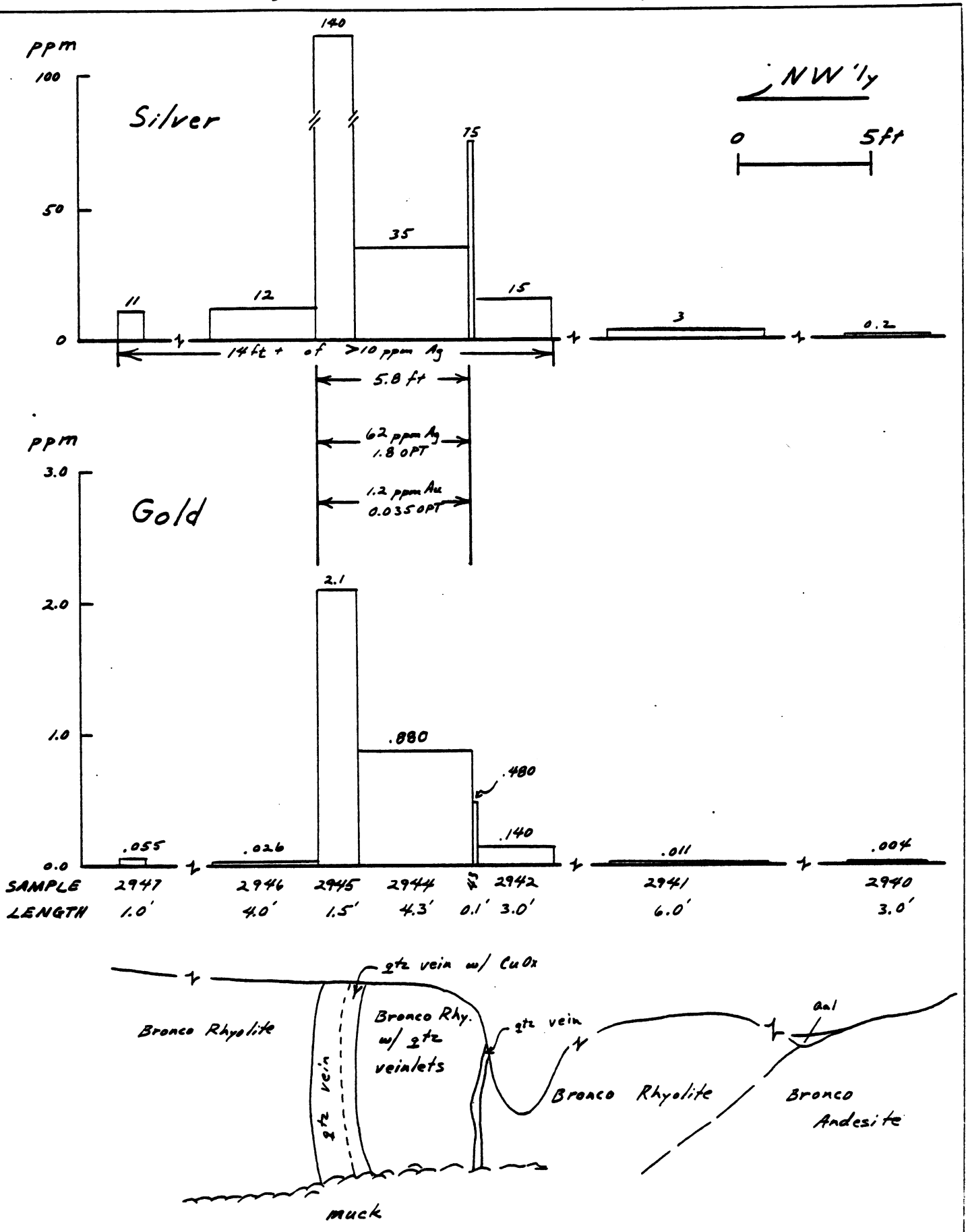


Figure 10. Manila-Brunckow vein, rock chip sample assay plot.

vein. All holes should be sited to intersect the vein structures below the water table. Total cost per foot is estimated at $60 (includes site preparation, assays, etc.).

PROPOSED CORE HOLES		
CHV-1	(45°)	T.D. 600 feet
CHV-2	(75°)	T.D. 600 feet
CHV-3	(45°)	T.D. 300 feet
	TOTAL	1500 feet

Total drilling costs would be approximately $90,000.

Drill data would provide HIMCO management with the information to determine if the prospect could lead to a viable mine which might meet HIMCO's economic criteria. The Charleston Vein System would be even more promising if additional prospects in the Tombstone District are pursued and collective tonnages are developed. If an ore deposit is present, HIMCO has the geological, metallurgical, and other required professional staff to bring such a deposit into production in a timely manner.

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TABLE XXII
PROVEN COPPER RESERVES IN ARIZONA 1/

COMPANY	DEPOSIT	MAJOR MINERAL TYPE	MILLIONS OF TONS	AVERAGE CU CONTENT (%)	REMARKS
ANAMAX MINING CO.	Twin Buttes	Sulfide	329	0.67	With 0.03% Mo; cutoff @ 0.2% Cu
	"	"	300	0.80	Pub. 1973; "outside current mine plans"; cutoff @0.4% Cu
	"	Oxide	57	1.10	Cutoff @0.6% Cu
	"	"	28	0.49	Pub. 1973; cutoff @ 0.4% Cu
	Helvetia	Sulfide	320	0.64	Pub. 1973; cutoff @ 0.3% Cu
	"	Oxide	20	0.55	Pub. 1973; acid soluble Cu; cutoff @ 0.3% acid soluble Cu
	Peach Elgin	Mixed	23	0.75	Pub. 1973; cutoff @ 0.4% Cu
ASARCO INC.	Mission	Sulfide	104.455	0.73	Excludes contribution of 31.5M tons to Eisenhower Mining Co.
	Sacaton (OP)	"	21.140	0.70	
	Sacaton East (UG)	"	14.898	1.25	
	San Xavier	"	166.902	0.52	
	"	Oxide	1.050	1.48	
	Silver Bell	Sulfide	26.059	0.66	
	"	Oxide			
AZTEC MINING CORP.	Aztec	Oxide	2	1.00	Unpublished est.
BS & K MINING CO.	Atlas	Mixed			
CASA GRANDE COPPER CO.	Casa Grande	Mixed	350	1.00	

TABLE XXII (Continued)
PROVEN COPPER RESERVES IN ARIZONA 1/

COMPANY	DEPOSIT	MAJOR MINERAL TYPE	MILLIONS OF TONS	AVERAGE CU CONTENT (%)	REMARKS
CITIES SERVICE CO.	Cactus	Oxide	20	0.70	Unpublished est.
	Copper Cities	"		0.50	Pub. 1976
	Miami	"			
	Miami East	Mixed (?)	55	1.95	Pub. 1973
	Old Dominion	Sulfide			
	Pinto Valley	"	350	0.44	Pub. 1972 "recoverable Cu"
	Red Hill	Mixed			
CRANE CO.	Dragoon	Mixed			
CONTINENTAL OIL CO.	Poston Butte	Mixed	500	0.50	Pub. 1972
CYPRUS MINES CORP.	Bagdad	Sulfide	290	0.49	
	"	Oxide	21	0.35	Acid soluble Cu
	"	"	95	0.22	Stockpile; acid soluble Cu after prior leaching.
	Bruce	Sulfide	0.1276	3.73	Pub. 1976: with 12.8% Zn
	I-10	Mixed	100	0.52	Unpublished est.; with 0.02% Mo
	Johnson	Oxide	9.9	0.50	Acid soluble Cu
	"	Mixed	10	0.60	Pub. 1974
CYPRUS PIMA MINING CO.	Pima	Sulfide	146	0.48	
EL PASO CO.	Emerald Isle	Oxide	1.5	0.40	Pub. 1977; 3Mt @ 0.1% Cu
EISENHOWER MINING CO.	Palo Verde (Anamax)	Sulfide	125	0.61	
	Palo Verde (ASARCO)	Sulfide	31.5	0.70	
FREEPORT MINERALS CO.	Santa Cruz	Sulfide			

TABLE XXII (Continued)
PROVEN COPPER RESERVES IN ARIZONA 1/

COMPANY	DEPOSIT	MAJOR MINERAL TYPE	MILLIONS OF TONS	AVERAGE CU CONTENT (%)	REMARKS
HECLA MINING CO.	Lakeshore	Sulfide (dissm)	241	0.70	Pub. 1969
	"	" (tactite)	23.6	1.69	" "
	"	Oxide	207	0.71	" "
INSPIRATION CONSOLIDATED COPPER CO.	Christmas	Sulfide	33.413	0.905	Pub. 1977; "recoverable Cu"
	"	Oxide			
	Inspiration Area Mines	Mixed	180.136	0.481	" "
	Ox Hide	Oxide	31.328	0.147	" "
	Sanchez	"	79.362	0.180	" "
KENNECOTT COPPER CORP.	Chilito	Sulfide			
	Ray	Mixed	650	0.80	Reported 1977
	Safford	"	2,000	0.41	"
	Safford Ext.	"			
KERR-MCGEE CORP.	Red Mountain	Sulfide		0.71	Pub. 1970; 100Mt poss
KEYSTONE MINERALS INC.	Korn Kob	Oxide	8	0.50	Pub. 1973
MCALESTER FUEL CO.	Zonia	Oxide	1	0.53	Unpublished est.
MULTIPLE OWNERS	Bisbee-North	Mixed (?)	20	0.80	"
NEWMONT MINING CORP.	Copper Creek	Sulfide			
	Kalamazoo	"	565	0.72	Published 1969
	Magma	"	10.2	5.80	Published 1970
	San Manuel	"	500	0.728	Published 1969
	"	Mixed	130	0.70	" "
	Vekol Hills	Sulfide	105	0.56	Pub. 1978; minable by open pit; with 0.01% Mo; 16Mt oxide Cu

TABLE XXII (Continued)
PROVEN COPPER RESERVES IN ARIZONA 1/

COMPANY	DEPOSIT	MAJOR MINERAL TYPE	MILLIONS OF TONS	AVERAGE CU CONTENT (%)	REMARKS
NAVAHO TRIBE (?)	White Mesa	Oxide	2	0.75	Pub. 1955
OCCIDENTAL PETROLEUM CO.	Van Dyke	Oxide	100	0.50	Pub. 1977
ORACLE RIDGE MINING PARTNERS	Oracle Ridge	Mixed (?)	11	2.25	Reported 1977; with 0.5oz Ag/ton (pub.
PENNZOIL CO.	Blackwater	Oxide			
	Esperanza	Sulfide	21.850	0.42	With 0.022% Mo
	"	Oxide			
	Mineral Park	Sulfide	49.541	0.30	With 0.036% Mo
	"	Oxide			
	Sierrita	Sulfide	459.842	0.32	With 0.033% Mo
PHELPS DODGE CORP.	Copper Basin	Sulfide	175	0.55	Pub. 1973: minable open pit; with 0.0
	Copper Queen	Mixed			
	Dos Pobres	Sulfide	400	0.72	Pub. 1977
	Lavender	"			
	Metcalf	"	415.970	0.77	Pub. 1975
	Morenci	"	662.462	0.80	"
	New Cornelia	"	126.623	0.63	"
	United Verde	"			
	"	Oxide			
PRODUCERS MINERALS CORP.	San Juan	Oxide	20	0.50	Unpublished est.
RANCHERS EXPLORATION & DEVELOPMENT CO.	Bluebird	Oxide	75	0.52	Pub. 1971
	Old Reliable	"	4	0.74	"

TABLE XXII (Continued)
PROVEN COPPER RESERVES IN ARIZONA 1/

COMPANY	DEPOSIT	MAJOR MINERAL TYPE	MILLIONS OF TONS	AVERAGE CU CONTENT (%)	REMARKS
V. B. SMITH ESTATE	Dymamite	Sulfide			
STANDARD METALS CORP.	Antler	Sulfide	5.1		With Zn values
STRONG & HARRIS	Strong & Harris	Mixed	60	0.60	Unpublished est.; with 0.70% Zn
SUPERIOR OIL	Pine Flats	Sulfide	12	0.50	Unpublished est.
UNDETERMINED	Mineral Hill	Mixed			
UNION OIL	Turquoise	Oxide	10	0.50	Pub. 1970
UNITED STATES GOVERNMENT	Park Hill	Mixed (?)	30	0.45	Unpublished est.
UNITED STATES GOVERNMENT AND U.S. METALS CORP.	Apex	Mixed (?)			

Source: Company Annual Reports, Form 10-K's, and Prospectus; Professional Publications.

1/ Reserves are given with a grade of average total copper content as of December 31, 1977, unless stated otherwise under "Remarks". As used in this table, reserves generally mean those estimated quantities of ore which under presently and reasonably foreseen technical and economic conditions may be profitably mined and sold or processed for the extraction of their constitutent values.

COMMONWEALTH PROJECT
Cochise County, Arizona USA

Property Description: The Commonwealth Gold Project, controlled by Harvest Gold Corporation of Evergreen, Colorado consists of 1020 acres of **patented** land located in Cochise County, Arizona near the old town of Pearce. Historic production was from underground vein mines which produced an estimated 122,000 ounces of gold and 13 million ounces of silver. Currently, an estimated 258,000 gold ounce equivalent open-pitable reserve has been defined by drilling and underground sampling.

Ownership: The Commonwealth property consists of 320 acres of patented claims under lease and option, plus 700 acres of fee land under option. ***All expected operational facilities are on private lands***, although BLM ground nearby may be needed for a waste dump. The property is covered by several agreements, however the major contract requires a 3.52% NSR royalty, decreasing to 1.76% after $2.5 million as been paid, further reducing to 0.88% royalty once a total of $3.25 million has been paid. In addition, Harvest is required to pay a 5% net profits interest, escalating to a 10% NPI after recovery of two times the invested cost. This is payable to the property vendor. Harvest is currently negotiating to remove the vendor obligations.

Ore Reserves: Reserve information consists of 156 drill holes from ten separate drilling programs between 1975 and 1995, aggregating some 52,000 feet of rotary and core drilling, yielding approximately 9,300 gold and silver assays. Drillhole data is combined with over 8,500 linear feet of underground sampling which yielded over 1,600 additional gold and silver assays. Harvest with Atlas Corporation has combined all this information and has used MEDSYSTEM & TECHBASE software to develop a reserve model and pit plan. The total data base has a 1996 dollar value of approximately $2.5 million.

A prior optionee, Atlas Corporation has calculated a conservative, diluted mineral reserve of approximately 9.5 million tons at a grade of over 0.027 oz per ton ***recoverable*** gold equivalent at a $5.21 external pit cutoff. Their **diluted mineable reserves were estimated at 9.5 million tons at an inplace grade of 0.023 oz per ton gold and 1.54 ounce per ton silver** (218,500 ounces of gold and 14.63 million ounces of silver in place or about an 0.044 gold equivalent). Reserves are available at a 2.7 to 1 strip ratio, however an undrilled internal portion of the reserve zone may increase ore and decrease waste. Atlas did not use an internal cutoff grade and hence "wasted" potential ore to the dumps with their design. The deposit is open ended to the east. Harvest is currently having an a noted international independent consultant produce a revised mineable reserve.

Overall gold recovery using heap leach is estimated at 82% with a silver recovery at 33%. The resulting average *mineable recoverable gold equivalent is estimated at a bit over 0.027 ounce per ton* yielding a total of 258,000 gold equivalent ounces (or $103 million at $400 gold). If the reserve can be expanded, a 91% gold and 82% silver recovery can be obtained from conventional CCD cyanide milling yielding *a recoverable gold equivalent of about 0.052* (or over 400,000 ounces of recoverable gold equivalent valued at $160 million).

Harvest estimates that an additional 13 million tons of similar grade ore is likely to be developed within and adjacent to the known reserve and on outlying properties with additional drilling. Locally nearby, significant, but as yet uncontrolled properties, have potential that when combined with Commonwealth reserve **exceeds 1.4 million gold equivalent ounces,** some of which has already been partially drilled out.

Geology: The Commonwealth is a low sulfur, epithermal, bonanza-type precious metal occurrence, modified and enriched by secondary weathering processes. Silver and gold occur in a series of quartz veins, massive and sheeted, localized along and between two major faults with "dry" gold-bearing limonite seams interspersed between the veins. All veins exhibit classic epithermal features. Gangue includes quartz, calcite, adularia and sercite. Iron oxides are abundant, however the original sulfide content was low, and is now thoroughly oxidized. Minor copper oxides are found on dumps, but is rare.

Metallurgy: Extensive tests on drill cuttings and bulk samples have aggregated over 150 bottle rolls and 28 column leach tests, yielding an average of 82% gold recovery and 33% silver recovery. Although, three different rock types are present, approximately 74% of the reserve is excellent heap leach ore which will likely yield over 84% of its contained gold by 1/2" crushing without agglomeration. The remainder must be crushed to 1/8 inch for similar recoveries, with two to four pounds of Portland cement for agglomeration. No cyanicides are present. Cyanide consumption will be less than 0.5 lb. per ton, while lime should not exceed 1.5 lb. per ton.

Infrastructure: The warm climate of southeastern Arizona is ideal for year-round mining and leaching operations. The proposed minesite is located about 4500 feet above sea level in a high desert environment. Site access is via one half mile of paved road off US Highway 191. Sufficient power and water are located on site. Local town facilities are only 3 miles north on Highway 191.

Permitting: Harvest commenced mine permitting activities in late 1994, but Atlas Corporation suspended that activity in 1995. Recently, Harvest has re-commenced those activities using the newly developed Atlas data. An additional 6 to 8 months will be required to obtain a state aquifer protection permit. To date, consultants has researched the regional water situation, toured the site and has prepared a map and water data summary for a three mile radius around the Commonwealth Mine. Water consultants stated that no problems should be encountered. An archeological study and an environmental site review have been compiled by noted consultants. No federal EIS requirements are needed. All other remaining permit requirements are minimal.

Recommended Program: A final feasibility stage of development is envisioned. This program would involve final permitting activities, final metallurgical refinement, some infill drilling to eliminate ore reserve gaps, a final heap leach design analysis and thence final mine and plant design. Approximately $1,000,000 and approximately 8 to 10 months will result in all permits in hand. A 3300 TPD heap leach mine construction budget is estimated to cost approximately $6.5 million and 5 months duration to implement. Good used equipment and contract mining appears to be indicated.

Harvest Gold Corporation

Box 2590
Evergreen, Colorado 80437
Ph: 303-674-3111, Fax: 303-674-3222

Date: October 9, 1996

Randy Moore
Cambior Explorations
230 S. Rock Blvd.
Reno, Nevada 89502

Sent via Fax: 702-856-4549

Re: Commonwealth Project, Cochise County, AZ (the "Project)

Dear Mr. Moore:

As per your request, enclosed please find a confidentiality agreement and summary covering the above referenced project. Once the confidentiality agreement is signed and returned via fax, we will forward the attached list of information via Fed Ex.

Most of these items are in report form with but few maps. All information is digitized and contained in a database form, either for **MedSystem** or **TechBASE**. Detailed met and environment reports are also available. Hard copies of our maps are at our Sunsites, AZ office, about 85 miles southeast of Tucson. A tour can be easily arranged. We have a project manager on site. However, if desired, I can fly down with a few day's notice.

At Commonwealth, we feel we can permit and build a 1.25 million ore-ton (annual) heap leach mine in about 15 months. All of Harvest management has built and operated heap leaches before. We figure about 10 months for the permits, and about 5 months for construction. Total budget equals about $7.5 million US. This would produce about 40,000 ounces (gold equivalent annually) for over 6 years with a longer life from good exploration targets and prospects adjacent and nearby.

We look forward to your interest.

Rich Forrest, Vice President

Harvest Gold Corporation

Commonwealth Project Reports available October 1, 1996

All non-defined reports compiled by Harvest Personnel

1) Pre-feasibility Report, 45 pages, April 1995 (general review of project, currently being updated).

2) Analysis of Past Exploration Work, 8 pages, September, 1996 (review of past work).

3) Ultimate Area Reserve potential, 7 pages, September, 1996 (summary of exploration targets).

4) San Ramon, et al, Mineral Prospects, 9 pages, Sept 1996 (review of adjacent properties).

5) Metallurgical Testing, 16 pages, September, 1996 (review of met testing)

6) Minesite Permitting & Cultural Concerns, 8 pages, April, 1995 (currently being updated)
Information based on newly completed Harding-Lawson Enviromental review.

7) Kappas-Cassiday, Prelim report, (+80 pgs w/ appendix) May, 1996 (recent met testing)
Sent only upon request.

8) Capital budget and timeline, 17 pages, April, 1995 (currently being updated)

9) Sovereign Gold Company (Argentine), 19 pages, April, 1995 (Harvest's Argentina properties)
Sent only upon request.

Harvest Gold Corporation

Box 2590
Evergreen, Colorado 80437
Ph: 303-674-3111, Fax: 303-674-3222

Date: October 9, 1996

Randy Moore
Cambior Explorations
230 S. Rock Blvd.
Reno, Nevada 89502

Sent via Fax: 702-856-4549

Re: Confidentiality Statement
Commonwealth Project, Cochise County, AZ (the "Project)

Dear Mr. Moore:

This letter is in response to your inquiry regarding information concerning the above referenced Project. We, being Harvest Gold Corporation and its affiliates ("HARVEST") will make available to you and your company (including your company's officers, directors, subsidiaries and affiliates, all herein termed the "Company") information necessary for review and evaluation of the above Project, subject to the following conditions:

1. The Company will hold all information in strict confidence for one year from the date of the Company's acceptance of this letter, except such information which: (a) prior to the Company's receipt thereof (i) was publicly available, or (ii) was already in the Company's possession from a source other than HARVEST, or (b) after the Company's receipt thereof (i) becomes publicly available without the fault of the Company, or (ii) is acquired by the Company from a third party free of any restrictions as to its disclosure.

2. All confidential information shall remain the property of HARVEST. Upon HARVEST's written request, the Company shall return to HARVEST all such information, together with any summaries of or extracts from such information and all copies thereof, which the Company may have in its possession or control. The Company shall also remove all such information from computer storage. The Company shall send a copy of HARVEST's request to all persons to whom the Company has disclosed such information.

3. The Company will use the information only for the purpose of evaluation of the Project for acquisition through or by the services of HARVEST and for no other purpose.

4. The Company shall not disclose such information to any third party other than its own consultants, except as may be authorized in writing by HARVEST. The dissemination of such information within the Company's internal organization shall be limited to those employees, officers, directors or its consultants whose duties justify their need to know such information and then only upon

the basis of a clear understanding by such individuals of their obligation to maintain the confidentiality of such information and to restrict the use thereof solely for the purpose of evaluation of the project.

5. Neither the Company nor any person or entity to whom the information is disclosed by the Company shall, within one year from the date of the Company's acceptance of this letter, acquire any interest, direct or indirect, in any mining claims, leases, mining rights, or fee lands within one mile from the lands included in the above project and further described herein as:

Sections 33,34, & 35 of T.17 S. R. 25 E. Cochise County, AZ
Sections 1,2,3,4, & 5 of T18 S. R 25 E. Cochise County, AZ

Any interest acquired in violation of this paragraph shall, at HARVEST's request and at no cost to HARVEST, be immediately conveyed to HARVEST.

6. Should the Company wish to examine the information in greater detail or conduct an actual on-site visit of the property, HARVEST shall be informed of such desire, and the Company shall allow HARVEST the opportunity to accompany the Company officials conducting such examination. In all events, factual information generated by the Company regarding the Project and its assets during such examinations shall be made available to HARVEST at no cost with 60 days of the examination.

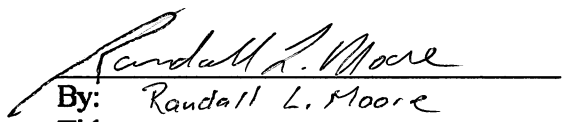
7. In the event the Company shall desire to acquire an interest in the Project, the Company hereby agrees to direct all initial inquires of such acquisition desires directly to HARVEST, and shall provide copies of all pertinent correspondence and documents pertaining to such desires within five (5) days of execution.

If you are in agreement with the foregoing conditions, please so indicate on a copy of this letter in the space provided and return via fax to the above number with a hard copy via mail.

Yours very truly,

By R.A. Forrest, Vice President

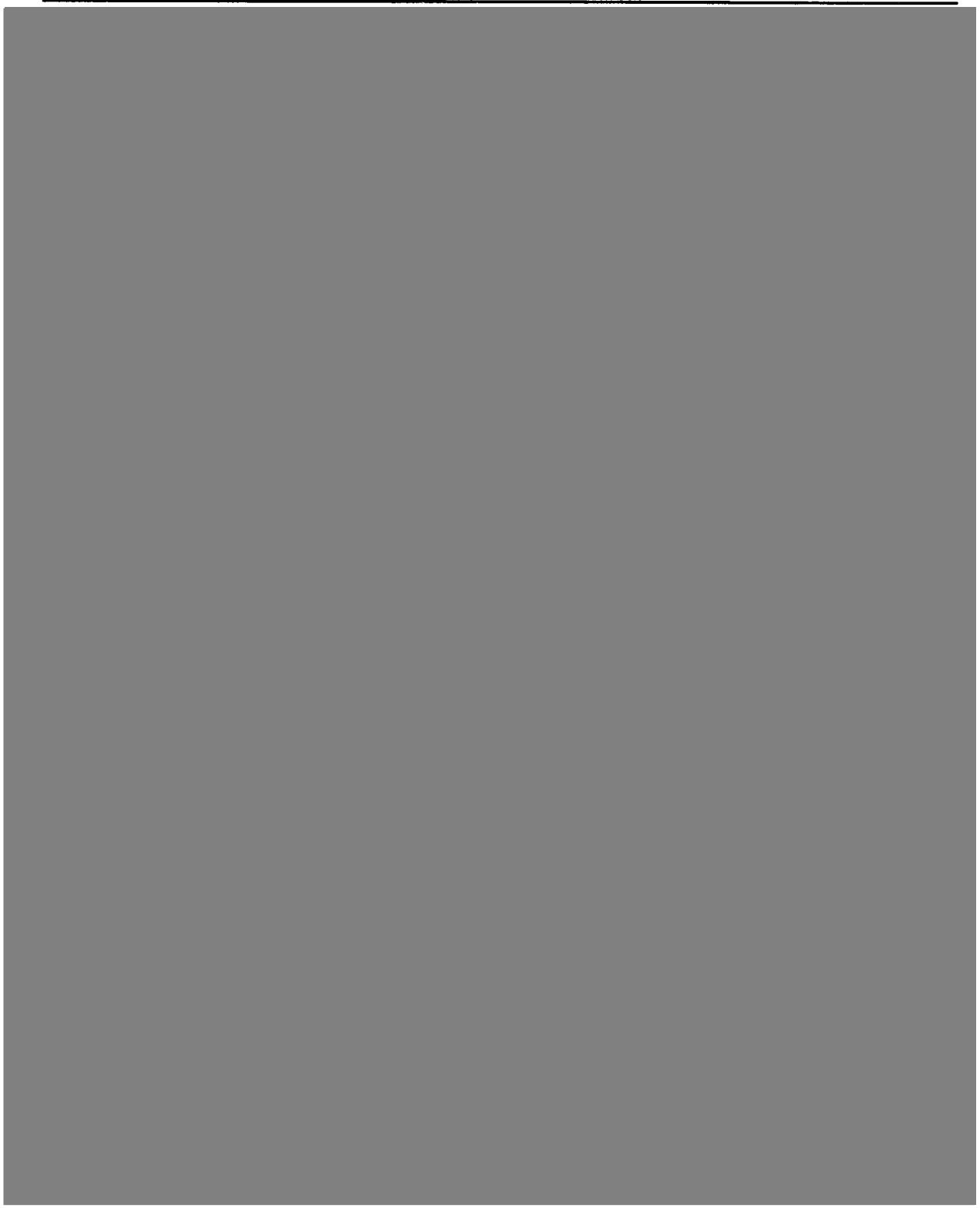
Accepted and Agreed to this 9th day of October, 1996



By: Randall L. Moore
Title: Senior Geologist

NM 9/30/96

N. Miner 9-16-91



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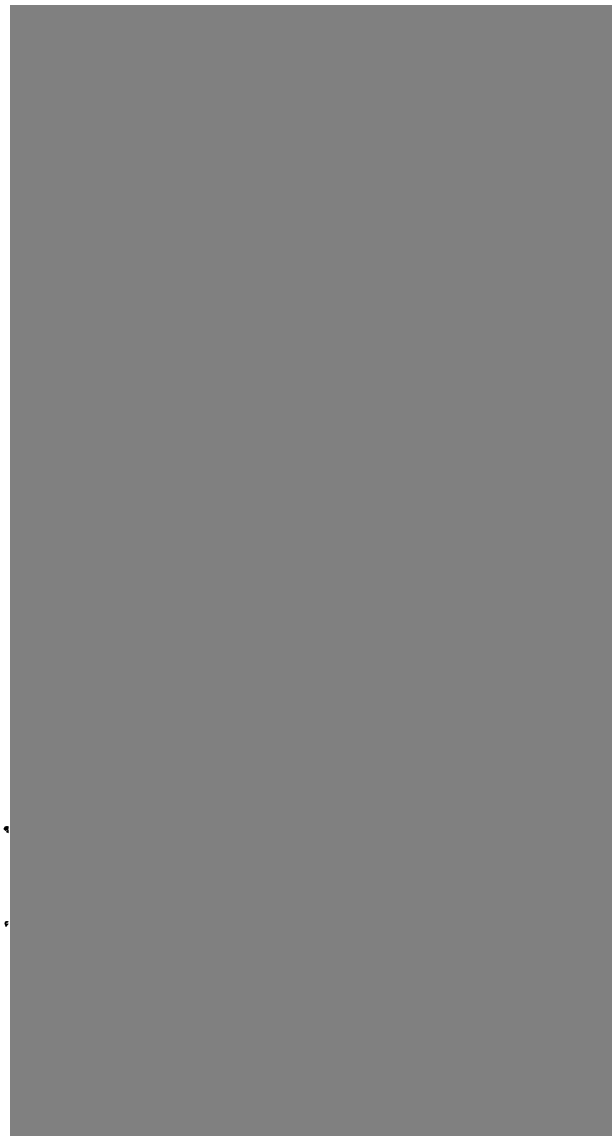
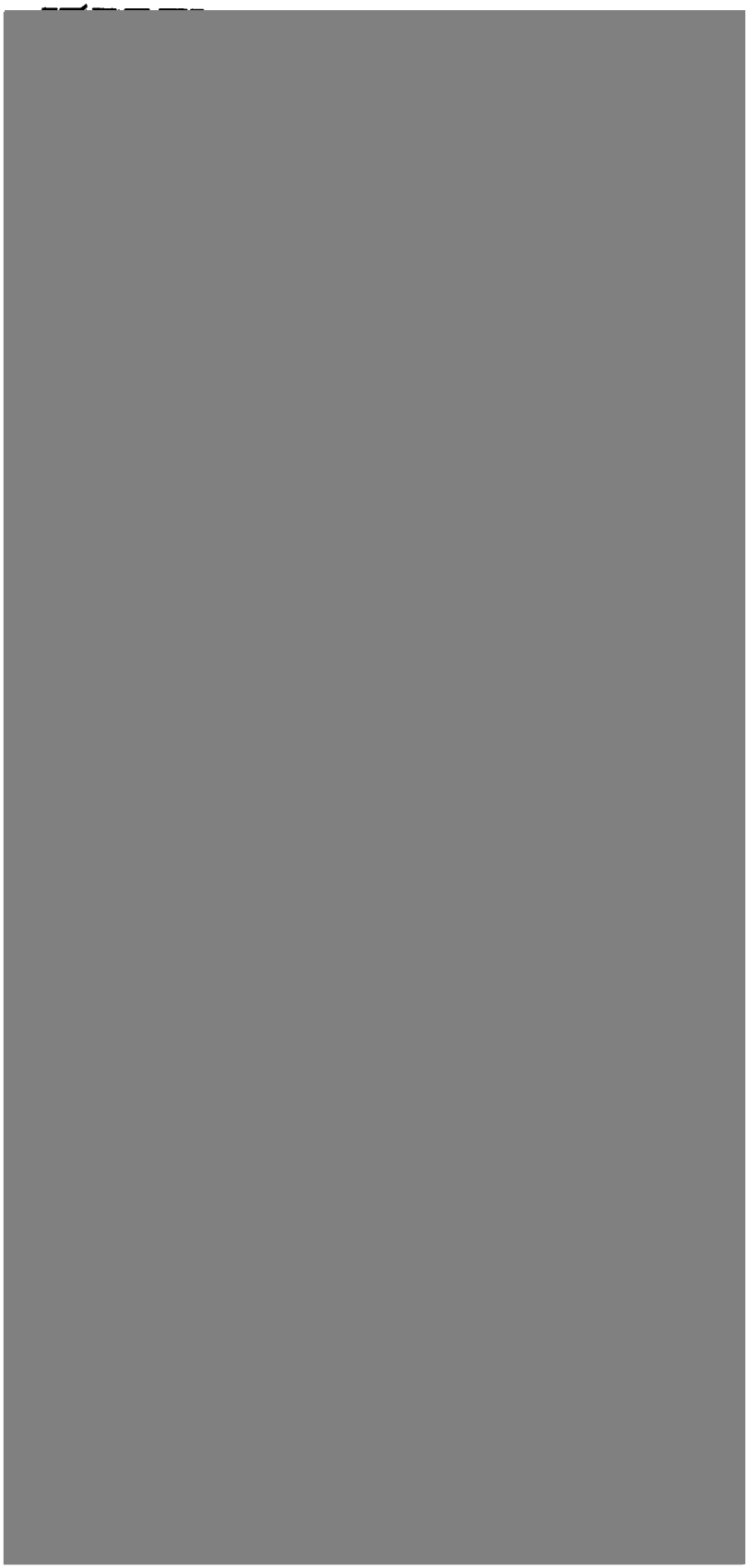


Vol. 102, No. 50



Cochise

[redacted]

Western Minerals. Feb. 1989

DRX Announces Carlin Trend Joint Venture With LAC Minerals

9-13-89 Mining Record

AZ
CA
NV

DRX, LAC explore Midas bet

9-25-89 N.M.I.

[redacted]

[redacted]

DRX INC 10/89 WM&R.

[redacted]

No. Meier 6-24-91

Please File

Commonwealth Project

Cochise County, Arizona

Preliminary
Global Gold-Silver Resources

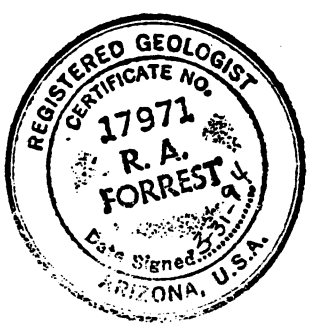
and

Estimated Minable Gold - Silver Reserves

March 31 ,1994

Harvest Gold Corporation
Box 2590
Evergreen, Colorado 80439

R.A. Forrest, President
Registered Arizona Geologist # 17971



Property Summary

The Commonwealth Project consists of 8 patented claims, 16 unpatented claims and 6 unpatented placer claims located approximately one fourth mile south of the old town of Pearce, Cochise County, Arizona. The Property is readily accessible just a few hundred yards from paved US Highway 666 about 2 miles south of Sunsites, Arizona, in turn about 38 miles south and west of Wilcox, Arizona off Interstate 10, about 81 miles east of Tuscon.

The Commonwealth Property is a past productive, low temperature, interlaced, gold-silver vein system which has produced over 940,000 tons of quartz-carbonate ore yielding to cyanidation and amalgamation approximately 122,000 ounces of gold and almost 13 million ounces of silver. Last significant production occurred in the 1920's although lessors are reported to have operated intermittently during the 40's and 50's. Modern exploration commenced in the mid-1970's when the property was recognized as having a bulk silver potential. From the late 70's until 1993 the property has been subjected to erratically directed exploration by numerous exploration companies, each exploring under its own pet theories. Bethlehem Copper, Santa Fe, Glamas Gold, Western States Minerals, Pegasus Gold and DRX Minerals, et al have added to the property database in varying degrees.

The aggregate digitized database now consists of some 126 drillholes from nine different drilling programs totaling some 40,320 feet which produced some 7183 gold and silver assays. Drill holes included regular rotary holes, reverse circulation rotary and diamond core holes. Hole sampling was generally done on 5-foot intervals although older holes have 10-foot sample intervals. The drillholes are combined together with approximately 6520 linear feet of underground channel sampling conducted by DRX in 1991 which yielded 1263 gold and silver assays.

According to previous independent mineral engineer reports, recent exploration through 1992 has defined a mineral resource as follows:

	James Askew Ass., Inc.	Mintec, Inc.
Cutoff Grade	0.02 oz. Au/ton	0.012 oz Au/ton
Total tons	4,579,000	5,011,000
Grade Au oz. / ton	0.036	0.036
Grade Ag oz. / ton	2.26	1.76
Method	cross sections	computer block model

A third study by Nevada Goldfields, as reported by the Property vendor to be a previous property optionee, defined approximately 6.2 million tons of 0.031 recoverable equivalent gold (combined gold and silver values) available at a 2.8 to 1 strip ratio using a 0.015 equivalent gold grade mining cutoff. Upon recent acquisition, Harvest management believed that an additional resource of 3 to 5 million tons could potentially be available within the existing resource and

along the unprospected strike projections of mineralization between the two relatively well drilled portions of the previously defined mineral resource.

Geologically, the Commonwealth Property contains wide (+50 feet), northwest striking, moderate to steep dipping (45 to 70 degrees), quartz-carbonate veins which cut Miocene andesite flows and rhyolite ash flow tuffs, penetrating Cretaceous mudstone and sandstone at depth. Oxidation extends to depths in excess of 400 feet. Speculative geologic theory suggests that the Commonwealth may be on the north rim of a hugh volcanic collapse feature lying to the south.

High grade, gold-silver mineralization was predominately mined from three shoots along the strongest structure known as the Main Vein. The highest grade material exceeded several hundred ounces of silver and 5 ounces of gold per ton. After 30 to 50 feet of leached capping at the 4400- to 4600-foot elevation, all ore shoots were mined continuous downward, shortening along strike until apparently bottoming out at about the 4000-foot elevation. According to old reports, deeper workings and deep drilling located only low grade "protore" grading 0.01 oz Au and <2.0 oz of Ag was at depth.

Mineralogically, gold is found both free and as electrum, probably derived from oxidized gold-bearing sulfides of a low percentage (<3%). Apparently secondary transport of both gold and silver has resulted in horizonally-oriented enrichment areas along vein trends, characteristically penetrating the vein footwall for several ten's of feet. Oxide lead and zinc minerals are found in areas of high silver content. Silver sulfides and sulfosalts are found increasingly at depth.

Study Introduction

Harvest Gold Corporation, a Colorado corporation acquired the Commonwealth via option from Columbia Resources in January of 1994 and shortly thereafter acquired a new NSR lease from the underlying owners. Since January 22, 1994, Mr. R. A. Forrest, a principal and president of Harvest Gold Corporation, and a Registered Arizona Geologist, in co-operation with Christopher D. Smith of CDS Associates, Inc. of Englewood, Colorado, a computer support organization, has been engaged in detailed geological and computer statistical evaluation of the Commonwealth property. The study goal was to determine reliable, potential tonnage, grade and economic statistics for the operation of the Commonwealth Property. Mr. Forrest has a vested interest in the ownership of Harvest Gold Corporation.

The resource study was made initially using MINEsoft Inc.'s, TECHBASE 2.02 software issued in 1990. The majority of the database was received in ASCII text form from the property vendor, and was sorted and reformatted by Mr. Smith who also performed de-bugging of the computer and sofware systems. A month into the study, an upgrade to 1993 TECHBASE 2.2a introduced some data transfer problems and operating difficulties, however all were resolved. The study initially used a 486 DX-25 computer with 8 megabytes of RAM, followed up with a 486 DX2-66 with 4 meg of RAM which shortened operating significantly.

A statistical computer modeling grid was laid out over the existing data utilizing an on-the-ground survey grid created by DRX which is based upon the coordinate 100,000 north, 100,000 east located at the SE corner of Section 33 T.17 S., R.25 E. situated about 3/4 mile east of the property near Highway 666. For data presentation purposes, the computer surface and block model maps cover an area portrayed by Easterly coordinates 92,500 to 95,500 by Northerly coordinates 97,000 to 99,000, for an area 3,000 feet long east to west and 2,000 feet north to south.

The actual underlying computer model consists of blocks 30' x 20' x 15' in depth oriented along a 100 degree azimuth, for which the southwest corner lies at 97,300 North and 92,200 East. From the SW corner, the model is composed of 100 blocks, 30 feet wide in the 100 degree direction (ESE), 100 blocks, 20 feet wide in the 10 degree direction (NNE) and 60 levels deep at 15 feet per level (vertically), for a total of 600,000 individual blocks. The highest 15-foot bench level had its mid point at the 4732.5-foot elevation atop Pearce Hill, immediately south of the Commonwealth workings. The deepest level, corresponingly, then having a mid-point at the 3832.5-foot elevation, approximately 700 feet below the average mine surface.

Rock types range from sandstone, to rhyolite breccia to dense andesitic flows. The average rock was deemed to have a specific gravity of 13.5 cubic feet per ton, thereby yielding some 666 tons per block.

Global Resource Estimation

With completion of the block model, all assay and survey data, assumed reliable by the authors, including all available drill hole data and the recent DRX underground sampling was orderly arranged and loaded into the database via vertical and horizontal coordinates after checking and correcting for errors and duplicates. Missing sample intervals were either assigned a -1.0 value or if a large area were left blank. Plans and cross sections of the loaded data were constructed and reviewed to locate and correct any potential loading errors. Standard sets of statistics were run on the raw data to reveal the mean, mode, variance and standard deviation. Geologic features and rock types were ignored for calculation and summary purposes. The raw statistics were as follows:

Raw data Gold Values, oz. per ton

	All Samples	0.011 Au/ton	0.021 Au/ton	0.041 Au/ton
# of samples	8446	1849	948	396
Mean	.01040	.03586	.05541	.09228
Std Dev	.0254	.04572	.05732	.07410
Maximum	0.835	0.835	.0835	0.835
Minimum	0	.011	.021	.041
Coeff Var	244.22	127.51	103.46	80.31

Raw data Silver Values oz. per ton

Mean	0.702	1.95	2.46	3.16
Std Dev	1.41	2.25	2.46	3.25
Maximum	31.0	31.0	31.0	31.0
Minimum	0	0	0	0
Coeff Var	200.53	115.46	108.53	102.47

The raw exploration data was then subjected to normalizing composite analysis, in order to derive uniform sample locations in regards to the block model level locations. By this procedure drill hole and underground assay intervals were plotted via coordinates and, if necessary, truncated and averaged to derive assay intervals within discrete computer blocks. A minimum of 1 foot and a maximum of 5-foot sample intervals were determined and located via coordinates within the computer model. A total of 8656 valid composite samples were generated.

Significantly, no potential mining dilution was introduced by using the composite lengths similar to actual assay data. The use of longer length composites (up to 15 feet) would effectively dilute the average grade by perhaps 7% to 16%, but was avoided due to a lack of intimate geologic knowledge of the vein-type mineralization. Only once a reliable geologic model has been applied to the mineral resource would the true effects of longer compositing be realized.

Due to the presence of scattered high grade assays which could disrupt and distort correct analysis of precious metal grade, a decision was made to limit all gold and silver composites to maximum values. Arbitrary limiters, equal to approximately ten times the expected average grade were set for both gold and silver. Limits of 0.25 oz Au/ton and 12.5 oz Ag/ton cut any value above such grades to those grades. In the raw data only 16 gold assays and 11 silver assays exceed the arbitrary limit, while in composited samples 15 gold and 13 silver composites were affected.

Sample composites were then subjected to semi-variogram analysis to determine the predictability of samples and valid sample value projection distances. A semi-variogram is like a histogram of the variability of two samples at specified distances. Separate semi-variogram patterns were run for both gold and silver usually at 10-foot intervals (lags) for a total maximum range of 200 feet. Non-directional and vertical variograms were run for both metals. The non-directional scans produced a gold "nugget" value of about 0.00025 and a silver "nugget" of 0.55. A nugget value roughly corresponds to the minimum variation to be expected from two identical samples taken from virtually the same location. For gold this seems to indicate a minimum variation of 0.016 ounce per ton for an average sample, while silver would be 0.74 ounce per ton. The vertical variograms showed sample influence out to 160 feet for gold and over 200 feet for silver.

Next, horizontal variograms were completed for north, south, east and west using a 30 degree cone of influence. Observation of geologic facts indicated that dipping structures were present so further additional scans were made at various dip components along the most favorable azimuth directions. Refinement of specific strike directions resulted in several possible spherical

variogram models which were then refined into a sample influence ellipsoid suitable for both gold and silver.

The ellipse finally adopted for resource modeling gave a primary axis with a maximum radius of influence of 140 feet at azimuth 190 degrees, dipping 65 degrees, a secondary axis of 80 feet at 100 degrees with a 0 degree dip and a third axis of 60 feet at 10 degrees azimuth with a 25 degree dip. This alignment reflected the geologically determined average vein strike direction of 100 degrees azimuth, and the 65 degree average dip on the Main Vein. Essentially, any one sample's influence could be projected up to 80 feet along vein strike, 140 feet along the vein dip and 60 feet into the vein walls. Surprisingly, the 10 degree azimuth direction, perpendicular to vein strike, initially gave a wider influence radius than 100 degrees, the vein strike. Since this was geologically contradictory, this +100 feet of influence was arbitrarily reduced to 60 feet for calculation purposes. The presence of secondarily enriched, supergene or remobilized mineralization may partially explain such phenomena. Selected variograms are appended herein.

From the best ellipsoid fit, a "sill" value of .00058 for gold and 1.5 for silver was selected. Since the "sill" is the squared value of the standard deviation, this corresponds to a standard sample variation of 0.024 oz Au/ton and 1.22 oz Ag/ton, somewhat similar to the all sample deposit average.

With the search ellipsoid now specified, kriging was instituted to estimate values for gold and silver within all possible blocks of the computer mine model. First, all surface survey data was placed in a cell model and used to create a kriged surface topography map of the current terrain using a linear variogram and a 500-foot search area. The resource krige program was then defined to eliminate all blocks above the terrain surface and to ignore any assays which did not equal or exceed the value of zero (eliminating missing sample intervals). Values were then estimated by ordinary three dimensional point kriging using the following parameters:

	Gold	Silver
Sill + Nugget	0.00083	2.05
Sill	0.00058	1.5
Nugget	0.00025	0.55

Ranges were derived from the ellipsoid, varying from 60 feet at N10E at 25 degrees, to 140 feet at S10W at 65 degrees.

A minimum of 2 and a maximum of 6 composite samples were used for each estimation and 3 random longitudinal locations were estimated and averaged in each block, both for gold and silver. For each block the metal's estimation variance was also calculated and stored for future reference. Global reserves for the Commonwealth Project were then determined for several potential mining cutoff grades, however the relationship between gold and silver required a common factoring agent so as to present each metal accurately despite varying prices and metallurgical recovery rates.

A special category know as the "recoverable equivalent gold grade" was also determined by taking the kriged gold value times a 77.5% recovery factor (as determined from metallurgical work) and adding to it an equivalent gold grade as derived from the estimated silver value. As determined by metallurgical work, the first ounce of silver was assigned a recovery factor of 20% and added to subsequent estimated ounces at a 70% recovery rate. Hence 3 ounces of estimated silver per ton would yield 1.6 ounces of recoverable silver i.e. ((1 x .2) + ((3-1) x 70%)) = 1.6. The value ratio of silver to gold was then derived from their approximate respective market prices on or about February 1, 1994, $5.00 per ounce silver verses $375 per ounce gold. ($375 / $5 = 75). Seventy five ounces of silver equals one ounce of gold in value, hence the silver grade was divided by 75 to yield a recoverable equivalent gold grade, which was then added to the kriged recovered gold grade (Recoverable Au + Recoverable Ag / 75 = Recoverable equivalent Au).

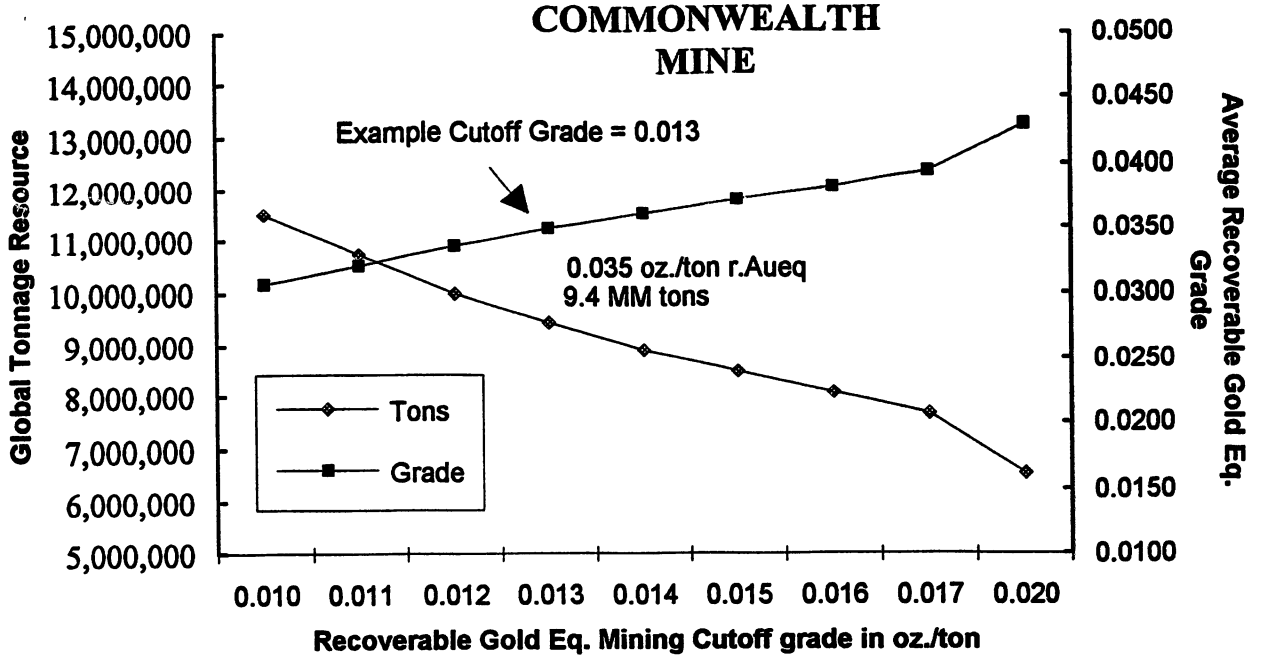
Global Resources are the total amount of potential resource available at a given mining cutoff grade without regard for the actual costs and problems of mining. Since short composites were used prior to kriging estimation, no dilution has been introduced into the Global Resource for mining. Normally, only a portion of global resource will be minable due to economic or other physical restraints. The material that is mined will be subjected to low grade wall rock dilution, which increases tonnage but lowers average grade.

A Global Resource estimator also makes no provision for the tons previously mined from the Commonwealth deposit. Past records indicated that over 940,000 tons have been mined in the past from underground, and obviously, such tons no long exist beneath the land surface, nor in the mine model. Reportedly, some 22 miles of underground working were supposedly excavated into the Commonwealth deposit between 1892 and 1945. Figuring a drift height of 7 feet and a width of 5.5 feet and 13.5 cubic feet per ton this yields some 330,000 tons having been extracted, but since no more than 50,000 tons lies on the old shaft dumps, most of this material was either ore which was milled or was left in the mine.

The old surface pits and surface caved areas were then examined for tonnage. Cross section analysis of surface depressions (which are not in the kriged model) revealed at least 324,000 tons of mined material was already accounted for by the mine model, while rock expansion in collapsed areas would easily negate the small tonnage (50,000) still found on the dumps. In light of these factors, Harvest management has elected to apply a "mined tonnage factor" of 616,000 tons to all economic models of the Commonwealth deposit. The Global Resources for the Commonwealth are then as follows:

Global Resources

Cutoff Grade	Total Tons	Adjusted for mined tons	rec.Gold Equiv.	Gold oz/ton	Silver Ag/ton	Gold Eq. ounces	Total Au ounces	Total Ag ounces
0.000	47,401,218	46,785,218	0.0098	0.0088	0.57	458,495	411,710	26,667,574
0.009	12,549,438	11,933,438	0.0289	0.0244	1.64	344,876	291,176	19,570,838
0.011	10,736,586	10,120,586	0.0321	0.0269	1.81	324,871	272,244	18,318,261
0.013	9,446,544	8,830,544	0.0349	0.0290	1.95	308,186	256,086	17,219,561
0.015	8,498,826	7,882,826	0.0372	0.0308	2.07	293,241	242,791	16,317,450
0.017	7,660,998	7,044,998	0.0395	0.0326	2.18	278,277	229,667	15,358,096
0.020	6,564,096	5,948,096	0.0430	0.0353	2.33	255,768	209,968	13,859,064



No provision is made in global estimating for the categories generally used in ore reserve estimation, such as the monikers of Proven, Problem and Possible Ore. The Commonwealth property has not been sufficiently delineated by workings or drill holes to allow these classifications, however, in order to better define potential categories of resources, the previously saved estimating variance could be of use.

Kriging variance was contoured for all estimated blocks and plotted on "variance " maps for observation. Since "proven" ore is usually regarded as mineralization with in 50 feet of drillholes, sample bench plan maps were observed for actual variance around drill hole plots. Not surprisingly, examination revealed that a gold variance of 0.0006 occurred at that 50-foot distance. The average variance for our model was 0.00058, so effectively all samples that have a sample deviation of less than the standard deviation could be considered "proven". With the removal of proven category from the resource base, then any remaining resource tons must be regarded as the "probable" resource. No tonnage is assigned to the possible catagory. No blocks exceeded two times the standard deviation

Mining Cutoff	Tons		Less Mined
	Proven	Probable	Tonnage
0.009 eq. recoverable oz. Au per ton	4,001,994	8,547,444	< 616,000
0.011 eq. recoverable oz. Au per ton	3,587,076	7,149,510	< 616,000
0.013 eq. recoverable oz. Au per ton	3,196,134	6,250,410	< 616,000
0.015 eq. recoverable oz. Au per ton	2,919,078	5,579,748	< 616,000

Harvest management also expressed concern regarding the influence of higher grade underground channel samples on the kriged averages. To mitigate this potential problem, the database was divided into two categories, drillholes and channel samples. Each was subjected to identical variogram and kriging estimation. Drill hole variograms showed consistent ranges of influence, a lower sample mean and deviation, plus generally lower nugget (0.0001) and sill

(0.00048) values than the "all sample" deposit averages. Meanwhile the channels revealed higher average grade and deviation and higher than average nugget (0.0005) and sill (0.0015) values. This scenario is consistent with the premise that the channel samples were taken from old mine working which almost by definition were located at or near the mineralized features, giving higher average grades and wider sample variance. Since the channels were restricted to the higher grade old mine area, the channels alone were able to estimate only 24% to the total kriged blocks, but could predict from 89% to 116% of the "all sample" resource tonnage at 101% to 111% of the "all sample" grade, depending upon the cutoff grade used. On the other hand, the widely scattered 126 drillholes yielded 94% of the kriged blocks, but only 41% to 71% of the tonnage at 80% to 92% of the grade. Generally, as could be anticipated, the higher the resource grade the more influential the channel samples.

Since the channel samples, making up only some 13.9% of the database, have significantly influenced the kriged reserves, and in some high grade cases produced greater tonnage and grade estimates, the author reviewed the channel sample program as to 1) location, 2) quality, 3) the goal of the management who instigated the sampling program, and lastly 4) compared this sampling with previously conducted sampling programs and random re-sampling conducted by other companies over the past two years. Although not personally examined underground, the results of this review indicated that: a) sampling concepts and procedures were sound; b) the sample locations generally were restricted to crosscut locations perpendicular to vein structure strike; c) a roughly estimated +95% of the samples were not oriented along vein strike; d) previous sampling routines have found similar, although not identical values in similar sample locals; and e) assay checks by other companies gave reasonable correlation of values. However, an exhaustive review and analysis of check sampling needs to be conducted.

In order to mitigate any future problems associated with the channel samples, the author has recommended, and Harvest management expects to conduct several thousand feet of reverse circulation check drilling into areas of higher grade channel samples, particularly those with significant unchecked kriged ore blocks, and will additionally collect or re-assay selected channel samples for potential sample bias.

Economic Reserve Estimation

An economic evaluation of minable reserves gives a much more accurate valuation of the potential worth of any mining property. Once Global Resources were defined, the study proceeded directly into determining the potential minability of such a resource. Although one always wishes for a higher commodity price, Harvest management concluded that any mining property must be viable at current prices.

Recent gold prices have fluctuated above and below $380 per ounce in the recent past January, 1994 to March ,1994, so logically $380 per ounce of gold was the selected norm. This is still reflected in a gold price of $381 as of March 27, 1994. By the formula default of a 75 to 1 value ratio, silver therefore had a deemed value of $5.06 per ounce, about 14% below the current market price of $5.77 (March 27,1994). The gold price was then further reduced by the cost of several items which directly impact the value of production regardless of the mines operating

costs. A smelting and refining charge of 1.5% followed by a state severance tax of 1.7% and lastly an underlying landowner royalty of 3.52% of the net smelter return. These items reduced the gold price by a cumulative 6.6% to approximately $355 ($354.98) per ounce. One should, however note that the landowner royalty will decrease as royalty distributions exceed $2.5 million.

The economic mining model used was TECHBASE 2.2a Open Pit Cone Optimization program using the kriged resource model previously defined. To start the cone mining program the topography was first set to the kriged unmined topography as also previous defined. Each subsequent use of the program relied on preprogrammed runlogs to reset the topography back to the unmined stage. Pit wall slopes were tested at various angles, however, due to the lack of intimate knowledge of rock mechanics of the Commonwealth deposit, a maximum 55 degree slope was applied to all mining scenarios, although computer mining showed that lesser slopes occurred naturally because of the physical layout of kriged resources to the north and east of the minable higher grade bodies.

Various mining cutoff grades were then selected by Harvest management reflecting anticipated mining costs and potentially an increase or decrease in the value of gold. Simulated mining was conducted at internal cutoff grades of 0.009, 0.011, 0.013, 0.015, 0.017 and 0.020 ounce of recoverable equivalent gold per ton. This cutoff grade was installed via formula to determine an ore value per block ((eq r Au grade x $355)less (cutoff grade x $355) and then instructing the computer to mine all blocks with a value of greater than $0. Two cutoff grades needed to be determined for each mining scenario, the internal cutoff as shown above which governs the value of kriged blocks within the anticipated pit wall boundary and an APEX cutoff which was used to determine the exterior of the mined pit. Generally, the APEX cutoff graded 0.002 ounce per ton gold higher, in order to compensate for the cost of moving this ore out of the pit at full cost. The APEX cutoff was installed as a fixed number into the program.

A database filter was added to remove all blocks with ore values of less than zero. Since only blocks with values equal to or greater than zero needed to be checked by the computer, this greatly decreased runtime. When the pit configuration lapped outside the kriged block area or a block did not pass the database filter, the computer was directed to assumed that all such blocks were waste and could be moved at a cost of $0.85 per ton or $566.10 per block of 666 tons. Waste mining costs were then subtracted from ore values of over $0 to determine mining viability, and if positive, tabulated to a net value register along with total tons mined, ore mined, average recoverable equivalent gold grade and actual gold and silver mined grade.

Preprogrammed runlogs were used to expedite simulated mining among the various differing scenarios, each runlog being modified by the appropriate variables. All pit results were saved into registers for later reporting and pit contouring.

The initial first few runs showed a variable discrepancy in mined tonnage's and grade due to the direction of ore block searches. Trial and error tests showed that a computer searching pattern from the south to the north found deeper ore blocks to mine, and yield higher total tonnage's and gross cashflow, albeit lesser average grade and net cashflow, while a north to south search had the opposite effect. Differences of east and west were seemingly immaterial. This

conclusion fits the southward dipping configuration of the kriged resource which outcrops to the north. A search pattern of West to East, Top to Bottom, South to North generally gave the highest mined tonnage and gross recovered value and are used for the attached minable tonnage table. No other physical restraints were applied against the potentially minable resource.

A chart of the resulting simulated mining results follows herein. Topographic maps, contoured at 20-foot intervals of the expected pit configurations, are appended at the rear. Results, stored in company files, are tabulated by bench in text form, and visually by topographic map meta-file. Mining results were further reviewed via cross sections spaced 100 feet apart, west to east across the deposit.

Significantly, on all tested mining cutoffs (i.e. 0.009 to 0.020) over 85% of the kriged resource was available for economic extraction suggesting that additional exploration in and around the kriged model will likely obtain additional minable mineralization, thereby lowering the overall waste to ore extraction ratio, while boosting tonnage and ounces extracted. The likelyhood of successful exploration is high When overlaid against the property boundary lines, virtually all of the anticipated mining, waste and ore, occurs entirely within the leased patented mining claims.

Cone Mining Results at $380 per ounce Gold*

All scenarios use $0.85 per ton moved

616000 tons mined from underground

Au Eq Mining Cutoff Grade	Search Pattern	Total tons Mined	Total Ore Tons	% of Global	Est. % stopes	Revised Ore tons	Waste to Ore	Au eq Grade	Recovered Gold Eq oz.	Gold Grade	Total Mined Total Au oz	Total Mined Silver Grade	Total Mined Total AG oz	Gross Value in $MM	Net Value in $MM
0.020	WETBSN	32,136,498	5,846,148	89.1%	61%	**5,472,995**	4.87	**0.045**	**246,285**	0.036	197,028	2.44	13,354,107	92.76	**28.9**
0.017	WETBSN	32,299,002	6,836,490	89.2%	73%	**6,387,080**	4.06	**0.041**	**261,870**	0.033	210,774	2.29	14,626,414	99.47	**36.6**
0.015	WETBSN	35,954,676	7,668,324	90.2%	83%	**7,154,863**	4.03	**0.039**	**279,040**	0.031	221,801	2.18	15,597,601	105.00	**40.2**
0.013	WETBSN	33,816,816	8,306,352	87.9%	91%	**7,743,763**	3.37	**0.036**	**278,775**	0.030	232,313	2.08	16,107,027	107.66	**47.7**
0.011	WETBSN	38,586,042	9,403,920	87.6%	100%	**8,787,920**	3.39	**0.034**	**298,789**	0.028	246,062	1.95	17,136,444	113.51	**52.0**
0.009	WETBSN	40,090,536	10,538,118	84.0%	100%	**9,922,118**	3.04	**0.032**	**317,508**	0.026	257,975	1.81	17,959,034	117.93	**59.1**

* includes deduction for smelting, refining, state severance tax and landowner royalty resulting in $355 / oz Au eq. net to operation.

99000
98500
98000
97500
97000
95500
95000
94500
94000
93500
93000
92500
4400
4420
4440
4460
4480
4500
4520
4540
4560
4580
4600
4620
4640
4660
4680
ORIGINAL TOPOGRAPHY

99000
98500
98000
97500
97000
95500
95000
94500
94000
93500
93000
92500
011 PIT 1

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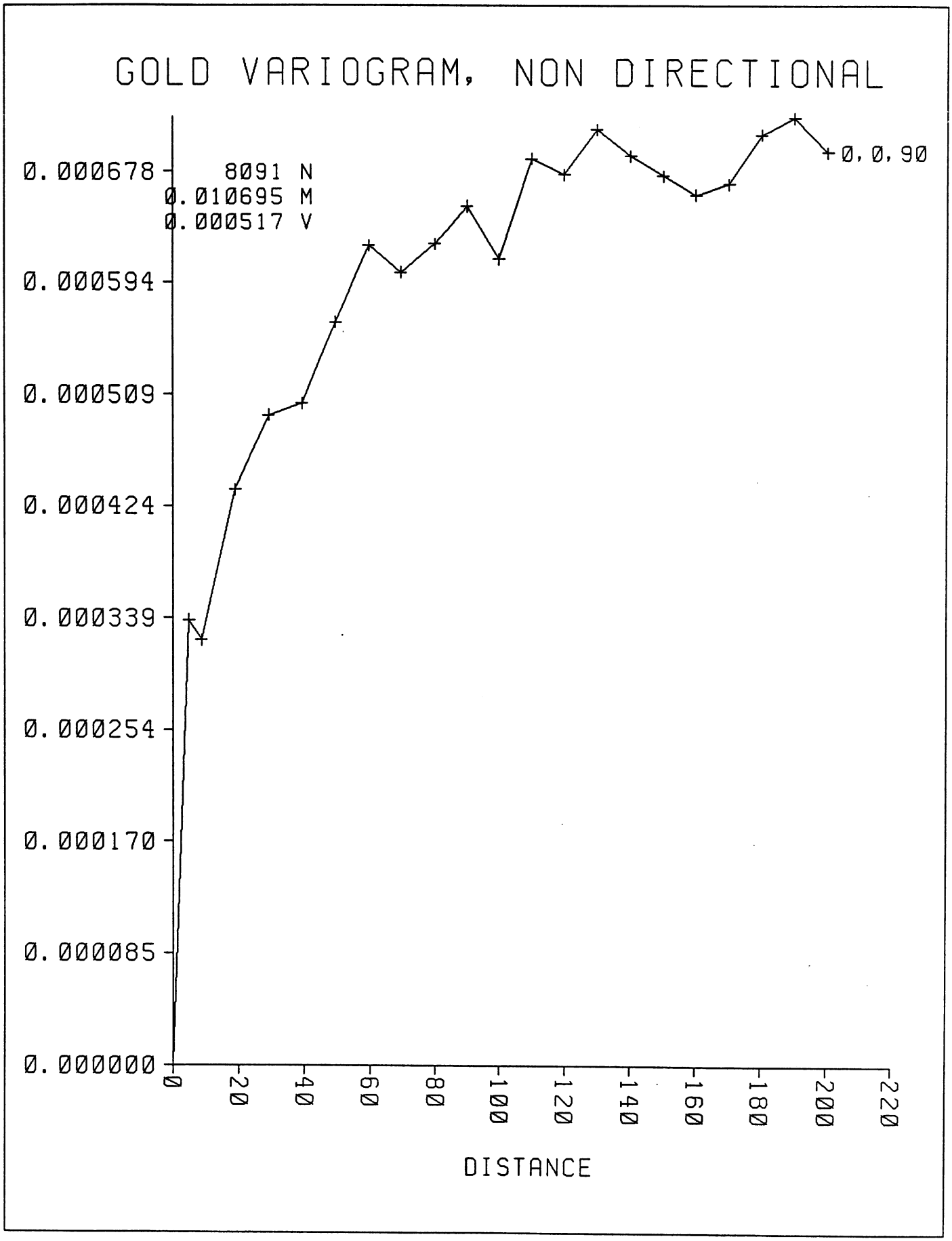
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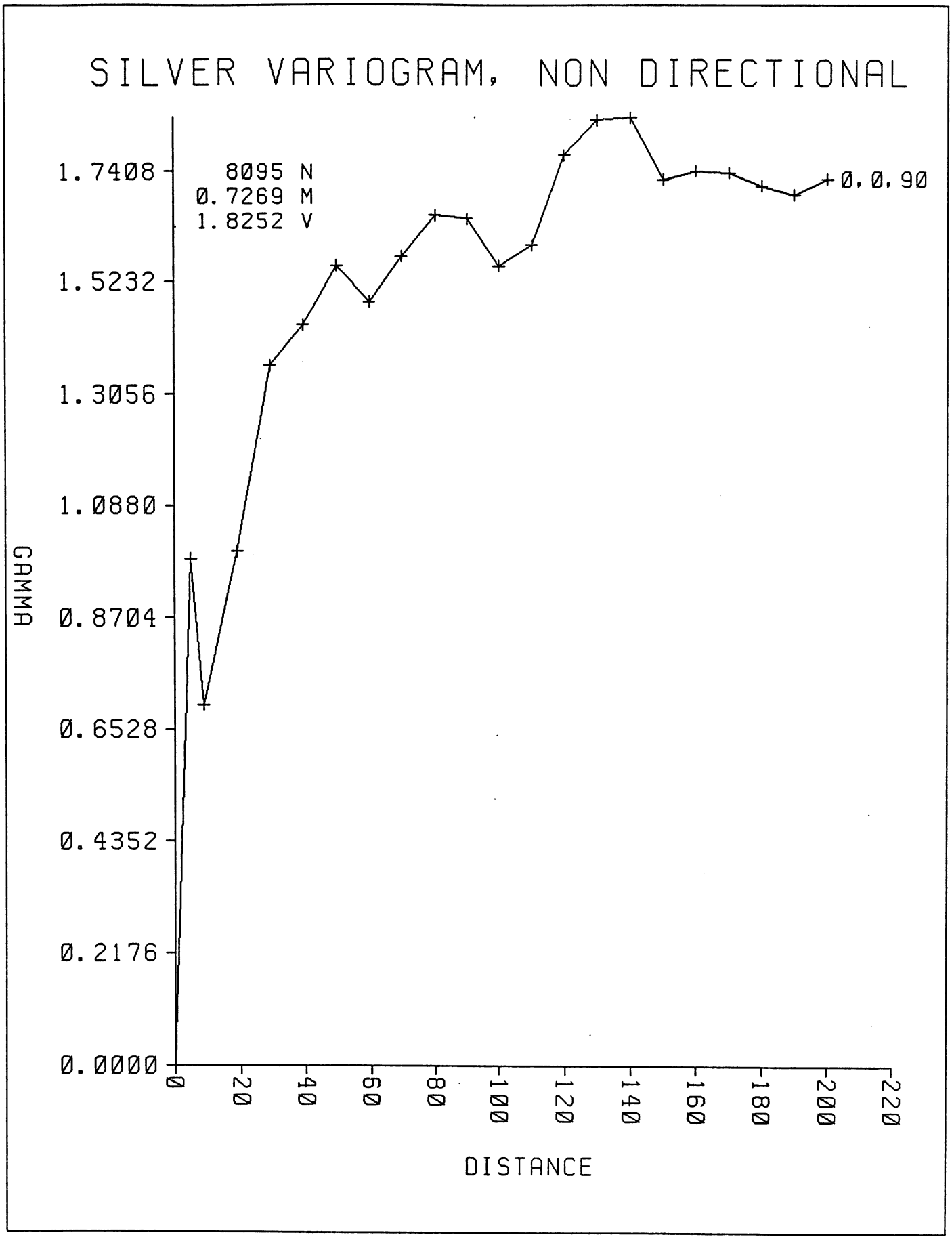
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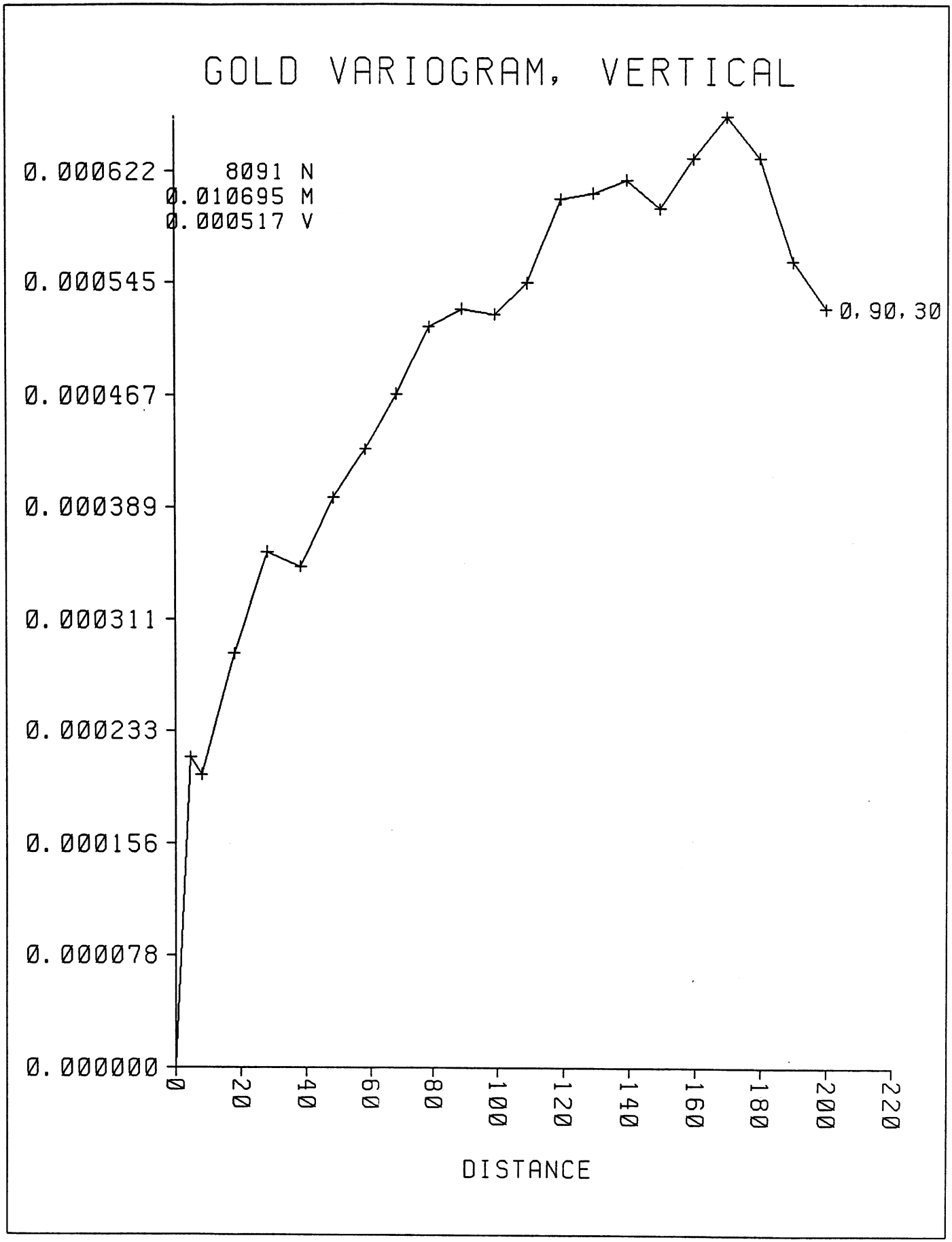
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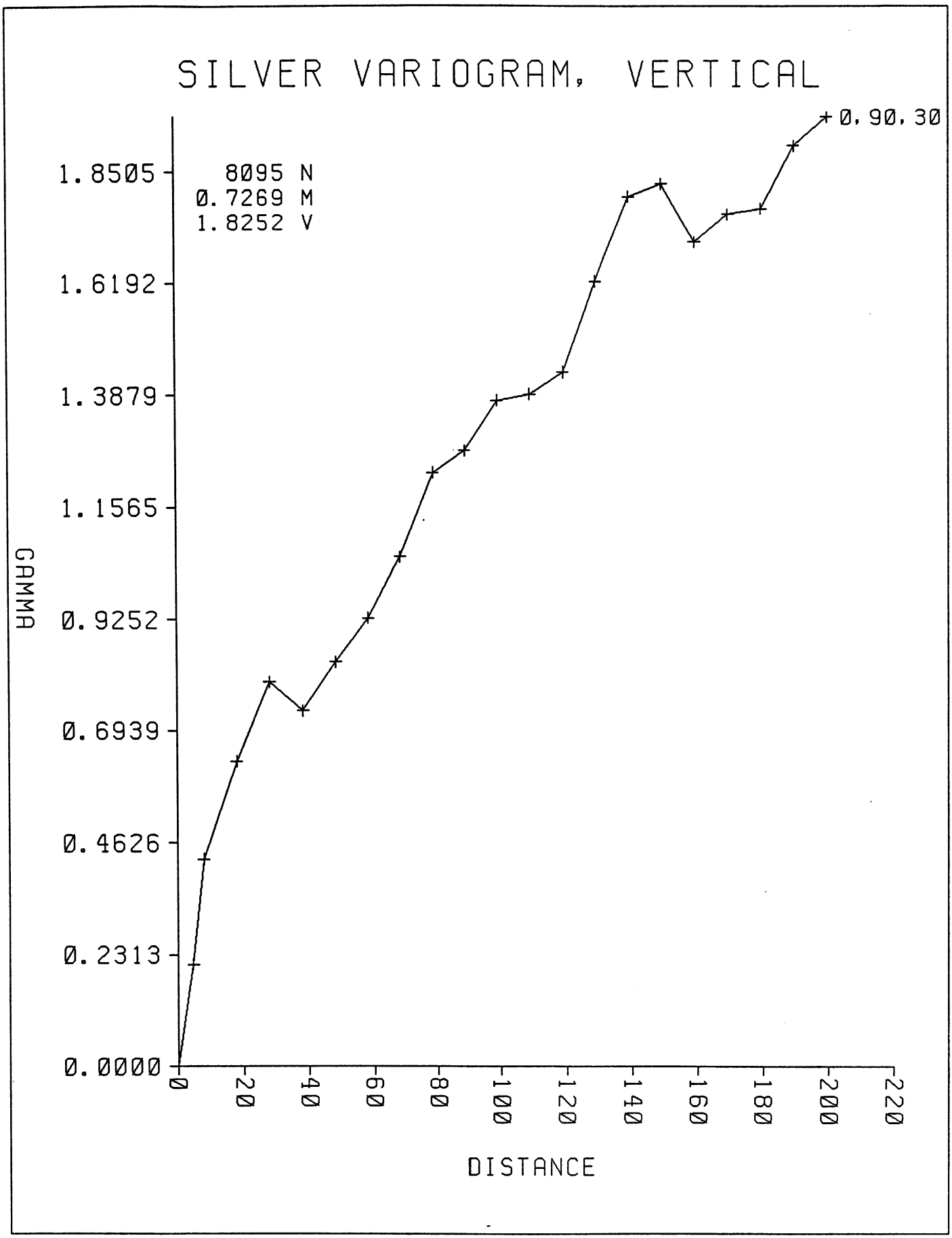
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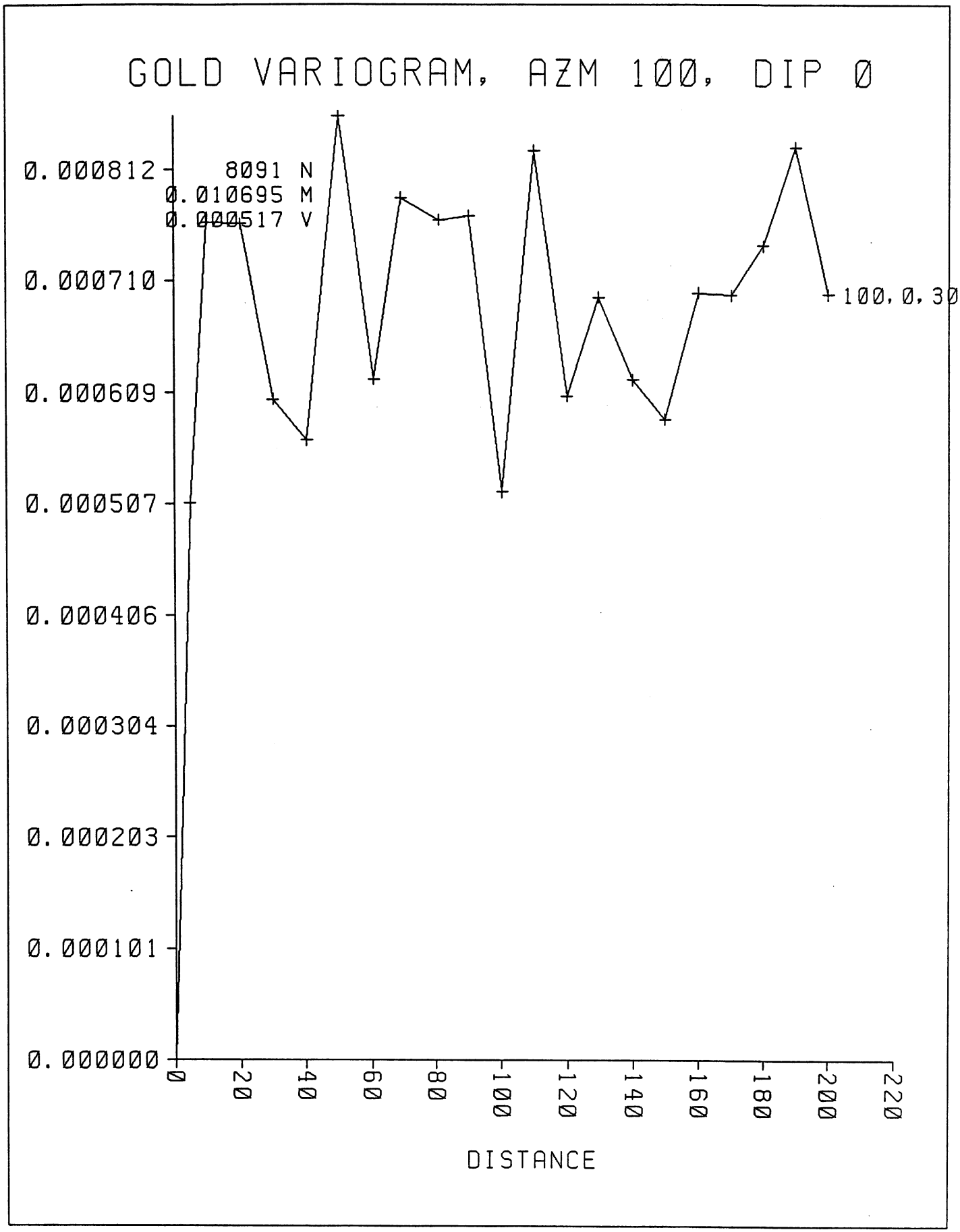
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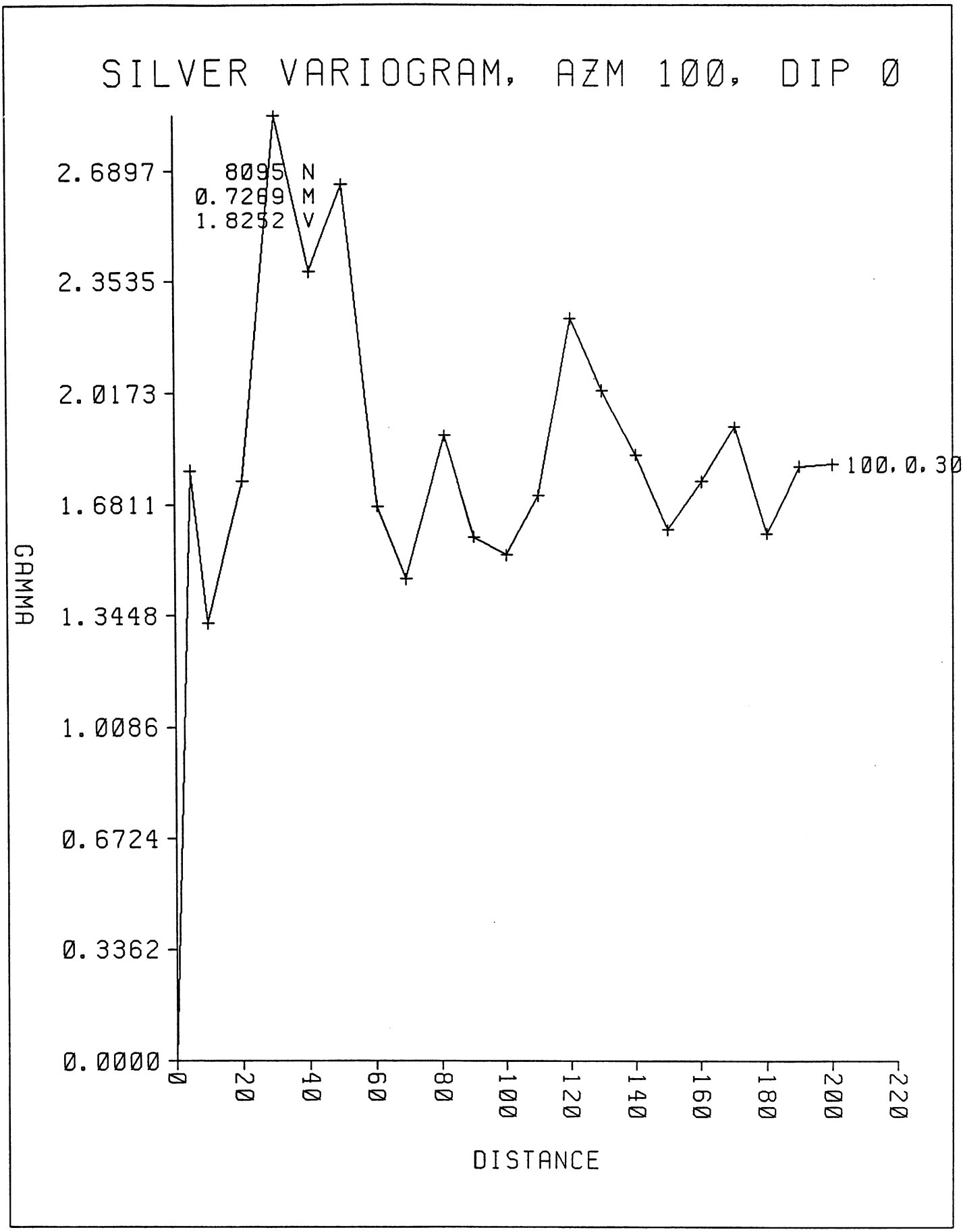
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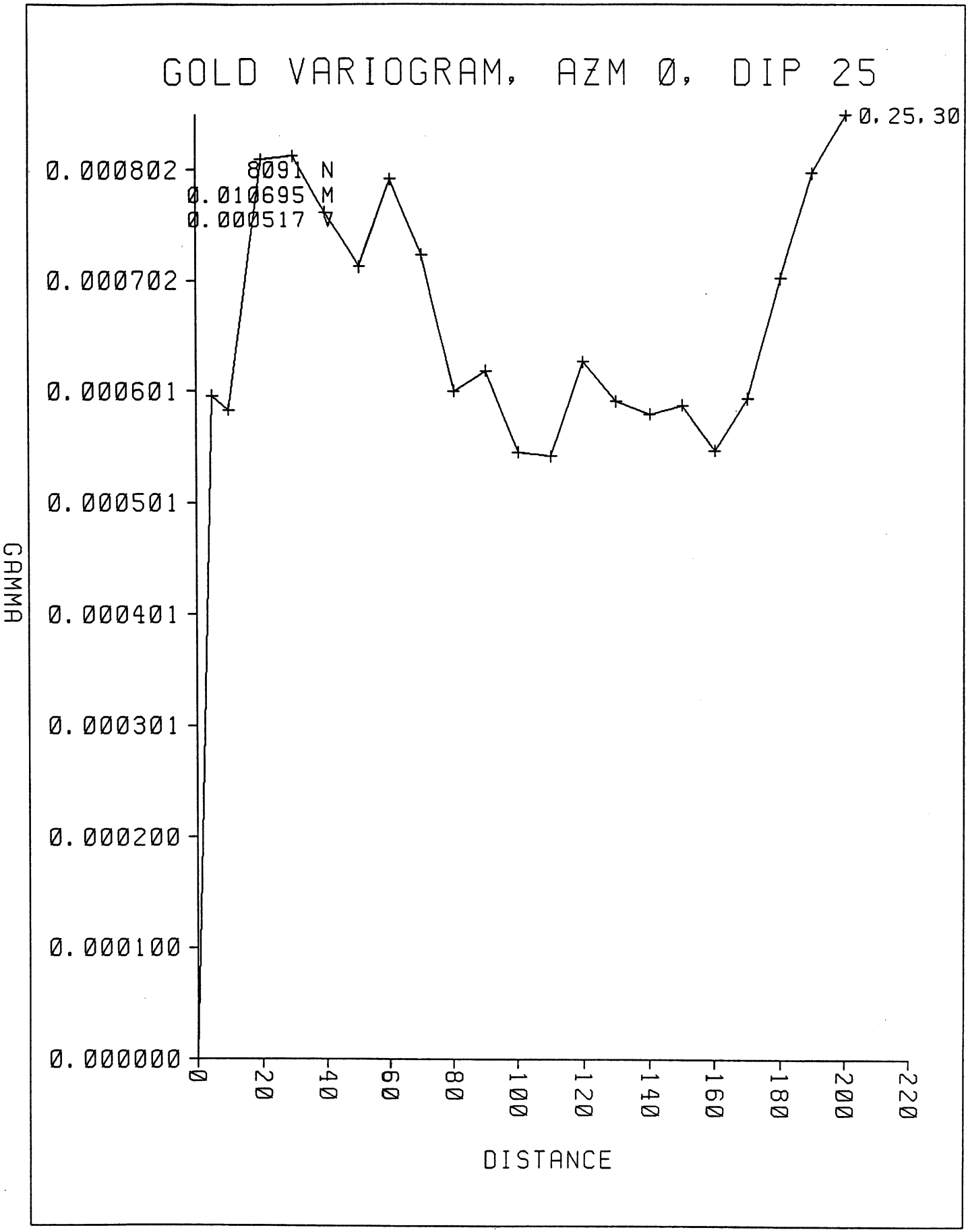
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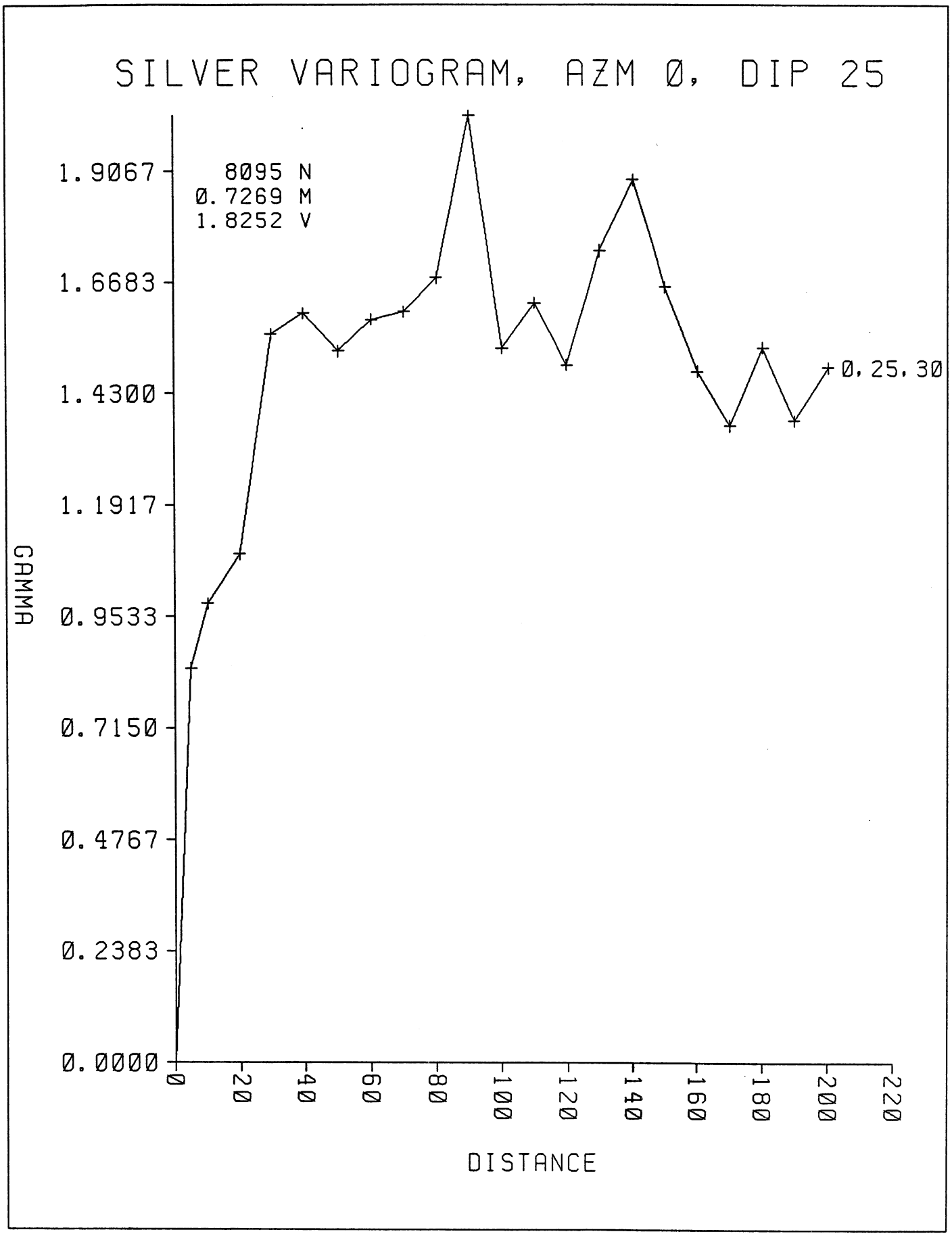
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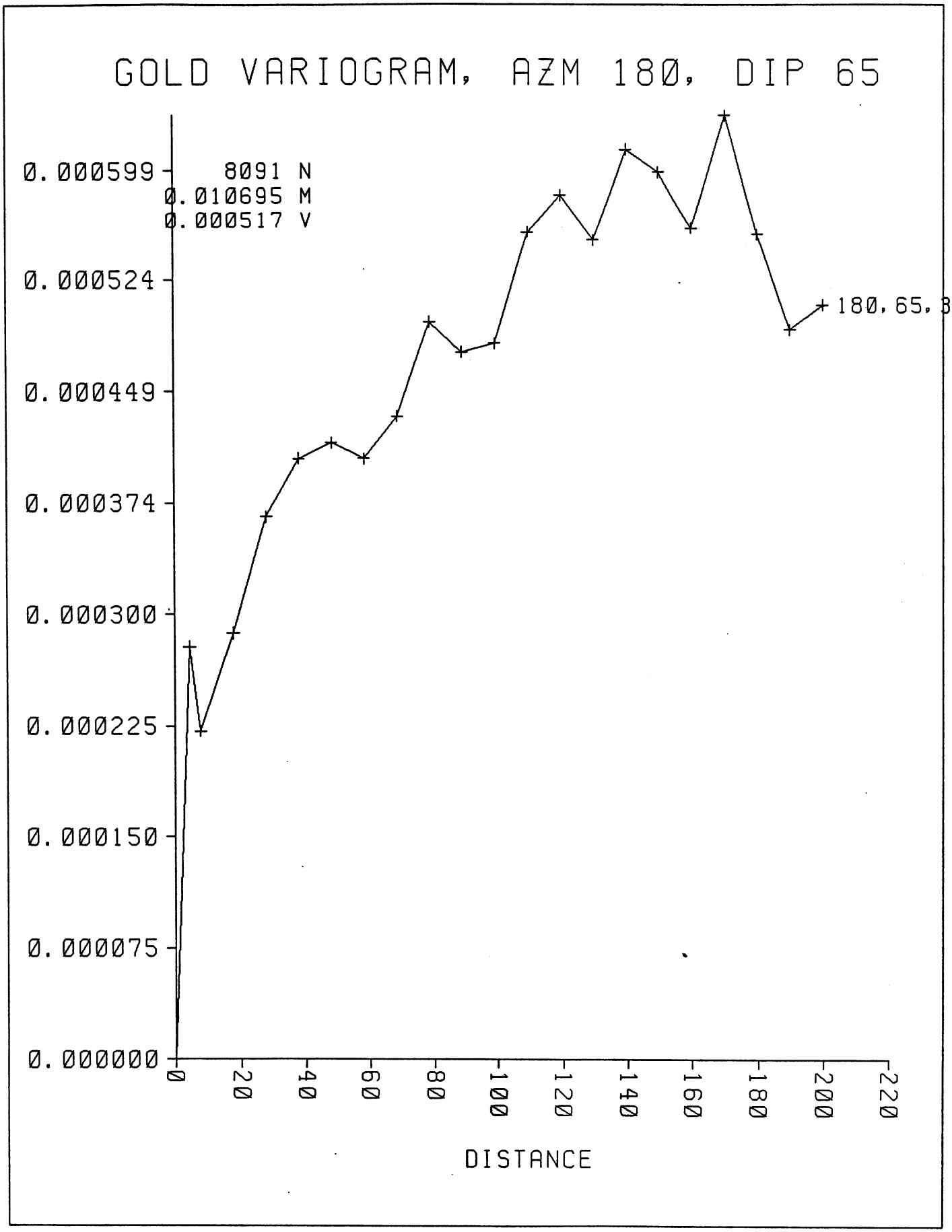
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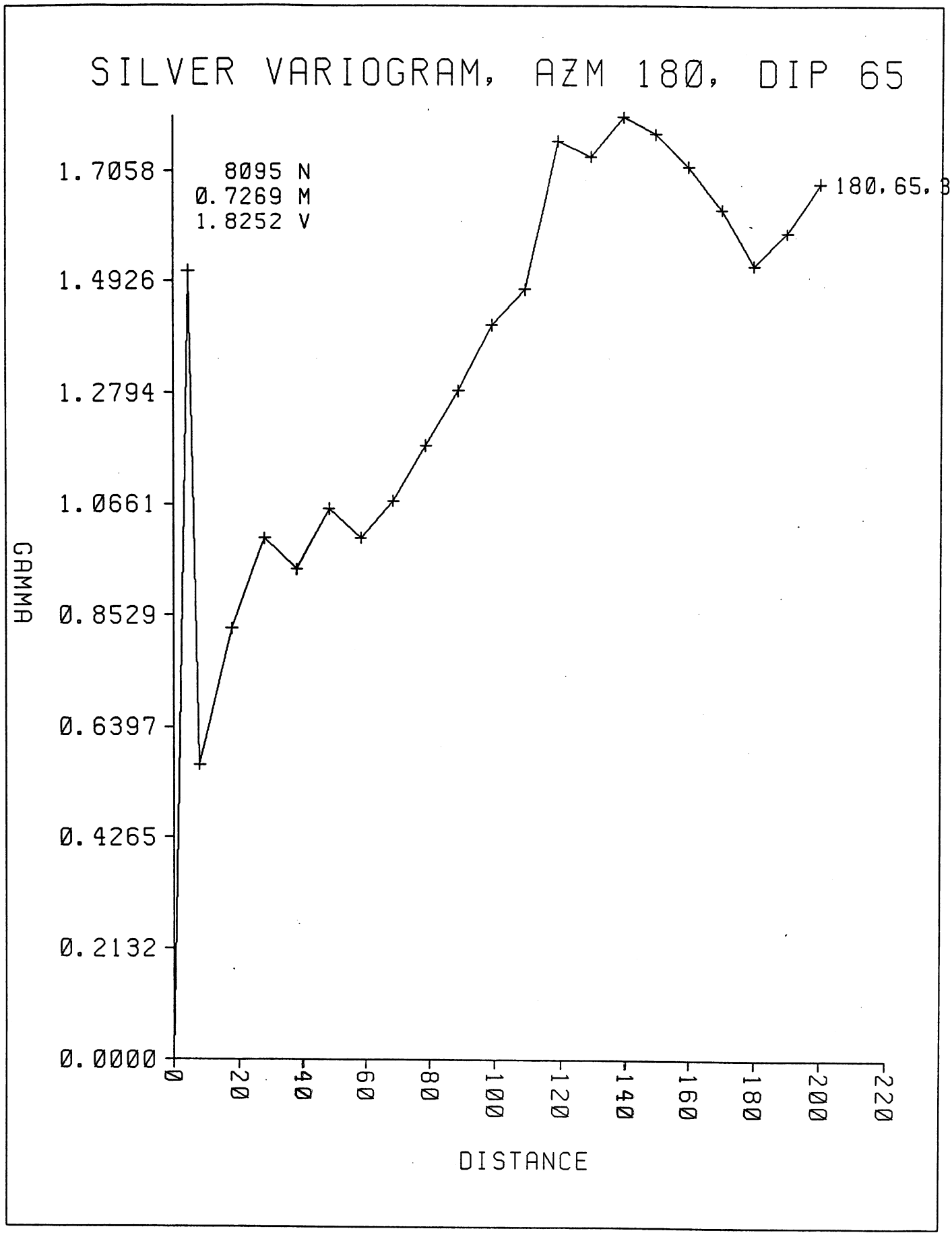
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GAMMA
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DISTANCE

METALLURGICAL TESTING

at the

COMMONWEALTH PROPERTY

Cochise County, Arizona

Old Mine Operations

The first milling operation at Commonwealth was established in 1898 by John Brockman, D.M. Barringer and R.A.F. Penrose of the Commonwealth Mining and Milling Company. Little information is available, however, the first operation was reported to be a 30 ton-per-day pan amalgamation mill, later increased to a 200 ton-per-day stamp and roll mill configuration. Recovery was reported at **83% of the contained precious metals.**

In June of 1900, this mill burned and was replaced with a new 80 stamp, 240 ton per day mill in January 1901 which operated continuously until mid-1905. From 1905 on to 1910, a 250 ton per day cyanide plant was in operation on the old amalgamation tailings, and in 1906 this included mine-run ore. No information has been located on the details of this plant.

In 1910, the Montana Tonopah Mining Company constructed a new cyanide plant which operated into 1917 on -35 mesh ground ore. From 1917 until 1927 some 115,000 tons of ore was shipped directly to the Douglas copper smelter as high silica smelter flux. No significant production, other than intermittent lessors was done after 1927.

Previous Metallurgical Testing

Several generations of metallurgical testing have been conducted at Commonwealth. In December of 1969, Basic Metals, Inc. investigated the Commonwealth mill tailings and defined about 808,000 tons grading 0.012 ounce gold and 2.48 ounce silver per ton. A screen analysis showed that 95% of the material was minus 35 mesh with a relatively uniform distribution of values amongst the various screen fractions. Froth flotation of the tails was unsuccessful, as was gravity concentration. Two large cyanide bottle rolls of the **tailings yielded 47% and 60% of the gold and 25% and 40% of the silver.**

In mid-1975 Platoro Mines, Inc. conducted 36 laboratory tests for gold and silver recovery from four underground composite samples and one old tailing sample. On the tailings, grinding to -200 mesh with flotation yielded 50% or the gold and 25% of the silver, while cyanidation gave better than 50% of the gold and 30% to 35% of the silver. On ore samples, finer grinds **(<200 mesh) always yielded +92 % of the gold and generally 63% to 71% of the**

silver. They believed that approximately one ounce of silver per ton was locked into the ore and difficult to extract.

In late 1983, Santa Fe Mining, Inc. contracted with Mountain States Research and Development to conduct cyanide and flotation tests. Santa Fe delivered some 630 pounds of -4 inch run of mine material grading 0.013 ounce of gold per ton and 9.8 ounces of silver per ton with the ore values evenly distributed among the various sample size fractions. Four thousand gram bottle rolls on -2 inch, -1 inch, - 1/2 inch and -1/4 inch, and 10% +100 mesh material showed widely varying results. In 72 hours, **finer material yielded 85% of the gold but only 22% of the silver**, while the -1/4 inch material gave 62% of the gold and only 13% of the silver. Coarser size recovery was very poor (<20%). Flotation test results were also poor.

In early 1989, Westland Exploration contracted with KD Engineering of Tucson for a series of six preliminary bottle roll leach tests on drill cuttings from Westland's initial phase of drilling on the western gold-rich zone. Here **the gold and silver recoveries averaged 78% and 34%** respectively with *average cyanide consumption of 0.5 pounds per ton and average lime consumption of 2.8 pounds per ton.* Westland also shipped numerous drill samples to Barringer Laboratories, Inc. of Sparks, Nevada for gold and silver bottle leaches to determine the ratio of extractable gold and silver to total gold and silver. The initial batch showed an 79% gold and an 81% silver ratio. While two later batches yielded an 85% and 82% ratio for both gold and silver.

In mid-1989, Westland had additional composites tested by METCON Research, Inc. of Tucson, Arizona. Six drillhole composites from the western portion of the deposit, each ground to -10 mesh in 500 gram bottle rolls for 72 hours, yielded gold recoveries from 38% to 95% and 2% to 70% recovery of the silver. The composite **recovery average was 78% and 38% for the gold and silver.** *Cyanide and lime consumption were 0.81 and 4.1 respectively.*

In early 1990, Placer Dome submitted four drill hole composite samples for testing at the Golden Sunlight Mines, Inc. lab in Whitehall, Montana. The samples ranged from 6 five-foot intervals composited, to 10 five-foot drill cutting samples composited, with composite values ranging from 0.016 to 0.161 ounce gold per ton and from 0.46 to 3.05 ounce silver per ton. Cyanide bottle roll tests with 2 pounds of cyanide per ton and an 11.0 pH done on coarser **material (25%+100 mesh) yielded from 85 to 94% gold recovery and 84% to 92% silver recovery in 48 hours** with approximately *1.2 pounds of cyanide and 5 pounds of lime consumed.* Finer grinding to 200 mesh improved recovery slightly, but generally 0.003 ounce gold per ton and 0.15 ounce of silver per ton always remained unrecoverable.

In early 1991, ASARCO investigated Commonwealth. Three drill hole composites were sent to METCON. All samples were crushed to -10 mesh and 500 grams were bottle roll leached for 72 hours. Recoveries ranged from 58% to 99% of the gold and 12% to 39 % of the silver. The average recovery **was 77% of the gold and 30% of the silver.** *Cyanide consumption was 1.3 pounds and lime was 2.7 pounds per ton* with an 11 pH. Lower grade head samples generally yielded the poorer recoveries. They also noted that high grade gold values leach out very quickly. A second batch of composites leached for 120 hours gave **84% gold**

extraction and 52% silver recovery albeit with cyanide consumption at *0.9 pound and lime at 2.9 pounds per ton* with a 10.8 pH.

In mid-1991, Chemgold, Inc., a subsidiary of Glamis Gold, Inc. performed bottle rolls on each of three ore bearing rocks at Commonwealth: the Bisbee Sandstone, the Upper Andesite and the Rhyolite Breccia. Approximately 450 pounds of material was collected, predominately from the western portion of the deposit. Each rock type was subjected to three bottle rolls at +4 mesh, -4 +10 mesh and -10 mesh. **The Bisbee samples leached well for gold after 72 hours yielding 72%, 89% and 88% respectively all from a head grade of 0.037 ounce gold per ton.** Silver showed no leach at all. The Upper Andesite was low grade with an average assay head of 0.006 but a calculated head of 0.021 ounce per ton gold and approximately 1.42 ounce per ton silver. **Gold leached 37% to 54% with about 24% of the silver**. Lastly, **the Rhyolite leached poorly, yielding an average of only 21% of the gold and 13% of the silver**, the best recovery by far at -10 mesh. Two 12 inch, 10-foot columns were then loaded and leached at -1.5 inch material and 1.5 to 2 inch material. Unfortunately, only four days of leaching data is available however it was noted that substantial gold leaching occurred very quickly.

In late 1991, Western States Minerals Corporation did extensive drill and metallurgical testing at Commonwealth. METCON Research was retained by Western States to conduct a large program of bottle rolls on drill hole composites. On some 18 tests with values ranging from 0.016 to 0.17 ounce gold per ton, gold recoveries ranged from 38% to 96% with **an average recovery of 77% of the gold with silver recovery from 24% to 58% (average 37%)** with a low *0.9 pound cyanide and 2.9 pound lime* consumption. The material was both 1/4 inch and -10 mesh for a 1000 gram charge. The best recoveries were from higher grades crushed to -10 mesh. Lower grade samples generally had lower recoveries with about 0.003 ounce gold per ton the minimum tail value. Further, they determined that coarse free gold is not an important constituent of the ore and cyanide solubility is approximately 88% of the fire assay on average.

In mid-1992, Westland had METCON conduct two 96 hour bottle rolls on -3/4 inch material, one of andesite and one of Bisbee. Recoveries were **38% of the gold and 43% of the silver in the andesite, verses 88% of the gold and 20% of the silver in the Bisbee.** *Cyanide consumption averaged 0.45 pound and lime was 4.5 pounds per ton.*

In late 1992, Consolidated Nevada Goldfields, Inc. shipped four small sample composites (3 from surface exposures and 1 from underground) to McClelland Laboratories, Inc., of Reno, Nevada and to CNG's Barite Hill operation in South Carolina. Two additional, large scale underground bulk samples were also sent to McClelland Laboratories, Inc. All these samples were to be used to determine precious metal recovery, recovery rates, reagent requirements and sensitivity to feed size. The samples sent to Barite Hill were subjected to various 96 hour bottle rolls at -5/8 inch -3/8, -1/4 inch, and -10 mesh. **Gold recoveries were 25% to 56% at -5/8, 35% to 39% at -3/8, 36% to 69% at -1/4 inch and 55% to 63% at -10 mesh.** Column leaches of approximately 70 pounds **-5/8 material yielded from 26% to 56%** of the gold depending upon rock type and average grade. *Cyanide and lime consumption was 0.3 pound and 5 pounds respectively.*

At McClelland, two feed sizes were tested 80% -5/8 inch and 100% - 10 mesh. Bottle rolls on 5/8 inch surface samples yielded only **25% gold and 24% silver** recovery in 120 hours suggesting that a surface oxidation product retards precious metal recovery. The underground samples gave **44% to 60% gold recovery and 7% to 29% silver recovery in 120 hours at the 5/8 inch size**. All the 10 mesh samples, including surface samples, yielded **60% to 87% of the gold and 22% to 50% of the silver** in 120 hours. The majority of metal recovery was rapid, however a longer leaching cycles would yield better recovery. *Cyanide consumption was low at from 0.1 to 0.4 pound cyanide per ton with moderate lime consumption at from 3 to 11 pounds per ton.* Column tests on the two underground bulk samples, sized at 80% -5/8 inch and grading 0.021 to 0.070 gold and 0.69 to 3.56 silver per ton, gave recoveries 20% higher than the bottle rolls. These tests using 8-foot 6 inch columns each with about 115 pound of material, **gave 68% and 71% gold recovery and 19% and 36% silver recovery** after 30 days, but were still increasing slowly at premature termination. *Cyanide consumption was approximately 2 pounds per ton, with lime consumption at 4 pounds per ton* to hold a +10.3 pH value. In both tests lower recovery was prominent on the +10 mesh fractions of the samples. McClelland final conclusion was that the Commonwealth ore was amenable to heap leaching at coarser sizes.

Harvest Gold Corporation Metallurgical Testing

Harvest commenced metallurgical tests in September 1994. Kappes, Cassiday and Associates, Inc. of Sparks, Nevada were retained to provide testing services. Initially two near surface and four deeper underground samples were collected from crosscuts in the old mine workings. Three samples were derived from the eastern end of the 3rd mine level and one from the eastern end of the 6th level. All head grades were intentionally low, running from 0.015 to 0.042 gold and 1.45 to 3.08 silver per ton. This approximates the average expected minable grade of the deposit as a whole, or 0.026 ounce gold and 2.29 ounce silver per ton, equaling about an 0.035 recoverable gold equivalent grade. Large 5000 gram bottle rolls were performed on all samples at -5/8 mesh material. The two near-surface samples were not expected to leach well due to oxidation problems. Only about **34% of their gold** was recovered in 96 hours. Two of the underground samples to the far west of D shaft on the 3rd and 6th level gave an average **of 95% gold recovery** while the two lying to the east side of the deposit near the D shaft on the 3rd level gave an **average 43% gold recovery**. **Silver recoveries are low from 11% to 25%.** *Cyanide consumption was low at about 0.6 pounds per ton with lime at approximately 1.3 pound per ton* at 10.3 pH.

In mid-October 1994, the two near-surface samples were combined into a single 5-foot, 3 inch diameter column for leaching at 100% -10 mesh. The two low-leaching, east side 3rd level samples were also combined into a 5-foot 3 inch column test at 100% minus10 mesh. Ten mesh is regarded as the smallest range suitable for heap leaching. Kappes, Cassiday economic studies have shown that operating costs are increased to approximately $2.30 per ton by the necessary finer crushing and the attendant cement agglomeration cost. Agglomeration tests indicated that 4 pounds per ton of Portland type II cement was adequate for proper binding of the ten mesh material. After 30 days leaching time, **68% and 78% of the gold had been recovered while**

only 15% to 19% of the silver was recovered. Kappes estimated *field cyanide consumption at only 0.3 pound per ton, with 0.4 pounds of lime per ton of ore due to the usage of cement..*

The two good bottle leaching samples from the western 3rd level and the 6th level were each placed in separate -5/8" columns 6 inches in diameter and 5 feet high. The 5/8" material showed **84% and 93% gold recovery** after 42 days of leach time. **Silver recoveries ranged from 20% to 24%.** *Cyanide consumption was again estimated at a very low 0.33 pound per ton with approximately 1.2 pounds of lime.*

In March 1995, an additional three underground bulk samples aggragating approximately 1000 pounds was delivered to Kappes, Cassiday for treatment under identical laboratory conditions with an eventual goal of maximizing silver recovery. Two of the three were oxidized samples collected from shallow underground workings to better define the nature of surficial oxidation and local silica encapsulation on a small portion of the ore reserve. Initial bottle rolls for gold recovery were completed on all three samples at 5/8", minus 10 mesh and minus 100 mesh. A near-surface siliceous area grading only 0.011 gold and 1.64 silver yielded 45.5% of the gold and 12.6% of the silver at 5/8", but yielded **81.8% of the gold and 24.7%** of the silver at - 10 mesh.

Two samples of average grade were collected approximately 50 feet and 120 feet below surface in the vicinity of C Shaft. On the 50-foot sample, the 5/8" leach gave only 33.3% of the gold and 11% of the silver in 48 hours. The 10 mesh yielded 55.6% and 14.8% respectively, similar results to the near-surface samples, while the minus 100 mesh yielded 93.1% and 38.7%. The deeper, less oxidized sample showed excellent leach characteristics. A 48-hour 5/8" leach gave **82% of the gold and 35% of the silver.** In all cases, *cyanide comsumption was very low with equally low lime usage*

Rock-type influence

Three rock types have been identified, each possessing distinctive leaching characteristics. These units, Bisbee Formation, Andesite and Rhyolite are readily identified in hand specimen and can be easily sorted out during the mining process.

The basal Bisbee Formation is generally a clean, fine to medium-grained sandstone with abundant silicification, fracturing and iron staining, best described as a quartz arenite. Some silica recrystallization is apparently present near quartz vein structures. Locally, pebble conglomerates, interbedded red mudstones, siltstones and sandy, calcareous mudstones may be present. Gold values generally leach well, averaging well over 75%. Perhaps 20% of the total reserve, or more, is contained in Bisbee rock. Much of the deposit's exploration potential also lies in Bisbee. No cyanicides are present. Local mudstone and high clay areas may create permeability problems and may require agglomeration or mixing with less fine grained ores.

The Andesite, found as several distinctive andesite horizons within the volcanic sequence, is the most favorable ore host. Brittle fracturing and well dispersed quartz-carbonate vein fillings make for excellent non-agglomerated heap leach rock with higher than average grades. This is verified by coarse leaching characteristics that can easily exceed 85% of the

contained gold. No cyanicides are present. Fortunately a significant portion of the Commonwealth reserve (~55%) is located within andesitic units.

The Rhyolite is the most difficult and unpredictable rock for heap leach purposes, making up perhaps 25% of the total reserve. Although it fractures well, it's metal grades are generally lower due to a non-reactive nature. No cyanicides are present, but locally, silica mobilization, intense quartz veining and the attendant silica encapsulation problems may be encountered. Generally only a 50% to 55% gold recovery can be achieved at coarser leach sizes, however, local, high silica areas can be leached at 10 mesh with a +65% success rate albeit at a high cost per ton. Sorting of poor leaching ore via quick cyanide bottle tests may be necessary during mining. This material may then been ground to 10 mesh, agglomerated then remixed with coarser ore (andesite) for optimal leaching.

Alteration Influence

Most ores at Commonwealth leach well. Fully on the order of 80% of the total Commonwealth reserve should be leachable at 5/8" or 1/2" with little or no agglomeration, but with judicious mixing of divergent ores. Pit observation can effectively segregate potentially poor leaching Bisbee without problem, however, Rhyolite is more problematic. Primary and secondary alteration have significantly affected portions of the Commonwealth deposit.

Local silica flooding is found both adjacent to Rhyolite host rocks and in the near surface environment. Such excessive silica is probably derived from the Rhyolite unit or, more unlikely, the Rhyolite itself was turned into a high silica rock by the influx of hydrothermal silica from an unknown source. Under either scenario, locally intense quartz veining and remobilized silica have partially encapsulated portions of the contained precious metals, yielding poor leach recovery. Finer grinding to minus 10 mesh has successfully liberated the available gold, abeit at an anticipated higher production cost.

Fortunately, high silica, poor leaching ores are generally found near-surface and at the eastern extreme of the developed deposit. These areas are also usually, but not always, high silver, low gold areas. Perhaps 15% of the total reserve will be affected by high silica flooding and will require finer grinding for successful leaching. Examples of this type ore are found just east of the C shaft at the surface and at depth on the 3rd level near the D shaft. Sorting via quick cyanide-leach testing of blastholes would reveal problem ore allowing for segregation and separate processing before remixing on the leach pads.

Supergene processes have been active on the Commonwealth ores. Previous workers have cited variable evidence that supergene leaching and enrichment of both gold and silver can be found at Commonwealth. Horizontally oriented high gold and/or high silver areas had been delineated during high grade underground mining operations of years past. The possible presence of such supergene ores would be predominately beneficial from a heap leaching standpoint. A previously remobilized precious metal molecule that has been redeposited in a fracture system by supergene processes is likely to be readily available for re-solution into a cyanide solution with a minimum of effort. Further, the blanket nature of supergene deposition

localizes the metals across broad areas of fractured ground facilitating large tonnage, open pit extraction.

Unfortunately, at Commonwealth not all supergene ores are premium leach ores. As mentioned above, supergene silica remobilization is locally present, sometimes partially encapsulating metal occurrences. Additionally, upwards of 10% of the total ore occurrence may be influenced by refractory, near-surface, secondary supergene conditions unrelated to silica flooding. As indicated by recent bottle roll tests, supergene refractory oxidation extents below 50 feet but is apparently fully disipated prior to 125 feet below surface. Harvest personnel are currently seeking access for sampling in this intermediate range.

In the near-surface environment, say generally less than 100 feet below surface, some very unusual supergene minerals are present. Silver chlorides, bromides and other halides and native silver are not uncommon nor is secondary silica and carbonate. From the ubiquitous presence of poor leaching gold ore at the surface, perhaps a partial coating of gold by supergene minerals, some silver bearing, some not, is common. Mineralogical studies have not yet attempted to define this near-surface phenomena, although test leaches, both bottles and columns, at minus 10 mesh have seemingly liberated the captive gold so as to make it available to the cyanide solution, albeit at increased costs.

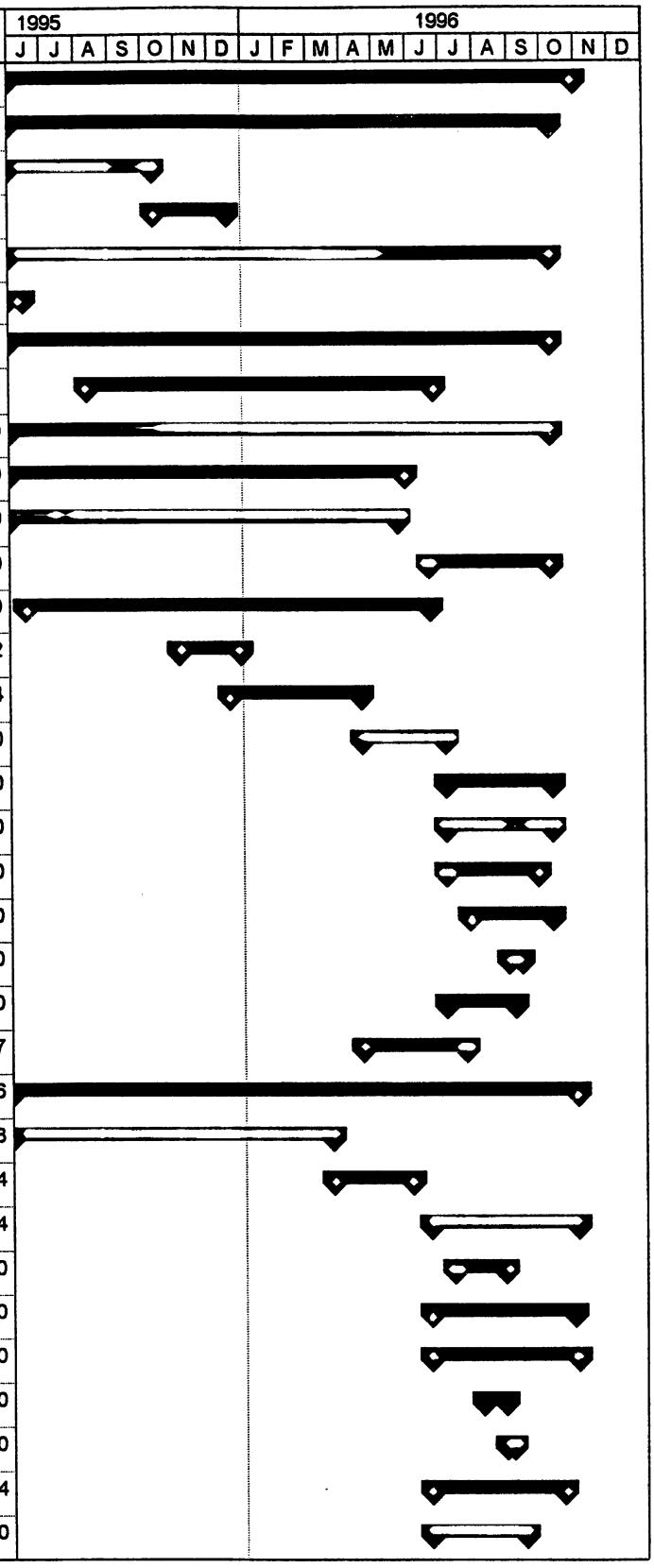
Conclusions

To date, hundreds of cyanide leach assays, some 156 cyanide bottle rolls and 12 cyanide column leach tests have been performed upon various Commonwealth ores. Results have consistently showed leaching characteristics indicative of potentially heap leachable material. Recoveries varying from 50% to over 90% of the contained gold depending upon rock type and sizing. Silver recoveries have generally been low, only occassionally exceeding 40% and averaging perhaps 25% to 30%. Testing to date has not focused on optimizing silver recovery. Future tests will concentrate on increasing silver extraction.

With continued testing and refinement of the leach process system, Harvest Gold management believes that an **average of 78% of the gold and +35% of the silver** in the entire Commonwealth reserve can be recovered through heap leaching. Leaching will be conducted on predominately 5/8" non-agglomerated material, with selected portions, defined by blasthole assay leaches, ground to minus 10 mesh, agglomerated with 4 pounds of Portland cement, cured and remixed with the coarser ore. *Chemical consumption will be low, at less than 0.35 pound of cyanide and less than 1.5 pounds of lime per ton of ore.*

Harvest Gold Corporation - COMMONWEALTH SCHEDULE with PRELIMINARY BUDGET

ID	Name	Total Cost
1	Commonwealth Operation (assumes 6/1/95 startup)	$6,411,549.63
2	Commonwealth Rock Products (Mining Co.)	$2,948,635.93
3	Ore Reserve Delineation	$338,552.00
16	Mining Feasibility	$76,472.80
23	Permitting	$392,575.12
25	Title review	$3,051.80
32	Permitting requirements	$363,859.32
33	Federal Requirements	$82,406.30
43	State Requirements	$260,785.10
44	AZ Dept. of Enviromental Qu	$103,440.00
49	AZ Dept of Water Resources	$0.00
54	AZ State Mine Inspector	$0.00
57	AZ Com. of Ag. & Horticultur	$16,000.00
67	Cochise County Requirements	$3,886.32
75	Engineering Design	$72,696.34
101	Construction Solicitation	$10,890.80
106	Mine Construction Phase	$1,930,408.20
109	Construction	$1,689,858.00
110	Mine	$415,530.00
114	Crushing Circuit	$1,020,500.00
126	Dump Areas	$7,620.00
133	Buildings	$186,960.00
144	Water Well Program	$127,040.67
164	Dragoon Metals, Inc. (Milling Company)	$3,161,917.76
165	Final Metallurgical Feasibility	$175,579.08
211	Construction Solicitation	$9,699.84
216	Mill Construction Phase	$2,976,638.84
220	Mill	$297,900.00
226	Pads (1 yr production 1.25mm tons)	$1,150,000.00
237	Ponds	$595,300.00
259	Preg circuit	$10,220.00
262	Barren circuit	$9,780.00
265	Buildings	$390,332.24
278	Utility construction	$175,435.00



Date: 4/27/95 10:21 am

COMMONWEALTH PROJECT
Cochise County, Arizona USA

Ultimate Area Reserve Potential

The Commonwealth Mine is typical of Tertiary epithermal precious metal systems found throughout the western United States. Several investigators have termed it a classical Bonanza-type epithermal occurrence, modified and enriched by secondary processes. It has the characteristics of a low-sulfur system. Past precious metal production equals roughly 122,000 ounces of gold and 13 million ounces of silver. **Current mineable reserves are approximately 7.7 million tons grading 0.030 ounce gold and 2.08 ounces of silver per ton.**. With ongoing exploration, the ultimate reserve potential may exceed **35 million tons grading approximately 0.030 ounce gold and 1.5 ounce of silver per ton** yielding over 1.0 million ounces of gold and over 54 million ounces of silver for a total ***gold equivalent of some 1.425 million ounces***.

Silver and gold mineralization at Commonwealth occurs within a series of quartz veins, massive or sheeted, localized along and between two major vein structures, the "Main" and "North" veins. In 1927, Lewis Smith identified seven larger veins, four of which were splays off the Main Vein in a belt 350 feet wide by 4,000 feet long. Vein "horsetails" were common. All veins exhibit classical epithermal features, including drusy quartz-lined vugs, crustification, comb and cockade textures. Historical production came from supergene-enriched ores of silver (cerargyrite, embolite, argentite, native silver) and native gold. Gangue minerals include quartz, black and white calcite, adularia, montmorillonite, and sericite. Iron oxides are now abundant along fractures in the mineralized zone, but the original sulfide content of the system was low. Minor copper oxides are found on some dumps but is very rare.

Mineralization on the east end of the property appears to be high silver (+2.0 oz/ton) and low gold (<0.03 oz./ton), and is restricted to veins and stockwork zones, with gold and silver values directly related to silicification. At the western end, silver values decrease (averaging <1.0 oz./ton) but higher gold values (>0.035 oz./ton) are present and appear to be more widespread, but not always directly associated with quartz veining or silicification. Ore grade gold characteristically occurs in well fractured Tertiary Lower Andesite, Cretaceous Bisbee Formation or sometimes in Tertiary Rhyolite Breccia, generally along small fractures coated with limonite and/or hematite with minor manganese oxides.

Highest grade mineralization (+20 oz silver/ton and +0.2 oz. gold/ton) is usually found in waxy green quartz, reminiscent of the Oatman, Arizona district. Locally, it has been termed "talc quartz". The green tinge may be fluid inclusions or finely dispersed

embolite, (silver bromide). Native gold occurs as micron particles on massive quartz. One to two percent limonite after pyrite pseudomorphs are common although actual unoxidized pyrite is rare.

All mineralization has been oxidized to the maximum depth observed. Only limited, low sulfide base and precious metal primary mineralization was ever encountered in the old mine. Base metal sulfides were apparently sphalerite and galena with lesser chalcopyrite, tetrahedrite, molybdenite and proustite. Old diamond drilling in the early 1900's, beneath the 8th level, as reported in dubious old reports, was not successful in locating deeper higher grade precious metals.

Reserve Potential at the Commonwealth Mine

Excellent potential exists to increase the precious metal mineral reserves at the Commonwealth. Several mineral targets have been defined. A general discussion, not in order of priority, but generally oriented west to east is as follows:

- ***West-Central Pit Area:*** The westerly portion of the Commonwealth structures contain higher grade gold values. This area, known sometimes as the "Gold Zone", has not been fully delineated at depth and is open directly to the east along strike of the Main Vein structure. A thousand-foot gap in detailed drilling has resulted in virtually no information regarding the Main Vein, its split with the North Vein, nor the intervening ground from just below the surface down to several hundred feet of depth along dip. The veins are present and old maps indicate abundant low grade mineralization. The paucity of information was probably generated by completely inaccessible mine workings, a reported "barren" (actually, just not higher grade) zone between old ore shoots, and the difficulty of gaining drill access due to steep slopes and poor angles of intercept. Mineral reserves likely can be extended to the east yielding upwards of two million minable tons. An additional benefit is the almost one for one decrease in waste tonnage to be removed. This area lies between two minable ore zones and currently forms a septum in any proposed pit design. Ore grade mineralization will allow it to be mined with a decrease in the overall waste to ore ratio. Harvest has constructed drill roads and plans a five hole reverse circulation drilling program to test this highly prospective area. **Ultimate potential: 2.2 million Tons grading 0.032 ounce gold and 1.25 ounce silver per ton.**

- ***Southwest Veins:*** Also in the Gold Zone area, several bulk dump samples from the Mominer shaft located south of the Gold Zone drilling contained up 0.70 ounces per ton gold and 8.12 ounces per ton silver in altered and iron stained Bisbee Formation. All samples contained commercial grade mineralization. The exact location or cause of this mineralization has not been determined, as the Mominer is currently too dangerous to enter. When evaluated in conjunction with deep moderate grade intersections in old rotary holes, this material may indicate a deeper high grade ore shoot essentially undefined by recent drilling. Such shoot would be at depth and

offset slightly west from the current Gold Zone mineralization. **Ultimate potential: 0.6 million Tons grading 0.047 ounce gold and 1.0 ounce silver per ton.**

- ***Deep Pit Extensions:*** The most obvious prospective area at Commonwealth for developing additional ore tons is right in the vicinity of the main productive area of the deposit, generally at greater depths than those currently drilled. The potential lies in the mineralized wedge of Rhyolite Breccia and Lower Andesite between the North and Main Veins. Drilling has adequately defined significant ore tonnage above the 5th level of the old mine, generally averaging above the 4,300 foot level. Deeper levels have only occasionally been tested. This has resulted in a "rolling bottom" configuration to currently projected open pit configurations. Deeper infill drilling is necessary. Since the Main Vein and North Vein converge at depth, this potential target narrows and perhaps dies out at 150 to 200 feet below currently defined reserves. Average grade would be low and the waste to ore ratio high (+3:1). High grade, narrower vein intercepts are also likely. **Ultimate potential: 3.2 million Tons grading 0.025 ounce gold and 1.85 ounce silver per ton.**

- ***North Pit Rim:*** Along the northern rim of the proposed pit, local spots of well mineralized Bisbee Formation are present. Sometimes known veins such as the Eisenhart are present, others show no obvious structures other than the erratically mineralized North Vein nearby from 10 to 80 feet away. Apparently portions of the Bisbee can be quite well mineralized without obvious features identifiable in hand specimen. Glamis Gold and Western States both attempted to prospect this mineralized Bisbee without success. **Ultimate potential: 2.5 million Tons grading 0.027 ounce gold and 2.2 ounce silver per ton.**

- ***Northeast Veins:*** To the immediate east of the developed reserve, along the North Vein, potential low grade ore is present. Several drill holes have found that scattered low grade silver and spotty gold is common, sometimes approaching ore grade. Harvest's drillhole C-94-1, cut this area east of the D shaft with poor results except for a single deep (435') 5-foot intercept of 0.14 oz Gold/ton in the Bisbee Formation below the North Vein at the end of the drillhole. If the Bisbee is consistently mineralized, abundant targets may be revealed by future work. **Ultimate potential: 1.5 million Tons grading 0.022 ounce gold and 2.50 ounce silver per ton.**

- ***Main Vein Extension:*** Also to the immediate east of the currently developed reserves, but along the easterly extension of the Main Vein, some deep vein drill intercepts suggest that low grade gold (0.02 oz./ton) with moderate grade silver (2.0 oz/ton) may be present. Reserves would be narrow, tabular and deep following the favored host rocks of the Lower Andesite and Rhyolite Breccia to depth. Perhaps 3/4's to one million additional tons may be present but at a high waste to ore ratio (+3:1). Four holes to 650 feet would test this area adequately. **Ultimate potential: 1.25 million Tons grading 0.025 ounce gold and 2.75 ounce silver per ton.**

- ***North Shaft Area:*** Another 500 feet to the east southeast of the East Main Vein target, a dump sample from the +200 foot North Shaft contained 0.068 ounces per ton gold and 15.94 ounces per ton silver. This shaft was thought by some to have encountered the intersection of the Main Vein and the North vein at depth. Old underground maps suggest that the Main Vein may have curved slightly northward, making this area an en echelon feature, perhaps worthy of testing. Also a surface vein sample near the Pearce shaft located in the southern portion of this area contained 0.012 ounces per ton gold and 4.92 ounces per ton silver. **Ultimate potential: 0.5 million Tons grading 0.02 ounce gold and 3.0 ounce silver per ton.**

- ***North Vein Extension:*** A low priority target is the far eastward extension of the North Vein toward Huddy Hill. Shallow drilling conducted by Santa Fe intercepted low silver (0.5 to 2.0 oz/ton) values through the North Vein and some low gold values (0.015 oz/ton) in the footwall. Reportedly, underground workings run 900 feet east of the D shaft along the Main Vein, turned north and explored a 400-foot portion of the North Vein just above the old water table. A small gold ore shoot was reportedly mined here, generally as a limited-size gold ore zone without silver values in the footwall of the North Vein and completely bounded by assay walls. Harvest drilled C-94-2 into this region and found 10 feet of open stope but no significant assay walls. **Ultimate potential: 0.75 million Tons grading 0.020 ounce gold and 2.25 ounce silver per ton.**

- ***Huddy Hill Area:*** Local vein mineralization at Huddy Hill and other small prospects on the Galyen lease may contain potential, but additional field work is necessary. Rock chip sampling together with field structural mapping may yield good results. **Ultimate potential: 0. 5 million Tons grading 0.030 ounce gold and 2.00 ounce silver per ton.**

Six-Mile Hill Area

Six-Mile Hill, lying about one mile west southwest of Commonwealth, is geologically similar to the eastern portion of the Commonwealth Mine area. A reasonable potential for similar style mineralization may occur in the following areas:

- ***San Ramon Veins:*** A quartz-calcite vein which is at least 65 feet in width is exposed in an adit at the northwest corner of Six-Mile Hill. Three composite samples taken at various locations across this vein contained 0.033, 0.024, and 0.013 oz/ton gold with 0.15, 0.22, 0.094 oz/ton silver respectively. Several additional outcrops of similar-looking veins are present in this area and deserve further attention. The host rocks are the upper Pearce Volcanics which could be as favorable as the underlying units so well mineralized at Commonwealth. **Ultimate potential: 2.5 million Tons grading 0.03 ounce gold and 1.0 ounce silver per ton.**

- ***Six Mile Hot Springs:*** An area of hot springs sinter outcrops in the north central portion of Six-Mile Hill. Rock samples from this sinter contained anomalous gold, silver, arsenic, antimony, bismuth, gallium, and zinc, but no ore values. They occur in a down-dropped fault block and may represent the upper level of an epithermal system perhaps similar to Commonwealth. **Ultimate potential: Unknown**

- ***Six Mile Mag Area:*** Lastly, an area of reported surface soil mercury and arsenic anomalies with associated magnetic anomalies is located on the eastern portion of Six-Mile Hill. Although somewhat speculative, additional work may be warranted. **Ultimate potential: Unknown**

Adjacent Ore Occurrences:

Several prospective ore occurrences are found within a few mile radius of the proposed Commonwealth Mine.

- ***Blue Jeep and San Ignacio Prospects***: The Blue Jeep and San Ignacio prospects are located about one mile and three miles respectively east northeast of Commonwealth Property. They have had significant exploration activity, including limited drilling, some with ore grade intercepts. Additional work is warranted. **Ultimate potential: 2.25 million Tons grading 0.03 ounce gold and 2.25 ounce silver per ton.**

- ***Mexican Hat Deposit:*** The Mexican Hat deposit is about 6 miles south of Commonwealth just off the county road to Courtland-Gleason. Owed by a Pearce local, it is currently controlled by a Vancouver, BC promoter. This is a significant gold resource. Originally drilled by Placer Dome, it is reported to contain over 7.6 million tons grading 0.034 oz. Gold/ton, or some 260,000 ounces of gold. Reportedly, it is open ended, but with a high waste to ore ratio. **Ultimate potential: 10.0 million Tons grading 0.034 ounce gold and 0.5 ounce silver per ton.**

Ultimate Reserve Potential

The Commonwealth Project is in a well mineralized district. Several mineralized prospects occur immediately adjacent to known, drilled-out reserves, with larger reserves available within a 10-mile radius. With successful district-wide exploration, the ultimate reserve potential may exceed 35 million tons grading approximately 0.030 ounce gold and 1.5 ounce of silver per ton yielding over 1.0 million ounces of gold and over 54 million ounces of silver for a total gold equivalent of some **1.425 million ounces**.

Commonwealth Project
Ultimate Reserve Potential

									Equivalent Gold ozs
			Millions	Potential		Gold	Total Ounces	Total Ounces	using 150 Ag = 1Au
			of Tons	oz Au/ton	oz Ag/ton	Equiv.	Gold	Silver	Gold + Silver Equiv.
Current Mineable Reserves			**7.70**	**0.030**	**2.08**	**0.044**	**231,000**	**16,016,000**	**337,773**
Exploration Target Area	Discovery Priority								
West-Central Pit Area	High		2.20	0.032	1.25	0.040	70,400	2,750,000	88,733
Southwest Veins	moderate		0.75	0.047	1.00	0.054	35,250	750,000	40,250
Deep Pit Extensions	High		3.20	0.025	1.85	0.037	80,000	5,920,000	119,467
North Pit Rim	moderate		2.50	0.027	2.20	0.042	67,500	5,500,000	104,167
Northeast Veins	moderate		1.50	0.022	2.50	0.039	33,000	3,750,000	58,000
Main Vein Extension	moderate		1.25	0.025	2.75	0.043	31,250	3,437,500	54,167
North Shaft Area	low		0.50	0.020	3.00	0.040	10,000	1,500,000	20,000
North Vein Extension	low		0.75	0.020	2.25	0.035	15,000	1,687,500	26,250
Huddy Hill Area	low		0.50	0.030	2.00	0.043	15,000	1,000,000	21,667
Exploration Total Possible Reserves:			*13.15*	*0.027*	*2.00*	*0.041*	*357,400*	*26,295,000*	*532,700*
Harvest Controlled Properties:			**20.85**	**0.028**	**2.03**	**0.042**	**588,400**	**42,311,000**	**870,473**
San Ramon Prospect	moderate		2.50	0.030	1.00	0.037	75,000	2,500,000	91,667
Six Mile Hot Springs	low						-	-	-
Six Mile Mag Area	low						-	-	-
Blue Jeep Prospect	low		0.75	0.030	2.50	0.047	22,500	1,875,000	35,000
San Ignacio Prospect	moderate		1.50	0.030	2.00	0.043	45,000	3,000,000	65,000
Mexican Hat Project	high		10.00	0.033	0.50	0.036	330,000	5,000,000	363,333
All Other Properties			*14.75*	*0.032*	*0.84*	*0.038*	***472,500***	***12,375,000***	***555,000***
All Properties Combined			**35.60**	**0.030**	**1.54**	**0.040**	**1,060,900**	**54,686,000**	**1,425,473**
									Equiv. ozs. Gold

Rex E. Loesby, P.E.

6234 East Peakview Avenue, Englewood, CO 80111
Telephone: (303) 771-9610 Fax: (303) 771-9652

May 11, 1995

Mr. Randy Moore
Cambior, Inc.
230 South Rock Blvd., Suite 23
Reno, NV 89502

Dear Randy:

Enclosed is a Property Summary for the Commonwealth Gold Project in Southeast Arizona near the town of Pearce (70 miles east of Tucson) held by Harvest Gold Corporation of Golden Colorado. This is a surface mineable, leachable gold and silver project. Based on 126 drill holes, in-place reserves are estimated at 7.7 million tons grading 0.03 opt gold (231,000 ounces) and 2.08 opt silver (16 million ounces). An additional 5 million tons could be developed on the property, and nearby properties hold real potential. Once a final feasibility stage of development is completed (estimated to take approximately 9 months at a cost of $750,000), mine construction could begin.

Harvest is seeking a straight sale for cash or cash and free trading stock for the Commonwealth Gold Project. Harvest is also seeking a buyer for its Dixie Comstock Gold Project in Nevada, and a large land position in Catamarca Province of Argentina. Harvest is open to the sale of all of these properties or any combination of the properties.

Please let me know if you would like to investigate this opportunity. Thank You.

Sincerely,

Rex E. Loesby

90,000 oz next to wilderness.

John Watson Pres Harvest Au

303-234-9991

REC - CAMBIOR USA

MAY 17 1995

COMMONWEALTH PROJECT

PROJECT SUMMARY

Prepared by Rex E. Loesby, P. E.

May 1995

While the information contained in this Venture Summary has been reviewed and is believed to accurately reflect the reports delivered to Mr. Loesby by the owners of the properties described herein and others, as well as information gathered in conversations with the owners of the properties described herein and others, Mr. Loesby expressly disclaims any and all liability for representations, expressed or implied, contained in, or omissions from, this report or any other written or oral communication transmitted to any interested party in the course of the reader's evaluation of the properties described herein. The reader should rely upon his or her own evaluation of the venture and independently verify all of the information presented in this summary report before taking any action with respect to the venture.

NEITHER THIS DOCUMENT NOR ITS DELIVERY TO THE READER SHALL CONSTITUTE OR BE CONSTRUED TO BE AN OFFER TO SELL ANY OF THE SECURITIES OF ANY COMPANY. SUCH AN OFFER CAN ONLY BE MADE BY THE DELIVERY OF AN OFFERING MEMORANDUM BY SUCH COMPANY TO THE PROSPECTIVE INVESTOR.

For information, please contact Rex E. Loesby at 6234 E. Peakview Ave., Englewood, CO 80111
(303) 771-9610, Fax (303) 771-9652

History: The property was discovered in 1895 by John Pearce. Production during 1895 to 1927 from the original Commonwealth underground mine totaled approximately 122,000 ounces of gold and 13 million ounces of silver. The majority of production was from high grade, bonanza type epithermal gold/silver veins which occur in highly fractured and faulted Tertiary volcanic rocks.

There have been several generations of exploration and development drilling programs on the property which began in 1975. The companies involved since 1975 have included Platoro Mines, Bethex (Bethlehem Steel), Western States Minerals Corporation, Geo-Hendrick Exploration, Alpine Resources, Santa Fe Pacific Mining, Westland Minerals Exploration, Glamis Gold Corporation, Columbia Resources Inc., Pegasus Gold, and finally, Harvest Gold Corporation.

Harvest optioned the property in January of 1994. Harvest compiled all reserve information and used MineSoft, Inc.'s TECHBASE software to develop a reserve model and pit plan. Harvest drilled four holes to check potential high grade zones, expand possible reserves, and define a potential pit perimeter. Results compared favorably with previous drilling. Harvest also mined a bulk sample from underground workings for metallurgical testing at Kappes Cassiday in Reno.

Infrastructure: The warm climate of southern Arizona is ideal for year-round mining operations. The mine site is at approximately 4,500 feet above sea level. Site access is by a half mile of paved county road off of US Highway 191. Power and water are both available on site.

Recommended Development Program: A final feasibility stage of development is envisioned. The program would involve some drilling to fill small gaps in the existing drill hole data, additional metallurgical testing, permitting, mill versus heap leach analysis, and mine design. The program is estimated to cost approximately $750,000, and will require approximately 9 months to complete. Mine construction and development for a 1.1 million ton per year operation is estimated at $6 million.

Permitting: Permitting a mining operation at the Commonwealth site is underway and is estimated to require an additional six to eight months. The major permit required is from the Arizona State Office of Water Quality. Harvest's environmental consultant, Errol Montgomery & Associates, Inc. of Tucson, writes, "... Based on information reviewed thus far and our knowledge of the Aquifer Protection Permit (APP) program, we do not foresee any substantial impediments to obtaining an APP for the Commonwealth Mine Project, especially if optimum Best Available Demonstrated Control Technology is used for construction of facilities..." Harvest believes it will receive the Air Quality Permit, under a variance, very soon.

PAGE NO.

PREPARED BY

DATE

Max hat.

Blue Jeep.

5 MT add depth

@ valley floor pit current level.

Area in pit w/ no drilling. add or there

Met east end has ~~some~~ SiO_2 encapsulation need to crush to 1/4" rest only needs 5/8" crush.

West end even larger crush size

~~[illegible]~~

Clive Baley living in Peru. Pro mining in Peru.

optioned 900 Ac Behind pit can't see pit facilities there

Asque - Reserve study **5MT** not all data

856-5189

Report on Met

" on permitting

" on Reserves

Pre feasibility study

Private Corp 20 shareholders

4 people hold 90% of Company

~~[illegible]~~

HARVEST GOLD CORPORATION

COMMONWEALTH PROJECT

Cochise County, Arizona USA

A GOLD -SILVER HEAP LEACH PROPERTY

PRE-FEASIBILITY REPORT

November 8, 1994
revised April 11, 1995

compiled by: R.A. Forrest

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1.0 EXECUTIVE SUMMARY

In January of 1994, Harvest Gold Corporation, a Colorado corporation, acquired the Commonwealth Mine Property located in Cochise County, Arizona approximately seventy air-miles east of Tucson, Arizona. A warm climate is ideal for year-round mining operations and site access is by paved county road. Power and water are both available on site.

Harvest currently controls approximately 1020 acres of privately owned land, comprised partially of patented and unpatented mining claims (320 acres) and fee land (700 acres), held under five separate agreements. Harvest has an ongoing discussion with an adjacent property owner to add additional acreage to the project area.

The Commonwealth has been termed a low-sulfur, epithermal, Bonanza-type precious metal occurrence, modified and enriched by secondary weathering processes. Previous production from the old Commonwealth Mine totaled approximately 122,000 ounces of gold and 13 million ounces of silver. The majority of production was from high grade, bonanza-type epithermal gold-silver veins which occur in highly-fractured and faulted Tertiary volcanic rocks.

Harvest acquired the Commonwealth Property after several generations of exploration drilling. This drilling was concentrated on the western and eastern portions of the property. Harvest has calculated global mineral reserves of approximately 8.83 million tons grading 0.035 ounce gold equivalent per ton (including significant silver credits) with a 0.013 gold equivalent cutoff. Minable ore reserves approximate 7.7 million tons at a grade of .030 ounce gold and 2.08 ounce per ton silver (0.036 oz gold equiv.) using a 0.013 ounce gold equivalent cutoff. These reserves occur in an open pitable configuration with a 3.37 waste to ore ratio. Several independent reserve reports show higher grade albeit lesser tonnage's.

A fully operational Commonwealth Project is expected to yield an additional 5 million minable tons while other nearby prospects could yield additional significant reserves.

Extensive metallurgical tests on drill cuttings consisting of a long series of bottle roll tests yielded average gold and silver recoveries of about 78 and 36 percent respectively with low average cyanide consumption of <1.0 pound per ton and average lime consumption of <3.0 pounds per ton. These are favorable results for an anticipated heap leach project.

Required fill in exploration, metallurgical testing, permitting and design work necessary for final feasibility on a 7.7 million ton minable deposit (i.e. close to 280,000 equivalent ounces of gold) is expected to be completed within nine months of commencement. Funding requirements for completion of this feasibility analysis is estimated at $750,000. Upon completion of this final feasibility, production financing approaching $6.0 million will be capable of ore production at the rate of +1,100,000 tons per year to begin within fifteen months of constructive commencement of the program.

2.0 PROJECT DESCRIPTION

2.1 *Location*

The Commonwealth Property is in central Cochise County (T.18 S., R.25 E., Sections 4, 5 and 8), about twenty-five (28) miles south of Willcox and eighty-seven (87) miles east of downtown Tucson. The old mine workings are located on Pearce Hill, one of several low hills which rise abruptly above the Sulphur Springs Valley. Collapsed stopes and old mill foundations on the north flank of Pearce Hill are readily discernible from a long distance. The property is less than a half mile south and west of curving US Highway 191 (formerly US Highway 666) about two (2) miles south of the community of Sunsites, now known as Pearce. Douglas, Arizona and Agua Prieta, Sonora, Mexico are approximately 45 to 50 miles south on Highway 191.

Map coverage is excellent. The US Geological Survey 7.5 minute quadrangle (1:24,000), **Pearce, Arizona** covers the entire property area. Additionally, the US Bureau of Land Management, Surface and Management Status Map, **Chiricahua, AZ-NM**, covers the area at a scale of 1:100,000.

2.2 *Geography and Weather*

Elevations vary from 4,320 feet above sea level on the valley floor at Sunsites, to over 4710 feet on the top of Pearce Hill. The base of Pearce Hill, at approximately the alluvial-bedrock contact, ranges from 4375 to 4410 feet above sea level. Pearce Hill is one of several local extensional fault blocks, exposed as erosional remnants isolated by widespread pediment surfaces common along the northern end of the nearby Swisshelm Mountains to the southeast. Individual hills generally have a northwesterly alignment, parallel with regional Basin and Range topography. Steep faces on southwesterly slopes suggests block fault tilting to the northeast. The 7000-foot Dragoon Mountains lie 7 to 9 miles west and south of Pearce, and are the source area for all local intermittent streams and occasional summer floods.

The climate is dry and temperate, virtually ideal for a year-round, heap leach mining operation. According to 30-year records kept at Pearce, annual precipitation averages about eleven and one half (11.5) inches annually, more than half as monsoon thunderstorms in July and August. Winter brings light rains and occasional light snows. The average annual snow fall is only 1.2 inches. Temperatures are generally mild in winter and hot in summer. Average summer highs approach 95 degrees F, with summer lows in the mid-60's. The late summer monsoon season raises the humidity to noticeable levels. Mid-Winter highs reach the low 60's while daily average minimums drop to about 29 degrees F in December and January. Fall and Spring are ideal shirt sleeve weather.

Vegetation is sparse. On hillsides only grasses and occasionally cactus or yucca are present. This yields moderately good rock exposures. Flat areas can be virtually barren to well vegetated with Palo Verde and other hardy bushes.

2.3 *Access*

Access to the minesite area is easy. The main access is via paved county road splitting off US Highway 191, about one mile south of Sunsites (now Pearce) Arizona. One mile directly south, the paved road intersects with a gravel county road, trending west up and over MiddleMarch Pass to Tombstone, Arizona about 32 miles distant. Continuing south the paved county road crosses the northwest corner of the claim block, turns west and terminates at the Pearce Elementary School. Heading south, instead of turning west with the pavement, places one on the county gravel road to the Courtland-Gleason mining district, lying about 12 miles south. This road provides easily access to the western portion of the Commonwealth claim block and the majority of the Galyen property lying south and east of Pearce Hill. Several dirt roads and tracks provide four-wheel drive access throughout the property.

A Southern Pacific rail spur is available at the town of Cochise, about 14 miles north of the Property. An additional spur is available at the Arizona Electric power plant about 12 miles north, but this may not be available for private use. Formerly, the mine was directly served by a branch line of the Arizona and Colorado Railroad south down from Cochise toward Douglas, right across the property with a siding at the old mill site. This spur line was abandoned in 1932.

The Mine itself was originally developed via five shafts, the #1, A, B, C and D. Only the approximately 65 degree C and D Shafts are currently accessible, both on the eastern end of the old developed mine. The B Shaft is accessable below the 6th mine level. The non-production Brockman shaft allows access to the far west end of mineralization. All three surface shafts were partially rehabilitated by Westland Exploration in the early 1990's. Eight levels were originally excavated with some 24 miles of underground workings. The first and second levels are now only locally accessible from the shafts and are badly damaged by caving stopes. The 3rd level is well accessible via the C and D, as is the 5th and 6th. Supposedly, the 7th and 8th are accessible via the D shaft. Harvest personnel have not yet attempted to access the deeper levels of the C Shaft. The D Shaft 7th level has been explored by Company personnel, but is accessible with difficulty as the station has collapsed making the 8th level totally inaccessible. No surface facilities other than foundations remain.

Square set and shrinkage stopes used during operations were apparently unstable, even during actual mining. Most old stope areas are now inaccessible. Although vein areas are difficult to access underground, many crosscut workings, some cutting the primary vein structures are available for sampling.

2.4 *Power and Water*

Abundant electric power is available from the Apache Generating Station of Arizona Electric Power Cooperative, Inc., located approximately 12 miles north of the Commonwealth Mine. Sulphur Springs Valley Electric Cooperative ("SVEC"), an REA power distributor, has a 7200 volt transmission line through Sunsites and south across the Commonwealth Property. Service hookups of approximately 300 amps are installed at a wellhead and at the old Thetford

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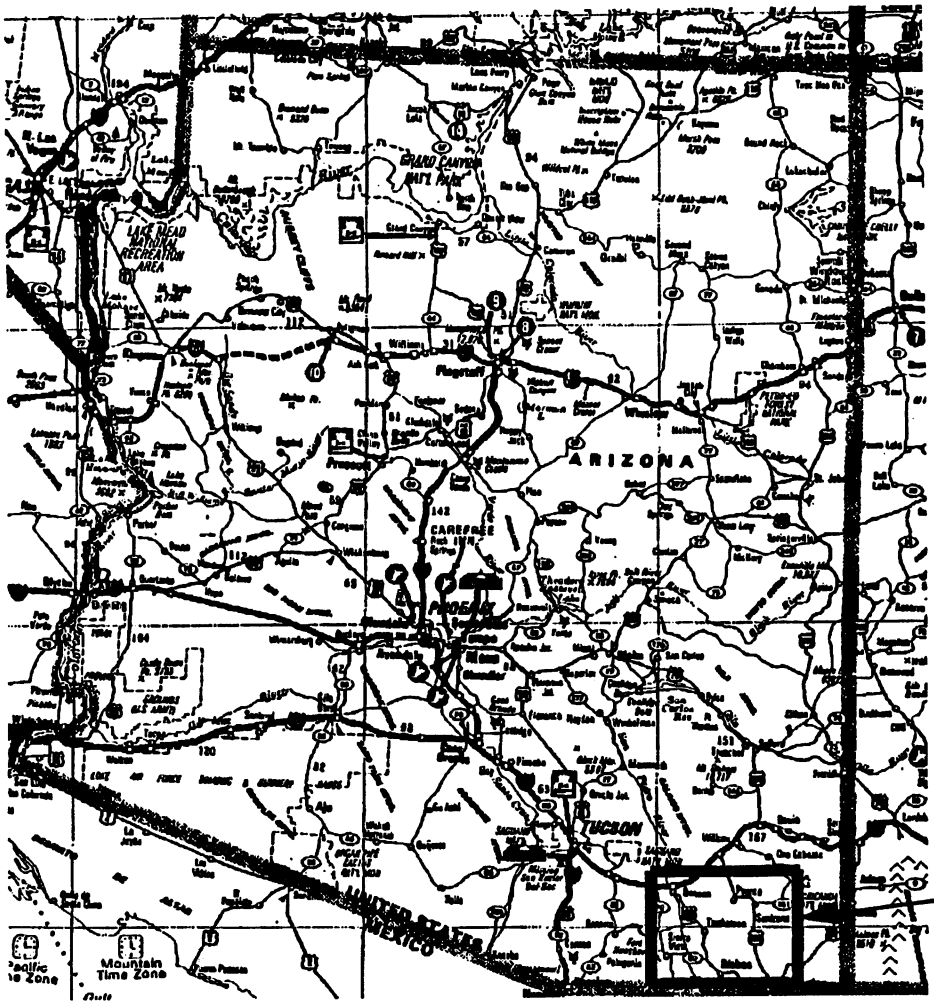
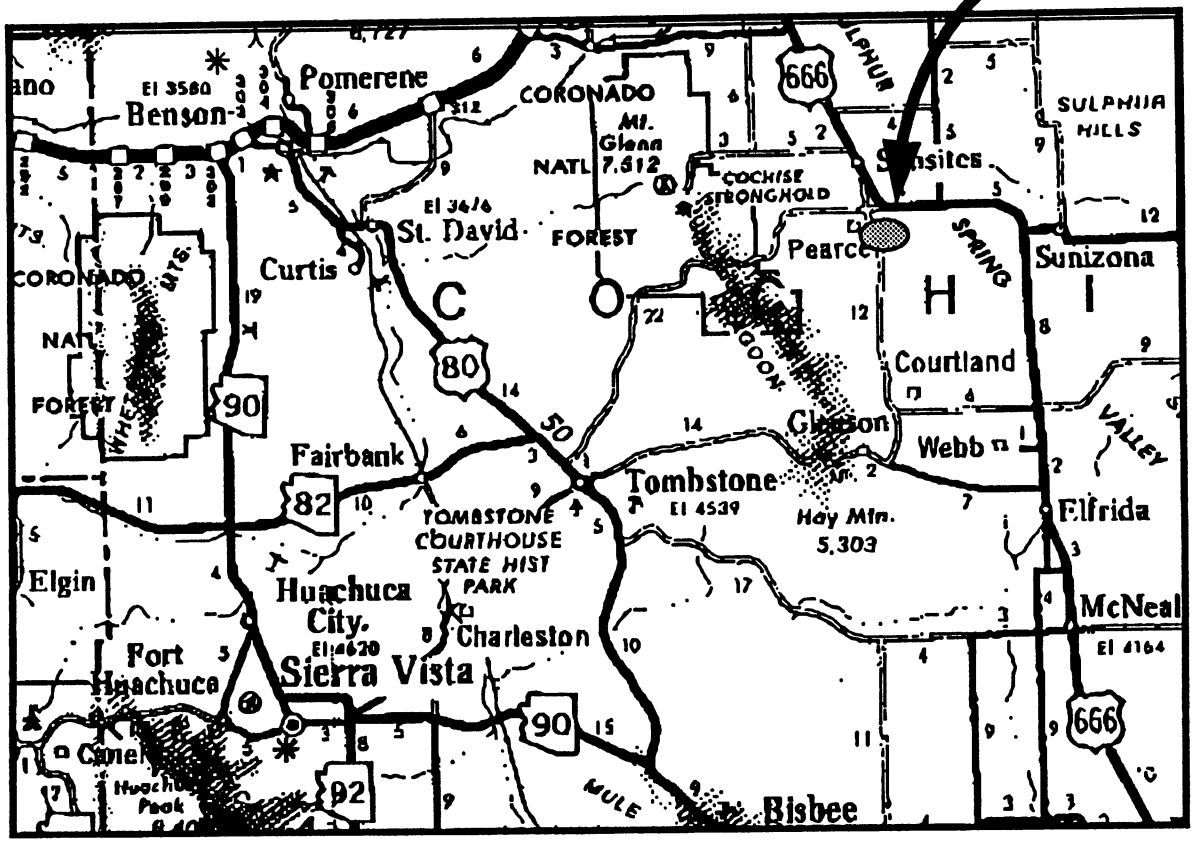
COMMONWEALTH PROJECT
ARIZONA



INSET AREA

PROJECT AREA



LOCATION MAP - COMMONWEALTH MINE

millsite. The line continues to the Pearce Elementary School with a stub branch up and over the east flank of Pearce Hill, ending at an old unused mill site area.

SVEC will construct new 7200 volt line at the rate of $35,600 per mile (the first 400 feet being free and additional line at $7.31 per foot). A monthly minimum charge of $221 per month will apply to all new industrial service, which with volume usage would approach approximately $0.067 per kilowatt hour.

Water is available from an old production well (the Thetford well) located on the northern portion of the property served by 3-phase power lines. A 408-foot 12-inch cased well holds both 15 and 3 horsepower pumps (the 15HP currently unusable) with the water level at 290 feet. Production capability is unknown. The underlying owner has the right to draw up to 3,000 gallons per day of domestic water from the system, but has not availed himself of that privilege for many years. A holding tank of approximately 3,000 gallons is on site with piping hookup of unknown condition from the Thetford well. The holding tank rests upon indicated mineral reserves and would likely be removed. Since the lowermost (8th level) Commonwealth Mine workings were reported in years past to be flooded, additional water sources could likely be developed at reasonable depths of 300 to 400 feet.

A second, 500-foot domestic well on the Galyen Property is served by a two horsepower pump at 400 feet on single phase power. Production characteristics for this well are also unknown. An old windmill well, located on the southerly portions of the Galyen Property in dense underbrush growth, suggests that a shallower water table is possible, fed directly from the nearby Dragoon Mountains to the west.

In October of 1994, Harvest retained Errol L. Montgomery & Associates, Inc., well known Tucson hydrologists, to evaluate the Commonwealth area for water development and environmental permitting requirements. Their report completed in January 1995 indicates that 24 wells have been drilled in the 9.75 square mile area surrounding the proposed minesite. Several of these wells were for mineral exploration purposes. All wells have been tabulated with results.

2.5 *Old Pearce Townsite*

Old Pearce was once home to some 2,500 residents in the early 1900's. It is now occupied by less than 25 people in about a dozen inhabitable structures just north of the mine site. Numerous old out buildings and abandoned facilities attest to its better years. The active Pearce Elementary School, consists of one old, and one newer brick structure, several temporary buildings and a large cinder block gymnasium. The school, originally founded in the early 1900's, has been in continual operation since. Its mascot name is "The Pearce Miners". The school had approximately 170 students in 1992 and serves all of Sunsites and the surrounding area. It partially occupies land donated by the ancestors of the current underlying claim owners, lying only about 700 to 800 feet north and west of a possible openpit boundary.

The old Commonwealth Mine and the majority of potential reserves are located immediately south and east of the village on the north and west flank of Pearce Hill. An old

store and the old post office lie at the Tombstone road junction about 1100 feet north of potential development. Two occupied residences are within 500 feet of potential open pit operations.

2.6 *Sunsites Townsite*

Sunsites, founded in the early 1960's, is a self-supporting, non-incorporated retirement community two miles north of Commonwealth. The Pearce Post Office moved to Sunsites as old Pearce was virtually abandoned. Sunsites has languished somewhat as a retirement community with only local agricultural development for employment. The town and surrounding rural area has some 1300 residents, and boasts of a monthly newspaper, a Bank One Branch, two auto part stores, an ACE hardware, three gas stations, several apartments, trailer parks, churches, miscellaneous businesses and cafes, plus a fine 18 hole championship golf course.

Natural gas pipelines from Southwestern Gas Company and propane from Ameri-Gas service the town. Telephone service is via the Valley Telephone Co-op. A concrete redi-mix plant is located about 11 miles north of the Commonwealth Property. Local tax assessments in 1990 were approximately $15.00 per $100 of assessed value. An 800-acre industrial park has no established businesses. Discussion meetings with local school board members and other "city fathers" have not given negative feedback as to potential mining activities.

3.0 LAND STATUS

Harvest currently controls approximately 1020 acres of land composed of patented and unpatented mining claims, and fee land at the old Commonwealth Mine and adjacent terrain. The Property is held under several agreements referred to as the Commonwealth and Galyen Agreements. Harvest has also held discussions with the property owner of the Blue Jeep and San Ignacio prospects that may have potentially commercial mineralization nearby. These discussions are ongoing. An agreement with this property owner would add approximately 1440 acres of claims to Harvest's property position at Commonwealth.

3.1 Columbia Resources, Inc. Agreement

On January 10, 1994, the Company acquired the rights from Columbia Resources, Inc. of Denver, Colorado, USA, to take an assignment of three agreements, including an option agreement to lease the Commonwealth Mine in Cochise County, Arizona, USA from three independent parties. On January 27, 1994, the Company exercised its option to acquire the Commonwealth leasehold interests and obtained assignments of three separate agreements covering the Property. In exchange for the agreement assignments, Columbia Resources, Inc. received: 1) $7,000 cash, 2) a guarantee by the Company that the underlying property holder payments would be made, or the properties returned, 3) an escalating payment schedule of cash payments commencing July 25, 1994 for $500,000 due over a 5 year period, 4) a 5% net profits royalty escalating to a 10% net profits royalty upon the Company's recovery of two times its invested cost, 5) a contract for $20,000 of senior level consulting activities to be provided by

Columbia management at the rate of $400 per day, and 6) the right to appoint one Board member of the Company for a two year period.

On April 5, 1994, Columbia appointed and the Company accepted Mr. Rudi Fronk, President of Columbia as a director of the Company. Also on April 5, 1994, Columbia and the Company agreed to exchange the first two cash payments owed to Columbia, aggregating $50,000 due under provision 3) above, for $20,000 cash paid to Columbia by the Company and 17,500 shares of the Company's Common stock, which has been delivered.

3.2 Commonwealth Agreements

Harvest's current ore reserves lie on patented ground leased from three individual parties. The leased ground includes:

1. Seven patented claims - 142.3 acres composed of the Sulphur Springs Valley, Ocean Wave, Silver Wave, North Bell, One and All, Commonwealth, Silver Crown claims.

2. One Patented millsite - 5 acres on the One and All Millsite.

3. One Unpatented millsite - 5 acres known as the Ocean Wave Millsite.

4. Seventeen Unpatented Lode Claims

   Lyle 1 thru 6 - BLM Nos. 50140 thru 50145
   Pan 8 thru 15 - BLM Nos. 50146 thru 50153
   Mamie V thru VII Nos. 128288 thru 128290

5. Four Unpatented Placer Claims

   Mamie I thru IV - BLM Nos. 50126 thru 50139.

The Property is leased under three separate agreements.

Corford Agreement Also known as the the Thetford agreement, stipulates that an eighty eight percent (88%) undivided interest is leased under a January 31, 1994 agreement for a 21-year period in exchange for escalating minimum advanced royalties of $37,500 each six months commencing January 31, 1994, progressively escalating to $125,000 each 6 months at the 84th month of the contract, until $2.5 million has been paid, plus a 3.52% gross royalty (a 4.0% gross royalty times an 88% undivided interest). The January 31, 1995 payment has been made. Once a total of $2.5 million has been paid, the property has been purchased and the royalty shall be reduced to a 1.76% gross royalty (a 2.0% gross royalty times 88%), which shall be further reduced to a 0.88% gross royalty (a 1.0 % gross royalty times 88%) once a total of $3.25 million has been paid. The COR-FORD property is subject to the following advance royalty schedule (of which $125,000 has been paid to date), which will be applied against future production royalty payments:

Due Date	Amounts	Cumulative
paid to date		$125,000
7/31/95	$50,000	$175,000
1/31/96	$62,500	$237,500
7/31/96	$62,500	$300,000
1/31/97	$75,000	$375,000
7/31/97	$75,000	$450,000
1/31/98	$87,500	$537,500
7/31/98	$87,500	$625,000
1/31/99	$100,000	$725,000
7/31/99	$100,000	$825,000
1/31/00	$112,500	$937,500
7/31/00	$112,500	$1,050,000
1/31/01	$125,000	$1,175,000
7/31/01	$125,000	$1,300,000
each 6 months thereafter	$125,000	

Breitner Agreement An eleven percent (11%) undivided interest in the Commonwealth Property is held by the Company via a 5-year Option to Purchase dated January 31, 1994, calling for semi-annual payments of $5,000. The January 31, 1995, payment has been paid. The Option to Purchase gives the Company the exclusive right to purchase the 11% interest (less a reserved 1% royalty in the interest conveyed, (equal to a minor royalty, 0.011%,on the whole property) for a total purchase price of $150,000 exclusive of the option payments.

Jessup Agreement Lastly, a one percent (1%) undivided interest is held via a 5-year, exclusive Option to Purchase dated September 17, 1993, calling for $500 semi-annual option payments non-creditable against a $10,000 purchase price. The May 17, 1995 payment has been made.

3.3 Galyen Agreements

Harvest also holds strategic land adjacent to the Commonwealth patented claims through a Lease and Option Agreement with L.A., & Francis Galyen and Seven Enterprises, Inc. all of Anderson, Missouri. The Galyen Agreement includes the following described real property situated in Sections 4, 5, 16 in the Turquoise Mining District, Township 18 South, Range 25 East, G&SRM, Cochise County, Arizona:

1. Patented Lode Mining Claims - 100% interest in four patented lode mining claims: the Arthur, Rainbow, Hornspoon and Silver Thread.

2. Fee land totaling approximately 700 acres:

Sec 4, SE/4 of the NE/4	E1/2 of the SE/4
SW/4 of the SE/4	SE/4 of the SW/4
SW/4 of the NE/4	NW/4 of the SE/4
Sec 9, NE/4 of the NE/4	W/2 of the SW/4
NW/4	W/2 of the NE/4
Sec 16 NW/4 of the NW/4	

3. Unpatented Lode Mining Claims:

Pan 1, 2, 3, 24, 26, 29, 31, 36, 68 and 72

Ayn Rand Nos. 1 & 2

The Galyen property is not subject to any production royalties, but is subject to the following payment schedule:

Due Date	Amount	Cumulative
paid to date		$20,000
8/16/95	$20,000	$40,000
8/16/96	$30,000	$70,000
8/16/97	$40,000	$110,000
8/16/98	$40,000	$150,000
8/16/99	$40,000	$190,000
8/16/00	$40,000	$230,000
8/16/01	$60,000	$290,000
8/16/02	$60,000	$350,000
8/16/03	$60,000	$410,000
8/16/04	$90,000	$500,000

Harvest has the option to purchase the Galyen Property for $250,000 any time prior to August 16, 1995. The purchase price shall be $500,000 thereafter.

The Galyen Property will allow the Company additional reserve exploration ground along the southeast extension of the Commonwealth vein structure, as well as relatively flat, but well-drained privately owned fee lands, nicely suited for the Company's anticipated mining and leaching operations.

4.0 HISTORY OF MINING AND EXPLORATION

4.1 Discovery and Mining

John Pearce discovered the Commonwealth Mine in 1895 while driving cattle over Pearce Hill. When picking up a rock to throw at a recalcitrant animal, he noted an extraordinarily heavy weight from bland looking quartz. He broke it open, found free gold with silver chlorides, and the rest is history. Total production was over 122,000 ounces of gold and almost thirteen (13) million ounces of silver. At current metal prices (October 1994) of $385/oz gold and $5.50/oz silver, the historical production of the Commonwealth Mine has a present day value in excess of 118 million dollars.

During the period 1895 to 1927, extensive underground development totaling about twenty (20) miles of workings on eight (8) levels was done at the Commonwealth Mine. Approximately two (2) miles of workings on only four (4) levels, mostly between C and D shafts are easily accessible today. The mine extended down to the eighth level at an elevation of about 4150 feet, approximately 500 feet below the surface.

After 1927, the mine was apparently worked sporadically in the upper levels by lessors. Significant tonnage's of low grade ore averaging $3-$4/ton across widths of 30 to 60 feet were noted in 1939. At 1939 prices of $35/oz gold and $0.68/oz silver, these reserves would contain 4 to 5 ounces of silver per ton (assuming a gold value of 0.01 oz/ton). Carl Thetford and D.A. Corgill optioned the Commonwealth patented claims from the Strong - Harris estate in 1972 and exercised their option in 1977. From 1972 to 1977, Theford attempted to recover low grade precious metal values from the large tonnage of old cyanide tailings available from prior operations. Corgill died in 1981 and Thetford executed an option to buy Corgill's interest in the claims from the Corgill heirs. Several tens of thousands of tons of old tailings were shipped as smelter flux during high silver prices. Up to Carl Thetford's death in February of 1987, five mining companies carried out exploration programs on his claims, while one company evaluated contiguous claims. Some of their results are summarized below.

4.2 Recent Exploration

Platoro Mines, Inc. under the direction of Paul Eimon mapped, sampled, and drilled the property during 1975. Sampling of surface outcrops and the accessible workings of the third, fifth, and sixth levels of the Commonwealth Mine indicated potential for 5 to 25 million tons of open pit ore averaging 0.02 to 0.03 ounces per ton gold and two to four ounces per ton silver with an approximate three to one (3:1) stripping ratio. In August and September of 1975, Platoro drilled five (5) rotary holes along the southeast extension of the Commonwealth zone with very favorable results.

Bethex, the exploration subsidiary of Bethlehem Steel, optioned the property from Platoro in May 1976 on the basis of Platoro's encouraging drill exploration results. Bethex's objective was to test the down dip and lateral extent of the system. They drilled thirteen (13) percussion holes (4785 feet) and three (3) core holes (510 feet) with disappointing results.

Bethex concluded that their drilling had ruled out the possibility of a large bulk minable silver deposit, and dropped their option.

Western States Minerals Corporation then optioned the property from Thetford in 1977 and drilled thirteen (13) percussion holes in 1978. According to Thetford, several company executives were killed in an airplane crash and the property was released soon thereafter. Western States drilled the eastern extension of the North vein without success and delineated some low grade mineralization in holes between C and D shafts. However, their most interesting results were at the west end of the property, when higher gold values were encountered.

During 1981, John A. Stephens of Geo-Heindrick Exploration drilled adjacent property to the west, east, north and south of the Commonwealth Mine. Fourteen (14) holes were drilled in alluvium on the Galyen property in Section 4. No mineralization was encountered. At least four (4) holes were drilled at Six Mile Hill southwest of Pearce but the results are not available.

Alpine Resources, Ltd. of Grass Valley, California had the property under option during 1983 and 1984. Their program included aerial photography preparation of a 1" = 100' topographic base map, geologic mapping, with rock chip and dump sampling. A drilling program was recommended to evaluate both the east and west sides of the property, but due to a lack of funds, Alpine dropped the property without drilling.

Santa Fe Pacific Mining, Inc. optioned and drilled the property during late 1986, but released it back to Thetford shortly before his death in February 1987. Santa Fe drilled five (5) holes along the east extension of the North Vein, apparently on the assumption that it represented a caldera margin. One hole was drilled on the west side of the property per contractual agreement with Thetford at a site dowsed by one of this associates. None of the holes intersected significant mineralization. A quick metallurgical review program on high silver samples from the mine found that precious metals were difficult to recover at larger (+1/4") cyanide leach sizes.

During 1988 DRX's, Inc.'s mineral exploration subsidiary, Westland Minerals Exploration, Inc., optioned the property. In 1989, and 1990 Westland Minerals under the direction of Rudi Fronk, currently a Director of Harvest, conducted three phases of reverse circulation drilling aggregating some 16,225 feet of drilling in 55 holes, based on drill targets as recommended by consulting geologist Tom Patton. He recommended exploration on:

1. A principal west-northwesterly vein (Main Vein) with higher grade ore mineralization and a spatially associated easterly vein (North Vein) with lower grade ore mineralization. The veins intersect and enclose a southeast-plunging prism of mineralized ground in Pearce Hill.

2. Incompletely explored ground associated with earlier mining of the combined vein system on the west end of Pearce Hill, and to the west of the above intersection.

3. Incompletely explored ground associated with earlier mining in the east end of Pearce Hill and along the projection of the plunging intersection of the two veins.

The drilling results from all phases identified significant mineralization. The Phase I drill assays were conducted by fire assay at Barringer Laboratories and the Phase II and III drill assays were conducted by fire assay at Skyline Labs in Tucson, Arizona. Check assaying completed by Skyline Labs and Bondar-Clegg on Phase I samples indicated that the silver assays reported by Barringer were perhaps incorrect as the re-checks were consistently higher. Most of the significant mineralized intercepts on the western end of the deposit have been re-assayed by Skyline Labs.

In early 1990, Placer Dome reviewed the property, sending several composite drill samples to it's Golden Sunlight Mines, Inc. lab in Whitehall, Montana for bottle roll testing at fine grain sizes. All samples from low to high grades leached well for both gold and silver, yielding 91% for gold and 89% for silver with moderate cyanide and lime consumption. Assay head grades for the composites were only 67% to 85% of the expected drill head grades, but varied with different sample weights, while copper values ranged from 20 to 250 PPM. Calculated head grades for gold were 12% higher than expected for gold and generally lower on silver especially with higher average grades. Placer Dome did not pursue additional work.

In the summer of 1991, Westland subleased the property to Glamis Gold, Inc. Glamis had its subsidiary Chemgold, Inc. performed several short term (72 hours) bottle rolls on different size fractions. They then performed 8-day column tests that returned favorable gold leachablities. Glamis also drilled 4430 feet of reverse circulation in 13 holes predominately to define mineralization in the Bisbee Formation. Drill hole results were discouraging and Glamis dropped out.

In May of 1991, Westland retained Mintec, Inc. to compile a computer generated ore reserve of the Commonwealth Property. Mintec, using its MEDSYSTEM software, compiled all previous data, and generated a block model utilizing 10'x20'x20' composite blocks within a 45 degree pit constraint at a 12.5 tonnage factor. Mintec defined 4.6 million tons at a 0.037 gold and 2.06 silver ounce per ton grade, using an 0.016 recoverable equivalent gold grade. This is equal to a 0.041 recoverable equivalent ounce gold per ton under Harvest's reserve definitions.

Early in 1992 Western States Minerals Corp. (WSMC) again optioned the Commonwealth Property, but only after a lengthy study of potential political and environmental concerns, which were all but alleviated by local governmental meetings. WSMC then conducted 3,545 feet of reverse circulation drilling in 11 holes. Many holes tested potential Bisbee targets parallel to the North Vein structure, and returned poor results. WSMC also conducted cyanide leachable gold tests on hundreds of previous drilled sample intervals with favorable results showing approximately an 83% cyanide extractable gold value verses fire assay value. Further, a composite of 49 old drill samples, divided into low, medium and high grades was submitted to METCON Research, Inc. lab for bottle roll tests, also with favorable results. Lastly, a check assay program was instituted on some 124 old drill samples re-submitted to American and

Skyline labs. Check assays came in approximately 19% lower than the initial drillhole assay results, even though at least four different drill programs were evaluated. No explaination was given for the failure to confirm three other assay regimes. WSMC, discouraged by the results of the check assaying and the poor drilling results, abandoned the project back to Westland.

After the financial demise of DRX in mid-1992, Mr. Fronk founded Columbia Resources, Inc. with the designated purpose of advancing the Commonwealth Property. In October of 1992, Columbia Resources obtained an exclusive option to lease the Commonwealth Mine from the underlying owners.

Almost immediately, in November of 1992, Consolidated Nevada Goldfields, Corp. concluded an agreement with Columbia to test the Commonwealth Property with metallurgical testing, in-house at CNG's Brewer, South Carolina lab, and with bulk samples to McClelland Laboratories, Inc. in Reno, Nevada. CNG compiled an ore reserve study which showed 5.149 million tons at 0.046 ounce gold per ton and 1.91 ounce silver per ton using a 0.015 ounce gold cutoff grade. This equals 0.047 ounce recoverable gold equivalent per ton under Harvest definitions. CNG terminated their program before completion of the metallurgical tests. Those tests showed favorable results with 68% to 71% of the gold leached in 31 days and still producing with low cyanide and moderate lime consumption. McClelland showed that near surface samples leach poorly (<30%) at coarse sizes (5/8") but much better (>65%) at finer sizes (-10 mesh).

In late 1993, Columbia then attracted Pegasus Gold Corporation to undertake exploration work, prior to the required exercise of the option to lease. Pegasus drilled five (5) deep reverse circulation drill holes beneath the central and eastern portion of the Commonwealth workings aggregating some 3,215 feet. Pegasus lost three of their five Main Vein intercepts in old mine workings. Pegasus returned the property to Columbia in December of 1993, apparently moving its exploration emphasis to South America.

4.5 *Harvest Gold Corporation - Exploration and Development*

In early January of 1994, Harvest Gold Corporation obtained the right to lease the property through an agreement with Columbia Resources transferring all its rights to the property to Harvest. On January 31, 1994, Harvest exercised the option, and leased the property from the underlying owners. Harvest immediately began compiling all the outstanding Commonwealth information into a comprehensive database using MineSoft, Inc. TECHBASE software. Several potentially minable reserve scenarios were defined.

Aueq Cutoff	MM ore tons	Gold grade	Silver grade	Aueq grade	Recoverable Gold Eq oz.	Waste ore ratio
0.020	5.47	0.036	2.44	0.045	246,285	4.87
0.015	7.15	0.031	2.18	0.039	279,040	4.03
0.013	7.74	0.030	2.08	0.036	278,775	3.37
0.011	8.78	0.028	1.95	0.034	298,789	3.39

In late September 1994 Harvest commenced a proposed 12-hole reverse circulation drilling program designed to check potential high grade reserve areas, expand possible reserves and define a potential pit perimeter. On the fourth hole some 260 feet of drill rods twisted off in the old mine workings and the drilling company pulled their rig from the property. Two of the four holes were drilled for check assay purposes. Results compared favorably with previous results. Of the two exploration holes drilled, the second bottomed in a 5-foot intercept of 0.14 ounce gold per ton in the Bisbee formation.

Also in September of 1994, Harvest commenced underground bulk sampling of the Commonwealth Mine for metallurgical purposes. Six (6) individual samples were collected from various mine workings, two from near surface, three from the third level and one from the sixth level. These six bulk samples were selected from 93 underground channel sample locations from cross cutting workings. The head grade average of all six samples was virtually identical to the expected channel sample grade (without weighting) of 0.026 ounce gold and 2.29 ounces silver per ton, although wide variations in grade were found on individual samples. Five of the six bulk samples were lower in grade for gold while two of the bulk samples were lower in silver.

In October, 1994, Kappes, Cassiday & Associates, Inc. performed identical 100% -5/8" bottle rolls on each of the six underground samples. Two samples yielded over 90% recovery in 72 hours. Four samples (including the two near-surface samples) showed from 32% to 45% recovery. Kappa's recommended 60-day column leaches at -10 mesh for the poor samples. In late October 1994 the two surface samples were combined, and the two poor leaching, third level samples were also combined. These produced two -10 mesh column leaches. After 30 days leaching time 68% and 78% of the gold had been recovered.

The two good bottle leach samples from the western 3rd level and the 6th level were each placed in separate -5/8" column tests. The 5/8" material showed 84% and 93% gold recovery after 42 days of leach time. Silver recoveries ranged from 15% to 24%.

In March 1995, an additional 1/2 ton of underground bulk samples was delivered to Kappas, Cassiday for treatment under identical conditions with a specific concentration on maximizing silver recovery. Bottle rolls are currently in progress.

5.0 GEOLOGY AND MINERALIZATION

5.1 Regional Geology

The Pearce Hills and other low hills in the Sulphur Springs Valley lie between the Willcox Playa, the Dragoon Mountains to the west and the Swisshelm Mountains to the south and east. The Hills are composed of a complex series of middle Tertiary flows, welded tuffs, and pyroclastic rocks that were extruded over a platform of Cretaceous and older sediments.

These individual, tilted volcanic blocks strike northwest, dip 10 to 40 degrees northeast, and are separated by a series of northwesterly trending Basin and Range faults. The Pearce Hills may be a northwestern continuation of the Swisshelm Mountains, a theory that is supported by regional gravity and magnetic data. Although Tertiary rocks in the vicinity of Pearce have not been dated, an Oligocene-Miocene age (20 to 40 million years) is probably based on correlation with similar rocks in the Swisshelm and Chiricahua Mountains to the east.

Individual rock units can not be easily traced between the various isolated volcanic fault block hills. Certainly in the vicinity of Commonwealth, hydrothermal alteration, in particular potassic alteration has obscured the original rock type and made correlations difficult. Volcanic sequences generally consist of andesite flows overlain by rhyolitic ash flow tuffs. Most hill tops are capped by the relatively resistant rhyolite ash flows.

5.2 Local Geology - Rock Types

Bisbee Formation (Kb)

The oldest rocks in the mine area are well-sorted sandstones and mudstones of late Early Cretaceous age, generally regarded as the Bisbee Formation. Because the Bisbee Formation is soft and easily eroded, outcrops are limited to a few small exposures along the north side of Pearce Hill near the footwall of the North Vein. Bisbee sediments are, however, exposed in several underground workings on the north and west side of Pearce Hill, and in numerous drill holes. The Mominer shaft, west of Pearce Hill is situated entirely in Bisbee and contains local +0.1 ounce gold mineralization. The base of the Bisbee is not present in the property area. The upper contact is disconformable with Tertiary volcanics.

Where the Bisbee Formation is exposed along the North and Main vein, it is a clean, fine to medium-grained sandstone with abundant silicification, fracturing and iron staining, best described as a quartz arenite. Recrystallization is present near vein structures. Locally pebble conglomerate units may be present. Underground exposures show interbedded red mudstones which appear emerald green in drill cuttings outside of the zones of obvious oxidation. Drill logs also indicate that the Bisbee contains interbedded siltstones and sandy, calcareous mudstones which do not crop out.

Generally, the Bisbee, of unknown local thickness, has been regarded as a poor host rock for ore mineralization due to its friable nature, its structural incompetence and its propensity to produce fault gouge rather than open fractures. However, the Mominer Shaft, selected drill holes and crosscuts through the North Vein on the 3rd level show significant gold grades (+0.10 oz gold/ton) across significant widths (+40 feet) with little silver. As this ore grade material is virtually non-distinguishable from unmineralized Bisbee, careful attention must be made to properly evaluate Bisbee drill intercepts and outcrops. High carbonate interbeds could provide suitable loci for disseminated gold mineralization. Several past exploration efforts have attempted to prospect the Bisbee without success to date.

Lower Andesite

The Lower Andesite, also known as the First Flow, is identifiable largely on the basis of its stratigraphic position between the underlying Bisbee Formation and overlying Rhyolite

Breccia, and to a lesser degree because of observable crystalline differences with the Upper Andesite flow. It is best described as a dark aphanitic, locally porphyritic andesite flow, which, in the vicinity of the mine is of a trachyte composition due probably to superimposed hydrothermal potassic alteration.

The Lower Andesite is disconformable with both the Bisbee and the overlying volcanic units. Although numerous textural variations make generalizations hazardous, the following features are typical of Lower Andesite: 1) low-profile, dense, smooth, and well-fractured outcrops 2) stubby plagioclase phenocrysts set in a light gray to black aphanitic matrix 3) auto-brecciated fragments present, but subordinate, and 4) generally weak to non-magnetic. A basal auto-breccia is made of up to 40% andesite fragments.

The Lower Andesite crops out on the west end of Pearce Hill where drill holes and underground exposures show that it disconformably overlies eroded Bisbee Formation. A few outcrops and abundant float also occur on the west side of Huddy Hill about 1500 feet east of the mine. These are perhaps the faulted offset of the Pearce Hill outcrops. Several outcrops of andesite occur along the Main Vein near its point of intersection with the North Vein. Here the unit is highly shattered, silicified and iron-stained making positive identification difficult.

The Lower Andesite, approximately 150 feet thick, is the premier ore host rock at Commonwealth, providing competent vein walls and widespread wall rock fracturing parallel to major vein systems.

Rhyolite Breccia

The Rhyolite Breccia, also known as the First Ash-flow, is a distinctive rhyolite crystal lithic tuff or arenite, with phenocrysts of square quartz, potassium feldspar and biotite, and fragments of andesite and locally minor Bisbee Formation. Thin sections have identified it as predominantly ash-flow tuff, completely devitrified. It forms massive, easily recognizable outcrops on Pearce and Huddy Hills. Faulted slices of Rhyolite Breccia also form bold outcrops along the Main and North Veins in the center of the area of previous mining. The bottom is marked by a thin (<2 feet) waterlain tuff or surge flow disconformably overlying the Lower Andesite. It is overlain disconfomably by the Upper Andesite flow, but is separated from it by an irregular (<10 feet) water-lain tuff or surge flow which makes a good marker horizon.

The Rhyolite Breccia, approximately 200 feet thick, is the second most predominate ore host at the Commonwealth property. Generally, within 50 feet of vein mineralization this unit can be well silicified or welded-looking, and is perhaps recrystallized with a high potassium feldspar content. Away from vein areas, this unit is more friable and obviously tuff-like. Silica-indurated Rhyolite Breccia provides for well shattered wall rocks adjacent to vein structures, but less reactive wall rock chemistry.

Upper Andesite

The Upper Andesite, also known as the Second Flow, is the most areally extensive at the Commonwealth Mine, covering the southern and eastern parts of Pearce Hill and the extreme eastern side of Huddy Hill. The top of Pearce Hill is capped by this unit. The Upper Andesite typically forms light gray to brown scabby, rubbly weathering outcrops and has a light to dark brown fine-grained matrix with plagioclase laths. It is commonly weakly magnetic and has

easily recognized hornblende crystals and/or breccia fragments. A vesicular basalt at the north end of Metat Hill, east of the mine, may be a scoriaceous flow top of the Upper Andesite. As in the Lower Andesite, material near to vein systems is of a trachyte composition due to potassic alteration. The Upper Andesite is overlain disconformably by the Third Waterlain Tuff.

Although good exposures are rare, the Upper Andesite is estimated to be approximately 500 feet thick.. The majority of the eastern part of the Commonwealth ore zone has a hanging wall composed of this unit, but significant ore occurrences have been rare. The eastern portion of the ore zone seems to die out as the Upper Andesite is approached.

Ash Flow Tuff

This unit, the youngest of all volcanics in the mine area, caps Metat Hill and is similar to rocks in the Six Mile Hill area one half to three miles west of the property. The rock is a dense, welded tuff with flattened pumice fragments, quartz phenocrysts and local vitrophyric textures. Locally, this unit appears conglomeratic with rounded fragments of limestone, Bisbee Formation and andesite set in an arkosic sandstone matrix. It is best described as an arkosic arenite with occasional boulders approaching two feet in diameter. Along the North Vein, south of Huddy Hill, this unit has been well silicified and superficially resembles the Rhyolite Breccia.

The Ash Flow has a total thickness of about 450 feet and has not been found in the mine workings, but has been exposed by exploration shafts sunk to 100-foot depths about 1000 feet east of the ore zone. Except where silicified, the Ash Flow does not appear to be a favorable ore host.

The lower portion of this unit has been described as a waterlain tuff while the upper portion has been defined as a Second Ash Flow unit similar to the first Ash-Flow or Rhyolite Breccia. The degree of welding governs its classification. The Ash Flow tuff is disconformable overlain by additional tuffaceous and flow rock outside the mine area.

5.3 Local Geology - Structure

Local structure is dominated by regional northwest-trending Basin and Range features. All pre-Quaternary rocks have general northwesterly strikes of N.25W. to N.55W., and northeasterly dips ranging from 10 to 40 degrees. Although the volcanic units are disconformable, no significant angular unconformity exists.

One early set of fault offsets have been found. These older faults, trending west northwest to east-west, are now occupied by the Commonwealth veins. All veins are emplaced along a strong group of bifurcating fault zones which locally have significant offset and abundant wall rock fracturing. The west trending North Vein and the N.80W. Main Vein are the dominant features. Dips vary from 40 degrees south on the North Vein to almost vertical on the Main Vein and subsidiary features. Due to the more recent block faulting, the original emplacement dips at the time of formation may have been from 80 degrees South to 60 degrees North.

The North and Main Vein join on the westerly portion of the property, assume an east-west strike, and seemingly dissolve away in the Bisbee Formation. To the east the veins diverge

at a 20 degree angle, but still coalescing in a shallow east-plunging juncture at depth. Old underground maps suggest that the Main Vein structure curves to a more east-west trend about 200 feet east of the defined ore zone. This may explain the apparent lack of ore development much to the east of the D Shaft. In this same general area, underground maps hint that the North Vein may have flattened to less than a 35 degrees south dip.

Fault movement was predominantly normal, although substantial lateral strike-slip movement may be present. This has resulted in apparent right lateral offset of 600 to 800 feet along the Main Vein and perhaps up to 2,900 feet on the North Vein. Several smaller subsidiary structures with lesser or no apparent movement are also present and mineralized. The North Vein structure has significant gouge up to several feet in thickness while gouge on the Mine Vein structure is rarely more than one or two feet. Santa Fe geologists suggested that the North Vein feature may be a caldera rim fault.

Early fracturing and lower grade mineralization took place along the North vein, while the wedge of rock between the Main and North Veins was intensely fractured, silicified, and cut by several moderate sized veins and abundant quartz stringers. The bonanza ore bodies of the Commonwealth Mine occur near the intersection of the North Vein and these subsidiary veins with the Main Vein structure.

All these events have resulted in a generally conformable sequence of rocks south of the Main Vein and a faulted sequence of the same rocks to the north and on Huddy Hill to the east. Silver-gold mineralization of economic significance is restricted to the pie-shaped wedge of units between the North and Main Veins, and along the Main Vein and its subsidiaries on the western edge of Pearce Hill.

Generally, mineral veins lie along the footwall of fault structures. At the fault hanging wall, veins tend to be massive and tabular, grading into vein sheet zones or even stockworks in a diffuse footwall. Sheeted zones may contain individual quartz veinlets or late stage gouge. Rock-type significantly influences the strength and character of vein sheeting, being best developed in the Lower Andesite, followed by the Rhyolite Breccia.

Several later generations of faulting and mineralization are present. Late stage faulting and recementation of breccia quartz is common on the North Vein. Late gouge cuts all vein structures. Underground, several N.40W. gouge structures appear to slightly offset the Commonwealth Veins. This trend is believed to represent possible Basin and Range deformation after mineralization, however, minor late stage quartz is present on some of these structures, as well, suggesting an earlier origin. According to old reports, these features were sometimes responsible for terminating commercial mineralization. Recent underground work has been unable to confirm the implied significance of these faults.

5.4 Ore Mineralization

The Commonwealth Mine is typical of Tertiary epithermal precious metal systems found throughout the western United States. Several investigators have termed it a classical Bonanza-

type epithermal occurrence, modified and enriched by secondary processes. It has the characteristics of a low-sulfur system.

Silver and gold mineralization occurs within a series of quartz veins, massive or sheeted, localized along and between the Main and North veins. In 1927, Lewis Smith identified seven larger veins, four of which were splays off the Main Vein in a belt 350 feet wide by 4,000 feet long. Vein "horsetails" were common. All veins exhibit classical epithermal features, including drusy quartz-lined vugs, crustification, comb and cockade textures. Historical production came from supergene-enriched ores of silver (cerargyrite, embolite, argentite, native silver) and native gold. Gangue minerals include quartz, black, and white calcite, adularia, montmorillonite, and sericite. Iron oxides are abundant along fractures in the mineralized zone, but the original sulfide content of the system was low. Minor copper oxides are found on some dumps but is very rare.

Two distinct types of quartz veins have been recognized:

1. Main Vein System. Quartz is clear to yellow-green, exhibits crustification and cockade textures, and has late amethystine quartz crystals projecting from vein walls to form prominent comb structures. High grade silver-gold mineralization, probably both primary and secondary is associated with these veins.

2. North Vein System. Quartz is massive, white, and delicately banded with abundant amethyst and some cockade textures. Locally, it can be brecciated and recemented by late quartz. This type of vein is generally associated with low grade silver mineralization and appears to be a lower temperature variety than Main Vein system except that they are overlapping and intermingled.

Mineralization on the east end of the property appears to be high silver (+2.0 oz/ton) and low gold (<0.03 oz./ton), and is restricted to veins and stockwork zones, with gold and silver values directly related to silicification. At the western end, silver values decrease (averaging <1.0 oz./ton) but higher gold values (>0.03 oz./ton) are present and appear to be more widespread, and not always directly associated with quartz veining or silicification. Ore grade gold characteristically occurs in well fractured Lower Andesite or Rhyolite Breccia, along small fractures coated with limonite and/or hematite with minor manganese oxides.

Highest grade mineralization (+20 oz silver/ton and +0.2 oz. gold/ton) is usually found in waxy green quartz, reminiscent of the Oatman, Arizona district. Locally, it has been termed "talc quartz". The green tinge may be fluid inclusions or finely dispersed embolite, (silver bromide). Native gold occurs as micron particles on massive quartz. One to two percent limonite after pyrite pseudomorphs are common although actual unoxidized pyrite is rare.

Three ore shoots were found in the old mine. Each covered several hundred feet of strike length at the surface, but decreased in length to a few tens of feet at the 8th level, perhaps an average of 500 feet below the surface. Zones between shoots were generally devoid of the high grades sought by the old timers, however they were still mineralized by lesser grade material. Average ore shoot grades diminished from west to east, while shoot tonnages were the reverse.

All mineralization has been oxidized to the maximum depth obtained. Only limited, low sulfide base and precious metal primary mineralization was ever encountered. Base metal sulfides were apparently sphalerite and galena with lesser chalcopyrite, tetrahedrite, molybdenite and proustite. Old diamond drilling in the early 1900's, beneath the 8th level, as reported in dubious old reports, was not successful in locating deeper higher grade precious metals.

Secondary enrichment processes have been significant at Commonwealth. Old mine reports indicate several horizontally-oriented high silver and separate high gold areas throughout the old mine. Extensive old work has shown a possible correlation between the various elevations of ancient Pleistocene lakes of the Willcox playa, and the horizontal precious metal enrichments. Old work found that the average Gold/Silver ratio at Commonwealth was approximately 1:135, while the horizontal gold zones, some 10 to 15 feet in vertical thickness showed a 1:40 Gold/Silver ratio. These enrichments persist out into the adjacent wall rocks giving a blanket-like distribution to both silver and gold mineralization. Footwall fractures are always higher grade than hanging wall features, again suggesting downward migration.

Embolite, and cerargyrite are the predominate secondary ore minerals near-surface, while acanthite, usually a secondary silver sulfide, has been encountered in the deeper mine levels, as has native silver. Native gold and native silver have been found intertwined together.

A tentative paragenetic sequence is as follows:

1) Adularia-black (manganiferous) calcite-quartz veins with silver and minor gold.

2) Main stage white and green quartz with silver and native gold.

3) Barren white quartz and amethyst.

4) Barren white calcite.

5) Barren clay gouge.

6) Secondary enrichment of very late calcite, exotic silver and perhaps significant transported gold.

5.5 *Alteration*

Alteration is difficult to assess at Commonwealth. Visually, silicification near the veins, and minor chloritization or epidotization up to 500 feet away from the veins is the only obvious alteration features. However, thin sections have revealed ubiquitous and intense potassic alteration in and adjacent to most vein structures. Veinlet adularia is abundantly present in areas of early quartz and calcite veining. Potassic envelopes approaching 30 feet surround the Main Vein stopes, lesser so adjacent to other minor veins. Potassic zones grade laterally into sericitic material. Vertically, potassic stable envelopes range over some 500 feet, almost identical to the vertical range of commercial mineralization.

Locally, sericitization and argillization to montmorillonite can be present, but generally well away from the areas of ore grade development. Argillization has been found between, above and below areas of commercial ore grade. Argillic rock increases significantly both above and below mined areas, possibly indicating a stacked or telescoped mineral emplacement.

Comparisons with other hydrothermal systems suggests that the Commonwealth was emplaced at a depth of perhaps 1400 to 1800 feet below the present surface.

6.0 ORE RESERVES

6.1 Previous Reserve Studies

The last significant production from Commonwealth occurred in the 1920's although lessors are reported to have operated intermittently during the 40's and 50's. Modern exploration commenced in the mid-1970's when the property was recognized as having a bulk silver potential. From the late 70's until 1993 the property has been subjected to erratically directed exploration by numerous exploration companies, each exploring under its own pet theories. Bethlehem Copper, Santa Fe, Glamas Gold, Western States Minerals, Pegasus Gold and DRX Minerals, et al have added to the property database in varying degrees.

The aggregate digitized database now consists of some 126 drillholes from nine different drilling programs totaling some 40,320 feet which produced some 7183 gold and silver assays. Drill holes included regular rotary holes, reverse circulation rotary and diamond core holes. Hole sampling was generally done on 5-foot intervals although older holes have 10-foot sample intervals. The drillholes are combined together with approximately 6520 linear feet of underground channel sampling conducted by DRX in 1991 which yielded 1263 gold and silver assays.

According to previous independent mineral engineer reports, recent exploration through 1992 has defined a mineral resource as follows:

	James Askew Ass., Inc.	**Mintec, Inc.**
Cutoff Grade	0.02 oz. Gold/ton	0.012 oz Gold/ton
Total tons	4,579,000	5,011,000
Grade Gold oz. / ton	0.036	0.036
Grade Silver oz. / ton	2.26	1.76
Method	cross sections	computer block model

A third study of minable ore by Nevada Goldfields, defined approximately 6.2 million tons of 0.031 recoverable equivalent gold (combined gold and silver values) available at a 2.8 to 1 strip ratio using a 0.015 equivalent gold grade mining cutoff. Upon recent acquisition, Harvest management believed that an additional resource of 3 to 5 million tons could potentially be available within the existing resource and along the unprospected strike projections of mineralization between the two relatively well drilled portions of the previously defined mineral resource.

6.2 Harvest Gold corporation - Global Resource Estimation

In January of 1994, Harvest Gold began a complete review of the Commonwealth Property. Company personnel and consultants have engaged in detailed geological and computer statistical evaluation of the Commonwealth, with the specific goal of determining reliable tonnage, grade and economic statistics for the operation of the Commonwealth Property.

The resource study was made initially using MINEsoft Inc.'s, TECHBASE 2.02 software first issued in 1990, later upgraded to 2.2a (1993). The majority of the database was received in ASCII text form from the property vendor, and was sorted and reformatted.

A statistical computer modeling grid was laid out over the existing data utilizing an on-the-ground survey grid created by DRX which is based upon the coordinate 100,000 north, 100,000 east located at the SE corner of Section 33 T.17 S., R.25 E.

The computer model consisted of blocks 30' x 20' x 15' in depth oriented along a 100 degree azimuth, for a total of 600,000 individual blocks. The highest 15-foot bench level had its mid point at the 4732.5-foot elevation atop Pearce Hill, immediately south of the Commonwealth workings. The deepest level, correspondingly, then having a mid-point at the 3832.5-foot elevation, approximately 700 feet below the average mine surface.

Rock types range from sandstone, to rhyolite breccia to dense andesitic flows. The average rock was deemed to have a specific gravity of 13.5 cubic feet per ton, thereby yielding some 666 tons per block. Standard sets of statistics were run on the raw data to reveal the mean, mode, variance and standard deviation. Geologic features and rock types were ignored for calculation and summary purposes. No ore constraits were imposed on the North and Main fault zones, although the Main fault may actually limit mineralization to the south.

Drill hole and underground assay intervals were plotted via coordinates and, if necessary, truncated and averaged to derive assay intervals within discrete computer blocks. Compositing to minable bench heights was not attempted. A total of 8656 composite samples were generated.

Due to the presence of scattered high grade assays, arbitrary limiters, equal to approximately ten times the expected average grade were set for both gold and silver. Limits of 0.25 oz Gold/ton and 12.5 oz Silver/ton cut any value above such grades to those grades.

Sample composites were then subjected to semi-variogram analysis to determine the predictability of samples and valid sample value projection distances. The vertical variograms for all samples showed sample influence out to 160 feet for gold and over 200 feet for silver.

The sampling ellipse adopted for resource modeling gave a primary axis with a maximum radius of influence of 140 feet at azimuth 190 degrees, dipping 65 degrees, a secondary axis of 80 feet at 100 degrees with a 0 degree dip and a third axis of 60 feet at 10

degrees azimuth with a 25 degree dip. This alignment reflected the geologically determined average vein strike direction of 100 degrees azimuth, and the 65 degree average dip on the Main Vein. Essentially, any one sample's influence could be projected up to 80 feet along vein strike, 140 feet along the vein dip and 60 feet into the vein walls.

From the best ellipsoid fit, a "sill" value of .00058 for gold and 1.5 for silver was selected. Since the "sill" is the squared value of the standard deviation, this corresponds to a standard sample variation of 0.024 oz Gold/ton and 1.22 oz Silver/ton, somewhat similar to the all sample deposit average.

With the search ellipsoid now specified, kriging was instituted to estimate values for gold and silver within all possible blocks of the computer mine model. Values were estimated by ordinary three dimensional point kriging using a minimum of two and a maximum of six composite samples at 3 random longitudinal locations for both gold and silver.

Global reserves for the Commonwealth Project were then determined for several potential mining cutoff grades, however the relationship between gold and silver required a common factoring agent so as to present each metal accurately despite varying prices and metallurgical recovery rates. A special category know as the "recoverable equivalent gold grade" was determined by taking the kriged gold value times a 77.5% recovery factor (as determined from metallurgical work) and adding to it an equivalent gold grade as derived from the estimated silver value. As determined by metallurgical work, the first ounce of silver was assigned a recovery factor of 20% and added to subsequent estimated ounces at a 70% recovery rate. Hence 3 ounces of estimated silver per ton would yield 1.6 ounces of recoverable silver i.e. ((1 x .2) + ((3-1) x 70%)) = 1.6. The value ratio of silver to gold was then derived from their approximate respective market prices on or about February 1, 1994, $5.00 per ounce silver verses $375 per ounce gold. ($375 / $5 = 75). Seventy five ounces of silver equals one ounce of gold in value, hence the silver grade was divided by 75 to yield a recoverable equivalent gold grade, which was then added to the kriged recovered gold grade (Recoverable Gold + Recoverable Silver / 75 = Recoverable equivalent Gold).

Global Resources are the total amount of potential resource available at a given mining cutoff grade without regard for the actual costs and problems of mining. Since short composites were used prior to kriging estimation, no dilution has been introduced into the Global Resource for mining. The material that is mined will be subjected to low grade wall rock dilution, which increases tonnage but lowers average grade. The Global Resources for the Commonwealth are then as follows:

Recoverable Cutoff Grade	Total Tons	Recoverable Gold Equiv.	Gold oz/ton	Silver oz./ton	Recoverable Gold Eq. ounces	Total Gold ounces	Total Silver ounces
0.000	47,401,218	0.0098	0.0088	0.57	464,532	417,131	27,018,694
0.009	12,549,438	0.0289	0.0244	1.64	362,679	306,206	20,581,078
0.010	11,501,154	0.0307	0.0259	1.73	353,085	297,880	19,896,996
0.011	10,736,586	0.0321	0.0269	1.81	344,644	288,814	19,433,221
0.012	9,991,998	0.0336	0.0281	1.89	335,731	280,775	18,884,876
0.013	9,446,544	0.0349	0.0290	1.95	329,684	273,950	18,420,761
0.014	8,914,410	0.0361	0.0300	2.02	321,810	267,432	18,007,108
0.015	8,498,826	0.0372	0.0308	2.07	316,156	261,764	17,592,570
0.016	8,079,912	0.0383	0.0317	2.12	309,461	256,133	17,129,413
0.017	7,660,998	0.0395	0.0326	2.18	302,609	249,749	16,700,976
0.020	6,564,096	0.0430	0.0353	2.33	282,256	231,713	15,294,344

Harvest management also elected to apply a "mined tonnage factor" of 616,000 tons to all economic models of the Commonwealth deposit. Using the computer-saved block variance values, the following proven and probable reserves can be defined. No possible reserves were determined. Precious metal grades are derived from the previous chart.

Mining Cutoff		Tons Proven	Tons Probable	Less Mined Tonnage	Total Tonnage
0.009	eq. rec. oz Gold per ton	4,001,994	8,547,444	< 616,000	11,933,438
0.011	eq. rec. oz. Gold per ton	3,587,076	7,149,510	< 616,000	10,120,568
0.013	eq. rec. oz. Gold per ton	3,196,134	6,250,410	< 616,000	8,830,544
0.015	eq. rec. oz. Gold per ton	2,919,078	5,579,748	< 616,000	7,882,826

6.3 Harvest Gold Corporation - Minable Reserve Estimation

An economic evaluation of minable reserves gives a much more accurate valuation of the potential worth of any mining property.

Since gold prices have fluctuated above and below $380 per ounce during the term of the study, $380 per ounce of gold was the selected norm. By the formula used, silver therefore had a deemed value of $5.06 per ounce. The gold price was then further reduced by the cost of several items which directly impact the value of production regardless of the mines operating costs. A smelting and refining charge of 1.5% followed by a state severance tax of 1.7% and lastly an underlying landowner royalty of 3.52% of the net smelter return. These items reduced the gold price by a cumulative 6.6% to approximately $355 ($354.98) per ounce.

The economic mining model program used was TECHBASE 2.2a Open Pit Cone Optimization program using the kriged resource model previously defined. Pit wall slopes were set to a maximum 55 degree slope. Various mining cutoff grades were selected reflecting anticipated mining costs. Two cutoff grades were needed for each mining scenario, 1) the internal cutoff which governs the value of kriged blocks within the anticipated pit wall boundary

and 2) an APEX cutoff which was used to determine the exterior of the mined pit. Generally, the APEX cutoff graded 0.002 ounce per ton gold higher.

The computer was directed to assumed that all such blocks out side the kridged resource were waste and could be moved at a cost of $0.85 per ton or $566.10 per block of 666 tons. Preprogrammed runlogs were used to expedite simulated mining among the various differing scenarios, each runlog being modified by the appropriate variables. The results were as follows:

Gold Eq Cutoff Grade	Total tons Mined	Revised Ore tons	Waste to Ore	Recovered Gold eq Grade	Gold Eq oz.	Gold Grade	Total Gold oz	Mined Silver Grade	Total SILVER oz
0.020	32,136,498	5,472,995	4.87	0.045	246,285	0.036	197,028	2.44	13,354,107
0.017	32,299,002	6,387,080	4.06	0.041	261,870	0.033	210,774	2.29	14,626,414
0.015	35,954,676	7,154,863	4.03	0.039	279,040	0.031	221,801	2.18	15,597,601
0.013	33,816,816	7,743,763	3.37	0.036	278,775	0.030	232,313	2.08	16,107,027
0.011	38,586,042	8,787,920	3.39	0.034	298,789	0.028	246,062	1.95	17,136,444
0.009	40,090,536	9,922,118	3.04	0.032	317,508	0.026	257,975	1.81	17,959,034

Significantly, on all tested mining cutoffs (i.e. 0.009 to 0.020) over 85% of the kriged resource was available for economic extraction suggesting that additional exploration in and around the kriged model will likely obtain additional minable mineralization, thereby lowering the overall waste to ore extraction ratio, while boosting tonnage and ounces extracted. All of the anticipated mining, waste and ore, occurs entirely within leased patented mining claims.

6.4 Dump and Tailing Reserves

In 1993, Alpine Resources, Inc. conducted a bulk sampling program on the dumps at Commonwealth to determine a possible resource of commercial-grade mineralization. Twenty pound grab samples were collected from the B Shaft dump and several 600 to 700 pound samples were taken from backhoe trenches every 50 feet on the C & D Shaft dumps. All were assayed for gold and silver. The dumps were measured geometricly and contained the following tonnages and grades.

Area	Tonnage	Gold(oz/ton)	Silver(oz/ton)
B Shaft Dump	3,000	0.0435	2.45
C Shaft Dump	17,000	0.0175	2.07
D Shaft Dump	26,000	0.021	1.30
TOTAL	46,000	0.021	1.66

In addition to the three main dumps, there are a number of smaller mineralized dumps that probably aggregate about five thousand tons of potential ore-grade material. Thus, the total tonnage available from dumps on the property is about 50,000 tons.

In addition to the mine dumps, there is potential for over 100,000 tons of slope material which originated from erosion of the outcrop of the high-grade lodes. Preliminary Alpine Resources Inc. sampling of this colluvial material indicates a grade about 0.03 ounces gold and 2.0 ounces silver per ton. Metallurgical reviews have not been conducted on surface material, however, near-surface ore samples have generally responded poorly to coarse cyanide leaching. Dumps and colluvium have not been included in the Harvest Gold reserves.

Lastly, old cyanide leach facilities operated during the late 1890's and early 1900's. They have left a large potential reserve of old cyanide leach tailings off to the northeast of the anticipated open pit development. These tailings had been variously estimated to contain between 350,000 and 500,000 tons of -35 mesh material.

During the later 1970's andearly 80's the underlying owners shipped 210,000 tons as a high silica smelter flux to various copper smelters. This material graded 2.51 ounce of silver per ton. Undocumented assays suggest that the remaining tailings may grade about 0.012 oz. Gold and 2.1 oz Silver per ton. Supposedly 47% of the gold and 25% of the silver may still be recovered by agitated cyanide leaching without further grinding.

In February, 1995 Harvest Gold evaluated the tailings via surface samples and 5 backhoe trenches to a maximum depth of 13 feet. Company estimates place the current tailing reserve at approximately 200,000 tons grading approximately 0.008 ounce gold and 1.90 ounce silver per ton with 74.5% silica and low iron and alumina. The Company was unsuccessful at finding a buyer for this material at current (March 1995) metal prices.

These old cyanide tailings, owned by Breitner, et al, were excluded from the mine lease and option, but are available for purchase at a nominal fee per ton. These tailings would make an excellent base layer above the anticipated leach pad plastic liner. Approximately 200,000 tons could cover roughly 3.2 million square feet to a depth of 1.5 feet, probably enough for most of the known ore reserve and the anticipated pad space. Extra recoverable gold and silver could more than pay for the cost of purchasing, moving and installing this pad base. Further political credits could be obtained by reclaiming these environmentally "dangerous" cyanide tailings.

6.5 Additional Reserve Potential

Commonwealth Mine

Excellent potential exists to increase the precious metal mineral reserves at Commonwealth. Several mineral targets of significant potential have been defined. A general discussion, not in order of priority, but generally oriented west to east is as follows:

- The westerly portion of the Commonwealth structures contain higher grade gold values. This area, known sometimes as the "Gold Zone", has not been fully delineated at depth and is open to the east along strike of the Main Vein structure. A thousand-foot gap in detailed drilling has resulted in virtually no information regarding the Main Vein, its split with the North Vein, nor the intervening ground from just below the surface down to several hundred feet of depth along dip. The veins are present and old maps indicate abundant low grade

mineralization. The paucity of information was probably generated by completely inaccessible mine workings, a reported "barren" (actually just not high grade) zone between old ore shoots, and the difficulty of gaining drill access due to steep slopes and poor angles of intercept. Mineral reserves likely can be extended to the east yielding upwards of two million minable tons. An additional benefit is the almost one for one decrease in waste tonnage to be removed. This area lies between two minable ore zones and currently forms a septum in any proposed pit design. Ore grade mineralization will allow it to be mined with a decrease in the overall waste to ore ratio. Harvest has constructed drill roads and plans a five hole reverse circulation drilling program to test this highly prospective area. Several more holes of 500 to 600-foot depths may be necessary.

- Also in the Gold Zone area, several bulk dump samples from the Mominer shaft located south of the Gold Zone drilling contained up 0.70 ounces per ton gold and 8.12 ounces per ton silver in altered and iron stained Bisbee Formation. All samples contained commerical grade mineralization. The exact location or cause of this mineralization has not been determined, as the Mominer is too dangerous to enter. When evaluated in conjunction with deep moderate grade intersections in old rotary holes, this material may indicate a deeper high grade ore shoot essentially undefined by recent drilling. Such shoot would be at depth and offset slightly west from the current Gold Zone mineralization. Tonnages could approach a few hundred thousand tons of moderate grade material, with the possibility of a new discovery of continuing vein mineralization in the Bisbee. Four holes to 500-foot depths could test this area.

- The most obvious prospective area at Commonwealth for developing additional ore tons is right in the vicinity of the main productive area of the deposit, generally at greater depths than those currently drilled. The potential lies in the mineralized wedge of Rhyolite Breccia and Lower Andesite between the North and Main Veins. Drilling has adequately defined significant ore tonnage above the 5th level of the old mine, generally averaging above the 4,300 foot level. Deeper levels have only occasionally been tested. This has resulted in a "rolling bottom" configuration to potential open pit configurations. Deeper infill drilling could add several million tons of low grade material deep in a future pit. Since the Main Vein and North Vein converge at depth, this potential target narrows and perhaps dies out at 150 to 200 feet below currently defined reserves. Average grade would be low and the waste to ore ratio high (+3:1). High grade, narrower vein intercepts are likely. Ten holes, each to 650 feet could define this region well.

- Along the northern rim of any proposed pit, local spots of well mineralized Bisbee Formation are present. Sometimes known veins such as the Eisenhart are present, others show no obvious structures other than the erratically mineralized North Vein nearby from 10 to 80 feet away. Apparently portions of the Bisbee can be quite well mineralized without obvious features identifiable in hand specimen. Glamis Gold and Western States both attempted to prospect this mineralized Bisbee without success. Five additional drill holes to 300-foot depths can probably prospect the remaining Bisbee possibilities. A potential target of two million tons may be present.

- To the immediate east of the developed reserve, along the North Vein, potential low grade is present. Several drill holes have found that scattered low grade silver and gold is common, sometimes approaching ore grade. Harvest's drillhole C-94-1, cut this area east of the D shaft with poor results except for a single deep (435') 5-foot intercept of 0.14 oz Gold/ton in the Bisbee Formation below the North Vein. Since the waste to ore ratio may be low (<2:1), three additional holes to 500-foot depths could yield another one half million tons. If the Bisbee is consistantly mineralized, abundant targets may be revealed.

- Also to the immediate east of the currently developed reserves, but along the easterly extension of the Main Vein, some deep vein drill intercepts suggest that low grade gold (0.02 oz./ton) with moderate grade silver (2.0 oz/ton) may be present. Reserves would be narrow, tabular and deep following the favored host rocks of the Lower Andesite and Rhyolite Breccia to depth. Perhaps 3/4's to one million additional tons may be present but at a high waste to ore ratio (+3:1). Four holes to 650 feet would test this area adequately.

- Another 500 feet to the east southeast. A dump sample from the +200 foot North Shaft contained 0.068 ounces per ton gold and 15.94 ounces per ton silver. This shaft was thought by some to have encountered the intersection of the Main Vein and the North vein at depth. Old underground maps suggest that the Main Vein may have curved slightly northward, perhaps making this area an en echelon feature, perhaps worthy of testing. Also a surface vein sample near the Pearce shaft located in the southern portion of this area contained 0.012 ounces per ton gold and 4.92 ounces per ton silver. Four to six 500-foot holes could test these potential target.

- A low priority target is the far eastward extension of the North Vein toward Huddy Hill. Shallow drilling conducted by Santa Fe intercepted low silver (0.5 to 2.0 oz/ton) values through the North Vein and some low gold values (0.015 oz/ton) in the footwall. Reportedly, underground workings run 900 feet east of the D shaft along the Main Vein, turned north and explored a 400-foot portion of the North Vein just above the old water table. A limited gold ore zone without silver values was found in the footwall of the North Vein and was bounded by assay walls. Harvest drilled C-94-2 into this region and found 10 feet of open stope but no significant assay walls. Two or three additional holes could further test this prospect.

- Local vein mineralization at Huddy Hill and other small prospects on the Galyen lease may contain potential, but additional field work is necessary. Rock chip sampling together with field structural mapping may yield good results.

Six-Mile Hill Area

Six-Mile Hill, lying about one mile west southwest of Commonwealth, is geologically similar to the eastern portion of the Commonwealth Mine area. A reasonable potential for similar style mineralization may occur in the following areas:

- A quartz-calcite vein which is at least 65 feet in width exposed in an adit at the northwest corner of Six-Mile Hill. Three composite samples taken at various locations across this vein contained 0.033, 0.024, and 0.013 oz/ton gold with 0.15, 0.22, 0.094 oz/ton silver. Several additional outcrops of similar-looking veins are present in this area and deserve further attention. The host rocks are the upper Pearce Volcanics which are not as favorable as the underlying units so well mineralized at Commonwealth.

- An area of hot springs sinter outcrops in the north central portion of Six-Mile. Rock samples from this sinter contained anomalous gold, silver, arsenic, antimony, bismuth, gallium, and zinc, but no ore values. They occur in a down-dropped fault block and may represent the upper level of an epithermal system perhaps similar to Commonwealth. Exploration by Santa Fe was negative, but much additional geologic work could be done on this interesting occurrence.

- Lastly, an area of reported surface soil mercury and arsenic anomalies with associated magnetic anomalies is located on the eastern portion of Six-Mile Hill. Although somewhat speculative, additional work may be warranted.

Other Prospect Areas

- The Blue Jeep and San Ignacio prospects are located about one mile and three miles respectively east northeast of Commonwealth Property. They have had significant exploration activity, including limited drilling, some with ore grade intercepts. Additional work is definitely warranted.

- The Mexican Hat deposit is about 6 miles south of Commonwealth just off the county road to Courtland-Gleason. Owed by a Peace local, it is currently controlled by Oneida Resources, Inc. of Vancouver, BC. It may represent a significant gold resource. Originally drilled by Placer Dome, it is reported to contain over 7.6 million tons grading 0.034 oz. Gold/ton, or some 260,000 ounces of gold. Reportedly, it is open ended, but with a high waste to ore ratio.

- The Maud Hill area near Cortland-Gleason, about 10 miles south, has been rumored to contain potential reserves approaching 11 million tons grading 1.5% copper and 0.05 oz/ton gold. No work has been done in this area recently.

7.0 1994 RESERVE IN-FILL, METALLURGY & EXPLORATION

The objectives of Harvest's 1995 program is to better define that a commercial gold-silver heap leach operation can be established at Commonwealth. This will be done by : a) an in-fill drilling program to increase the measured reserves by 2.0 million tons (i.e. in excess of 100,000 ounces of gold equivalent); b) determination of the final metallurgical characteristics of

the Commonwealth, c) design the final pit and facility plans, d) commence permitting, and lastly e) conducting ground exploration at Six-Mile Hill and other areas in the local region. The envisioned program, already partially completed, will consist of the following:

1. Re-establish a surveyed grid over the property to accurately locate all past drill holes, adits, shafts, etc. This grid can then be used as a base for future work.

2. Locate all drill holes for the next phase of drilling, and construct required drill roads and pads for future drilling. This phase of drilling will better define and probably extend the Commonwealth ore reserve. A total of approximately 5,500 feet of in-fill drilling is proposed to a) increase the reserves, b) perform check assaying through important ore areas, and c) test new areas of potential mineralization. In addition, a future program of some 35 drill holes aggregating an additional 18,300 feet of drilling is recommended to extend the reserves to the west and the east along strike. Additional in-fill drilling will simplify mine planning, however, with only a small portion of this drilling, mine planning functions can commence. A final mine plan will be delivered.

3. Re-assay and check assaying of any of the important drill holes and underground samples will be part of any ongoing program.

4. Collection of additional bulk metallurgical samples from the surface and underground. Definitive metallurgical analysis, some already in progress requires proper collection and evaluation of a multitude of representative samples. A bulk sample approaching 100 tons may be necessary prior to final process determination and facility design. Large scale bottle roll and column testing will insure accurate results. Final metallurgical results will lead to a process flow sheet, in turn allowing for facility design and construction plans.

5. With pit designs and processing plans complete, one must proceed with operating permit acquisition immediately. This is a critical path item. Water quality and air quality base line studies are in progress.

6. The Six Mile Hill area warrants additional exploration. Acquisition and initial geologic studies will be followed by two shallow holes to check quartz mineralization which is very similar to Commonwealth.

7. Compile all existing geologic mapping for Commonwealth and Six-Mile onto a uniform base. Field check old mapping and conduct additional detailed mapping. Conduct additional surface sampling at Six-Mile and Commonwealth to delineate future drill targets. Conduct a quick reconnaissance program and land status survey of other Tertiary volcanic outcrops in the region and make exploration and lease recommendations.

The total cost for the Commonwealth, 1995 refinement program is estimated at US$650,000. Drilling and metallurgical work will require approximately four months. Permitting work is already in progress, but may approach one year from start to finish. Initial work was commenced in October of 1994.

8.0 METALLURGICAL TESTING

8.1 *Old Mine Operations*

The first milling operation at Commonwealth was established in 1898 by John Brockman, D.M. Barringer and R.A.F. Penrose of the Commonwealth Mining and Milling Company. Little information is available, however, the first operation was reported to be a 30 ton-per-day pan amalgamation mill, later increased to a 200 ton-per-day stamp and roll mill configuration. Recovery was reported at 83% of the contained precious metals.

In June of 1900, this mill burned and was replaced with a new 80 stamp, 240 ton per day mill in January 1901 which operated continuously until mid-1905. From 1905 on to 1910, a 250 ton per day cyanide plant was in operation on the old amalgamation tailings, and in 1906 this included mine-run ore. No information has been located on the details of this plant.

In 1910, the Montana Tonopah Mining Company constructed a new cyanide plant which operated into 1917 on -35 mesh ground ore. From 1917 until 1927 some 115,000 tons of ore was shipped directly to the Douglas copper smelter as high silica smelter flux. No significant production, other than intermittent lessors was done after 1927.

8.2 *Previous Metallurgical Testing*

Several generations of metallurgical testing have been conducted at Commonwealth. In December of 1969, Basic Metals, Inc. investigated the Commonwealth mill tailings and defined about 808,000 tons grading 0.012 ounce gold and 2.48 ounce silver per ton. A screen analysis showed that 95% of the material was -35 mesh with a relatively uniform distribution of values amongst the various screen fractions. Froth flotation of the tails was unsuccessful, as was gravity concentration. Two large cyanide bottle rolls of the tailings yielded 47% and 60% of the gold and 25% and 40% of the silver.

In mid-1975 Platoro Mines, Inc. conducted 36 laboratory tests for gold and silver recovery from four underground composite samples and one old tailing sample. On the tailings, grinding to -200 mesh with flotation yielded 50% or the gold and 25% of the silver, while cyanidation gave better than 50% of the gold and 30% to 35% of the silver. On ore samples, finer grinds (<200 mesh) always yielded +92 % of the gold and generally 63% to 71% of the silver. They believed that approximately one ounce of silver per ton was locked into the ore and difficult to extract.

In late 1983, Santa Fe Mining, Inc. contracted with Mountain States Research and Development to conduct cyanide and flotation tests. Santa Fe delivered some 630 pounds of -4 inch run of mine material grading 0.013 ounce of gold per ton and 9.8 ounces of silver per ton with the ore values evenly distributed among the various sample size fractions. Four thousand gram bottle rolls on -2 inch, -1 inch, - 1/2 inch and -1/4 inch, and 10% +100 mesh material showed widely varying results. In 72 hours, finer material yielded 85% of the gold but only 22% of the silver, while the -1/4 inch material gave 62% of the gold and only 13% of the silver. Coarser size recovery was very poor (<20%). Flotation test results were also poor.

In early 1989, Westland Exploration contracted with KD Engineering of Tucson for a series of six preliminary bottle roll leach tests on drill cuttings from Westland's initial phase of drilling on the western gold-rich zone. Here the gold and silver recoveries averaged 78 and 34 percent respectively with average cyanide consumption of 0.5 pounds per ton and average lime consumption of 2.8 pounds per ton. Westland also shipped numerous drill samples to Barringer Laboratories, Inc. of Sparks, Nevada for gold and silver bottle leaches to determine the ratio of extractable gold and silver to total gold and silver. The initial batch showed an 79% gold and an 81% silver ratio. While two later batches yielded an 85% and 82% ratio for both gold and silver.

In mid-1989, Westland had additional composites tested by METCON Research, Inc. of Tucson, Arizona. Six drillhole composites also from the western portion of the deposit, each ground to -10 mesh in 500 gram bottle rolls for 72 hours, yielded gold recoveries from 38% to 95% and 2% to 70% recovery of the silver. The composite recovery average was 78% and 38% for the gold and silver. Cyanide and lime consumption were 0.81 and 4.1 respectively.

In early 1990, Placer Dome submitted four drill hole composite samples for testing at the Golden Sunlight Mines, Inc. lab in Whitehall, Montana. The samples ranged from 6 five-foot intervals composited to 10 five-foot drill cutting samples composited with composite values ranging from 0.016 to 0.161 ounce gold per ton and from 0.46 to 3.05 ounce silver per ton. Cyanide bottle roll tests with 2 pounds of cyanide per ton and an 11.0 ph done on coarser material (25%+100 mesh) yielded from 85 to 94% gold recovery and 84% to 92% silver recovery in 48 hours with approximately 1.2 pounds of cyanide and 5 pounds of lime consumed. Finer grinding to 200 mesh improved recovery slightly, but generally 0.003 ounce gold per ton and 0.15 ounce of silver per ton always remained unrecovered.

In early 1991, ASARCO investigated Commonwealth. Three drill hole composites were sent to METCON. All samples were crushed to -10 mesh and 500 grams were bottle roll leached for 72 hours. Recoveries ranged from 58% to 99% of the gold and 12% to 39 % of the silver. The average recovery was 77% of the gold and 30% of the silver. Cyanide consumption was 1.3 pounds and lime was 2.7 pounds per ton with an 11 ph. Lower grade head samples generally yielded the poorer recoveries. They also noted that high grade gold values leach out very quickly. A second batch of composites leached for 120 hours gave 84% gold extraction and 52% silver recovery albeit with cyanide consumption at 0.9 pound and lime at 2.9 pounds per ton with a 10.8 ph.

In mid-1991, Chemgold, Inc., a subsidiary of Glamis Gold, Inc. performed bottle rolls on each of three ore bearing rocks at Commonwealth: the Bisbee Sandstone, the Upper Andesite and the Rhyolite Breccia. Approximately 450 pounds of material was collected, predominately from the western portion of the deposit. Each rock type was subjected to three bottle rolls at +4 mesh, -4 +10 mesh and -10 mesh. The Bisbee samples leached well for gold after 72 hours yielding 72%, 89% and 88% respectively all from a head grade of 0.037 ounce gold per ton. Silver showed no leach at all. The Upper Andesite was low grade with an average assay head of 0.006 but a calculated head of 0.021 ounce per ton gold and approximately 1.42 ounce per ton silver. Gold leached 37% to 54% with about 24% of the silver. Lastly, the Rhyolite leached poorly, yielding an average of only 21% of the gold and 13% of the silver, the best recovery by far at -10 mesh. Two 12 inch, 10-foot columns were then loaded and leached at -1.5 inch material and 1.5 to 2 inch material. Unfortunately, only four days of leaching data is available however it was noted that substantial gold leaching occurred very quickly.

In late 1991, Western States Minerals Corporation did extensive drill and metallurgical testing at Commonwealth. METCON Research was retained by Western States to conduct a large program of bottle rolls on drill hole composites. On some 18 tests with values ranging from 0.016 to 0.17 ounce gold per ton, gold recoveries ranged from 38% to 96% with an average of 77% and silver from 24% to 58% (average 37%) with a low 0.9 pound cyanide and 2.9 pound lime consumption. The material was both 1/4 inch and -10 mesh for a 1000 gram charge. The best recoveries were from higher grades crushed to -10 mesh. Lower grade samples generally had lower recoveries with about 0.003 ounce gold per ton the minimum tail value. Further, they determined that coarse free gold is not an important constituent of the ore and cyanide solubility is approximately 88% of the fire assay on average.

In mid-1992, Westland had METCON conduct two 96 hour bottle rolls on -3/4 inch material, one of andesite and one of Bisbee. Recoveries were 38% of the gold and 43% of the silver in the andesite, verses 88% of the gold and 20% of the silver in the Bisbee. Cyanide consumption averaged 0.45 pound and lime was 4.5 pounds per ton.

In late 1992, Consolidated Nevada Goldfields, Inc. shipped four small sample composites (3 from surface exposures and 1 from underground) to McClelland Laboratories, Inc., of Reno, Nevada and to CNG's Barite Hill operation in South Carolina. Two additional, large scale underground bulk samples were also sent to McClelland Laboratories, Inc. All these samples were to be used to determine precious metal recovery, recovery rates, reagent requirements and sensitivity to feed size. The samples sent to Barite Hill were subjected to various 96 hour bottle rolls at -5/8 inch -3/8, -1/4 inch, and -10 mesh. Recoveries were 25% to 56% at -5/8, 35% to 39% at -3/8, 36% to 69% at -1/4 inch and 55% to 63% at -10 mesh. Column leaches of approximately 70 pounds -5/8 material yielded from 26% to 56% depending upon rock type and average grade. Cyanide and lime consumption was 0.3 pound and 5 pounds respectively.

At McClelland, two feed sizes were tested 80% -5/8 inch and 100% - 10 mesh. Bottle rolls on 5/8 inch surface samples yielded only 25% gold and 24% silver recovery in 120 hours

suggesting that a surface oxidation product retards precious metal recovery. The underground samples gave 44% to 60% gold recovery and 7% to 29% silver recovery in 120 hours at the 5/8 inch size. All the 10 mesh samples, including surface samples, yielded 60% to 87% of the gold and 22% to 50% of the silver in 120 hours. The majority of metal recovery was rapid, however a longer leaching cycles would yield better recovery. Cyanide consumption was low at from 0.1 to 0.4 pound cyanide per ton with moderate lime consumption at from 3 to 11 pounds per ton. Column tests on the two underground bulk samples, sized at 80% -5/8 inch and grading 0.021 to 0.070 gold and 0.69 to 3.56 silver per ton, gave recoveries 20% higher than the bottle rolls. These tests using 8-foot 6 inch columns each with about 115 pound of material, gave 68% and 71% gold recovery and 19% and 36% silver recovery after 30 days, but were still increasing slowly at premature termination. Cyanide consumption was approximately 2 pounds per ton, with lime consumption at 4 pounds per ton to hold a +10.3 ph value. In both tests lower recovery was prominent on the +10 mesh fractions of the samples. McClelland final conclusion was that the Commonwealth ore was amenable to heap leaching at coarser sizes.

8.3 *1994-95 Harvest Gold Metallurgical Testing*

Harvest commenced metallurgical tests in September 1994. Kappas, Cassiday and Associates, Inc. of Sparks, Nevada were retained to provide testing services. Initially two near surface and four deeper underground samples were collected from crosscuts in the old mine workings. Three samples were derived from the eastern end of the 3rd mine level and one from the eastern end of the 6th level. All head grades were low running from 0.015 to 0.042 gold and 1.45 to 3.08 silver per ton. This approximates the average expected minable grade of the deposit as a whole, or 0.026 ounce gold and 2.29 ounce silver per ton, equaling about an 0.035 recoverable gold equivalent grade. Large 5000 gram bottle rolls were performed on all samples at -5/8 mesh material. The surface samples were not expected to leach well due to oxidation problems. Only about 34% of their gold was recovered in 96 hours. Two of the underground samples to the west on the 3rd and 6th level gave an average of 95% gold recovery while the two lying to the east side of the deposit on the 3rd level gave an average 43% recovery. Silver recoveries are low from 11% to 25%. Cyanide consumption was low at about 0.6 pounds per ton with lime at approximately 1.3 pound per ton at 10.3 ph.

In mid-October 1994, the surface samples were combined into a single 5-foot, 3 inch diameter column for leaching at 100% -10 mesh. The two low-leaching, east side 3rd level samples were also combined into a 5-foot 3 inch column test at 100% -10 mesh. Ten mesh is regarded as the smallest range suitable for heap leaching. Kappes, Cassiday economic studies have shown that operating costs are increased to approximately $2.30 per ton by the necessary finer crushing and the attendant cement agglomeration cost. Agglomeration tests indicated that 4 pounds per ton of Portland type II cement was adaquate for proper binding of the ten mesh material. After 30 days leaching time 68% and 78% of the gold had been recovered while only 15% to 19% of the silver was recovered. Kappes estimated field cyanide consumption at only 0.3 pound per ton of ore.

The two good bottle leach samples from the western 3rd level and the 6th level were each placed in separate -5/8" columns 6 inches in diameter and 5 feet high. The 5/8" material showed 84% and 93% gold recovery after 42 days of leach time. Silver recoveries ranged from 20% to 24%. Cyanide consumption was again estimated at a very low 0.33 pound per ton under field conditions.

In March 1995, an additional 1/2 ton of underground bulk samples was delivered to Kappas, Cassiday for treatment under identical conditions with a specific concentration on maximizing silver recovery. Two near surface samples were collected from underground workings to better define the nature of near surface oxidation and silica encapsulation on a small portion of the ore reserve. Bottle rolls are currently in progress.

8.5 *Additional Testing*

As the current Kappes, Cassiday data is collected, a need for additional bottle roll tests and column leaches may be found, so as to develop sufficient data for final feasibility. If this is the case, this additional testing may require a suite of representative composite samples with a total weight of perhaps a minimum of 2,000 pounds or perhaps even up to several tens of tons. These samples can be procured in various ways: a) surface excavation after limited blasting, b) by drilling core of a minimum size of 2.5 to 3 inches, or c) by entering the old workings and physically obtaining a bulk sample by chipping and perhaps blasting.

Excavation via one or more surface cuts is the most logical, however problems have been noted in the leaching characteristics of near surface material. An estimated cost for dozer excavation, drilling and blasting and backhoe extraction could approach $30,000. Harvest has obtained bids for completing diamond coring of 3 inch core at approximately $30.00 per foot with a total of 1,800 feet necessary for obtaining the sample for a cost of about $60,000, including auxiliary costs If a bulk sample from old workings is used Harvest estimates a cost of $22,000, mostly labor to obtain good samples.

A series of bottle rolls would be conducted using the procedures defined by Kappes, Cassiday. These tests will be used to identify any problems associated with the ore, such as the previously reported surface oxidation or any silver recovery problem. Adjustments to cyanide strength and ph control should be able to maximize silver recovery. Further to the bottle roll tests, a series of 6 to 8 column tests may also need to be conducted. For each of these tests, the

A cost estimate for completing the above is approximately $70,000 and would require approximately 60 days for completion prior to application.

The above information will be used to make an informal presentation to the Office of Water Quality to insure that our application is complete prior to filing. Once filed in final form, the schedule for receiving the Aquifer Protection Permit is as follows:

1. Director of DEQ will notify applicant within 30 days if application is complete.

2. Director will notify applicant of the preliminary decision to issue or deny permit within 90 days of receipt of complete application.

3. Director will cause publication of notice of preliminary decision to issue or deny permit within 30 days after applicant is notified of the preliminary decision to issue or deny permit.

4. The DEQ will make a decision whether to conduct a public hearing within 45 days after publication of the public notice. If a hearing is to be held, the department will schedule a hearing on or before 75 days from the close of the public comment period. The hearing record shall close seven days after the hearing.

5. If a public hearing is not required, the Director shall notify the applicant within 30 days of the end of the public comment period of the final decision to issue or deny permit.

6. If a public hearing is required, the Director shall notify applicant within 45 days after public hearing record is closed of the final decision to issue or deny permit.

The maximum permissible period of application to issuance is approximately 315 days, but a minimum is 225 days. This assumes that all documents and data are complete at submission. Additional information requests may be made by the Office. Consultant fees to shepherd the application through the Office may approximate $25,000. Actual application fees have not yet been determined, but could approached $10,000. Harvest has not yet submitted an initial Water Quality application, but has engaged in informal discussions. Total cost of permit estimated at $100,000 exclusive of Company personnel time and incidental expenses.

9.2 *Office of Air Quality- MINOR PERMIT*

The Air Emissions Permit issued by the Office of Air Quality will require at least 6 to 8 weeks to be issued following application. The proposed operation would most likely be classified as a Class C (minor emission source) permit and require an application fee of approximately $1,000.

Harvest personnel are currently in discussion with Air Quality personnel in regards to monitoring requirements. They have requested details of minesite operation, and have tenatively indicated that the Commonwealth Mine may be an insignificant particulate emission source, not

requiring a monitoring system. If however, a baseline measurement of air quality for solid particulate is necessary, the Company has already acquired the necessary equipment. For the type of operation anticipated, one EPA approved PM-10 Monitor would need to be installed down wind of the intended dust source. Filters must be changed following each sampling period which is anticipated to be every other day. As much base line data as possible would be collected before applying for the final permit. Most work can be completed by Company personnel, however, $10,000 in consultant fees may be prudent.

9.3 *Department of Water Resources*

Commonwealth is not located in a controlled or restricted water use area. No special permits for water development or water adjudication are required. Once potential well sites are located only a notice of intent to develop water resources needs to be filed. No monitoring activities are required. Costs are minimal.

9.4 *Arizona State Mine Inspector*

The Inspector must be notified of an intent to operate a mining facility. Only notification is necessary. No ongoing monitoring is required. All cyanide operations required that at least six employees undergo the state cyanidation plant training course at Company expense which is minimal.

9.5 *Arizona Commission of Agriculture and Horticulture*

The Commonwealth Project is designed to operate only on private land, generally outside the jurisdiction of the Commission of Agriculture. As a courtesy, the Company intends to perform a limited biological and archeological review of the area to be disturbed. Special permits are needed to relocate specific plants that may be endangered, if any. Although no items of significance have been noted to date, minor allocations may be made to conserving potential impact items. The cost of selected consultants should not exceed $20,000.

9.6 *Cochise County Regulations*

Cochise County Department of Health requires notification of pending sewerage and potable water facilities, however no specific building permits or zoning laws infringe upon mining claim development.

9.7 *Federal Agencies*

All operations at Commonwealth are anticipated to be conducted upon private land. If federal lands can be avoided, which the can, then no federal permitting requirements need be met. Any attempt to use federal lands may subject the entire operation to federal requirements. Once operations have commenced, the federal Mine Safety and Health Administration, the Occupational Safety and Health Administration and other agencies may be involved in monitoring operational activities. Federal endangered species, water quality and other regulatory requirements may need to be met.

10.0 PROJECT PLAN, SCHEDULE AND BUDGET

10.1 Pit and Facility Layout

Several preliminary pit outlines have been drawn via computer. The maximum pit dimensions under the 0.009 cutoff approached 2400 feet in about the N. 70 E. direction and has approximately 1200 feet of maximum width. Due to erratic deep drill intercepts, the pit bottom is irregular. The top of Pearce Hill, at 4,732 feet in elevation, was removed down to the 4580 level, while the deepest excavation approaches the 3980-foot elevation for a total maximum relief of about 752 feet.

As per the TECHBASE cone mining program, all pit outlines assumed a maximum pit slope of 55 degrees. Only the southern pit wall, located within competent Upper Andesite and Rhyolite Breccia, achieves the maximum slope angle. The northern pit slope conforms with the morphology of the North Vein system, generally dipping 40 to 45 degrees south. While the east and west pit walls are relatively narrow with intermediate slopes. Only the far western pit boundary breaches Pearce Hill completely down to the pediment surface level at about the 4420 level, although the eastern wall reaches down to within 40 feet of breaching onto the southeastern pediment level.

Waste rock disposal is best accomplished south of open pit development. The top of Pearce Hill can be excavated via blasting and dozing from 4732 to the 4580 level pushing all waste rock south over the slope edge. Some 160-feet of post mining relief allows for 8 million tons of waste storage on the south flank of Pearce Hill solely on optioned patented ground. Haulage distance is less than 1000 feet from southeast pit access. This area can receive upwards of 20 million tons if expanded over private surface and US mineral ground, south of the patented claims, but east of the Courtland-Gleason county road. Additional, virtually unlimited waste storage can be found to the north, east and south on both optioned private and US surface grounds. Haulage distances would be increased to about 1500 to 2000 feet from the southeast pit rim.

Crusher and agglomeration facilities are best situated approximately 1500 feet south southeast of the pit wholly upon Galyen optioned fee lands. Several hundred acres with a gentle 1.5 degree northeast slope, provide excellent heap leach terrain. The anticipated leach liquor facility would be situated in the NW1/4 of the SE1/4, Sec 4, T.18 S., R.25 E. also on optioned fee land. Access would be via a 3/4 mile spur road off the Courtland-Gleason road about one mine south of the Pearce crossroads. An alternate access, avoiding the Pearce Townsite area completely, would involve about 3/4 mile of spur road off Highway 191 about 1.25 mile east of the Pearce crossroads. Virtually all operations and roads would be on private surface lands.

Visually, the proposed Commonwealth Mine would expose only the flattened top of Pearce Hill and several mining benches to Highway 191 traffic and the townsites of Sunsites and Pearce. The large majority of waste dumps, crushing and leach liquor facilities would not be visible from the main highway nor old Pearce, except along the highway at great distances to the

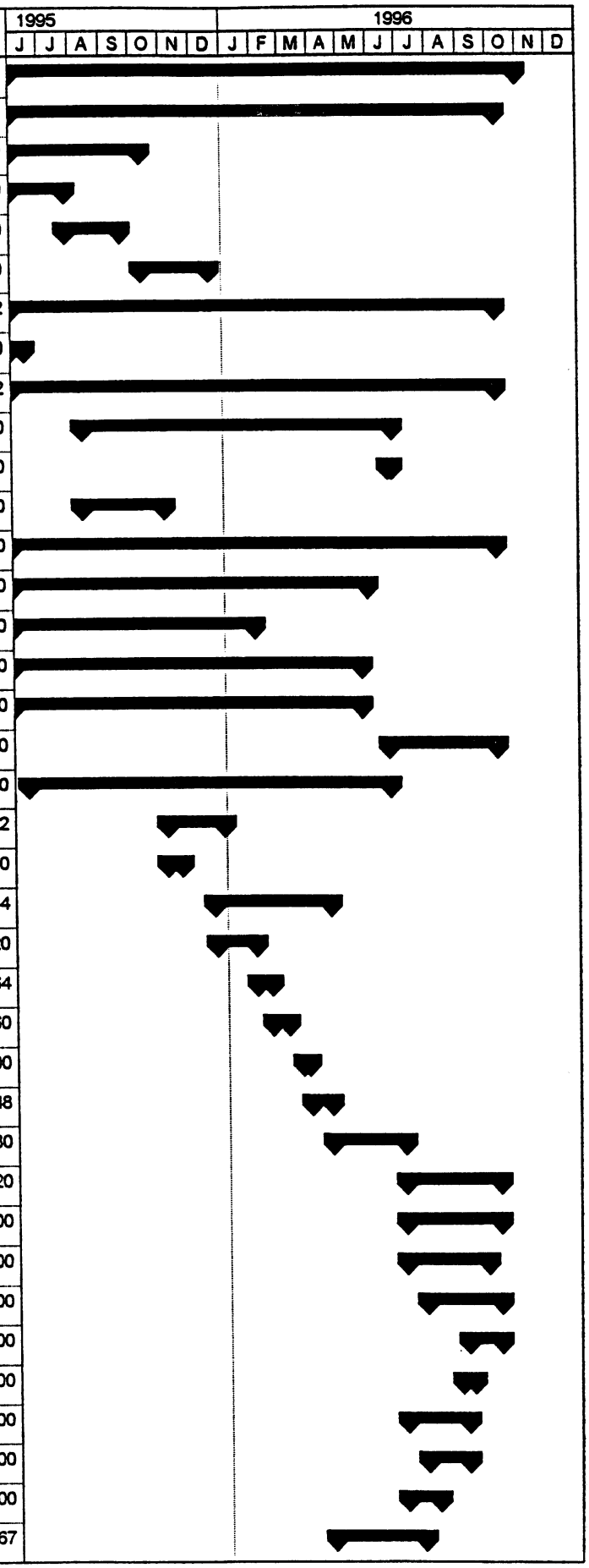
east. The Courtland-Gleason road would skirt the western pit margin requiring some limited relocation and the majority of waste dump would parallel the road but shield the operational facilities from close view. Dust and blast mitigation are a priority.

Current planning calls for final feasibility study of the Commonwealth Project on 7.7 million tons (i.e. in excess of 250,000 ounces of gold equivalent). An independent consultant can be expected to complete this task within two months of commencement. The expected cost of such a study is estimated at $125,000.

10.2 Project Schedule and Budget

Harvest Gold Corporation - COMMONWEALTH SCHEDULE with PRELIMINARY BUDGET

ID	Name	Total Cost
1	Commonwealth Operation (assumes 6/1/95 startup)	$6,411,549.63
2	Commonwealth Rock Products (Mining Co.)	$2,948,635.93
3	Ore Reserve Delineation	$338,552.00
4	Phase 1 drill program	$154,078.00
9	Phase 2 drill program	$127,930.00
16	Mining Feasibility	$76,472.80
23	Permitting	$392,575.12
25	Title review	$3,051.80
32	Permitting requirements	$363,859.32
33	Federal Requirements	$82,406.30
34	MSHA	$0.00
36	USBLM (if required)	$3,600.00
43	State Requirements	$260,785.10
44	AZ Dept. of Enviromental Qu	$103,440.00
46	Office of Air Qualtiy	$20,760.00
49	AZ Dept of Water Resources	$0.00
50	Notice of Intent to drill	$0.00
54	AZ State Mine Inspector	$0.00
57	AZ Com. of Ag. & Horticultur	$16,000.00
67	Cochise County Requirements	$3,886.32
68	Dept of Health	$1,200.00
75	Engineering Design	$72,696.34
77	Rock Mechanics	$14,687.20
82	Haulage requirements	$560.64
85	Dumping requirements	$1,401.60
91	Maintenance Requirements	$1,500.00
95	Site Plan	$10,774.48
101	Construction Solicitation	$10,890.80
106	Mine Construction Phase	$1,930,408.20
109	Construction	$1,689,858.00
110	Mine	$415,530.00
114	Crushing Circuit	$1,020,500.00
119	Agglomeration Circuit	$254,000.00
126	Dump Areas	$7,620.00
133	Buildings	$186,960.00
134	Main office (contract)	$81,480.00
138	Warehouse	$48,480.00
144	Water Well Program	$127,040.67



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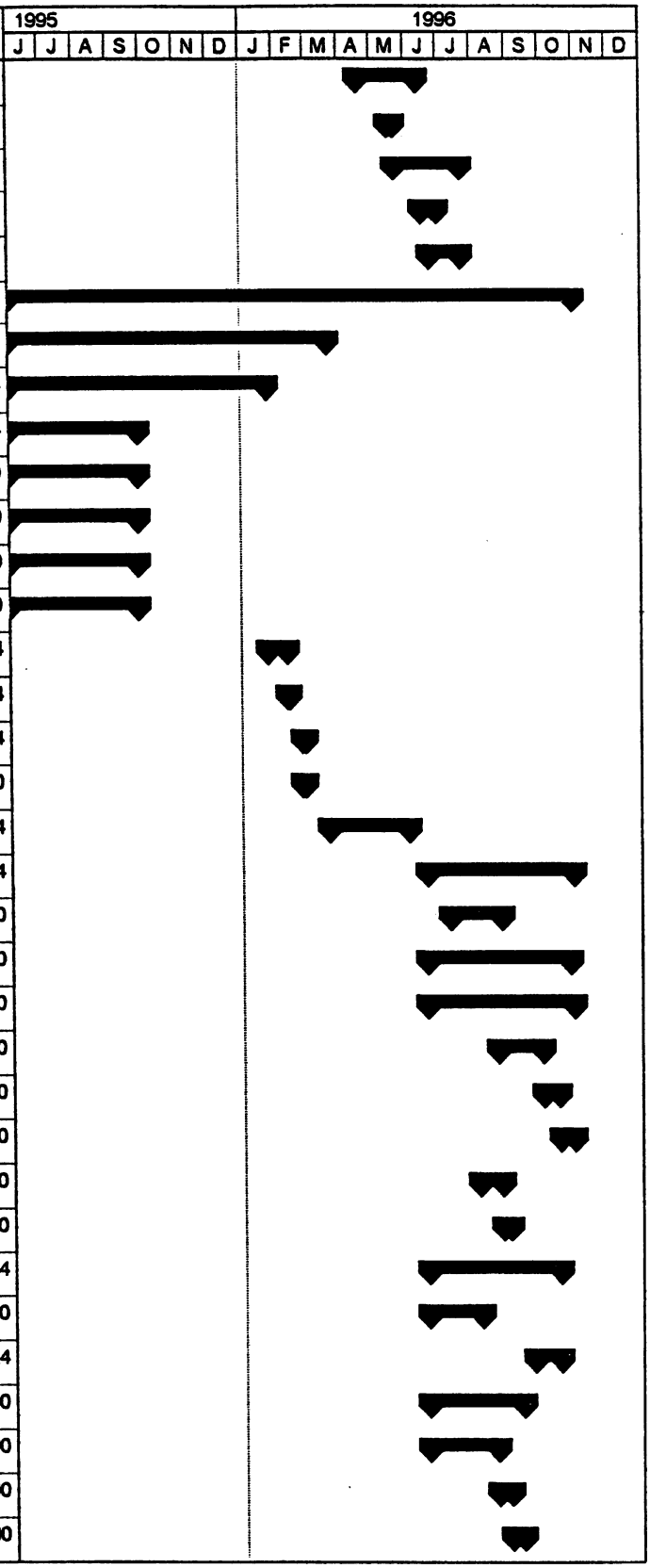
Harvest Gold Corporation - COMMONWEALTH SCHEDULE with PRELIMINARY BUDGET

ID	Name	Total Cost
145	Water rights	$4,949.40
147	Retain Hydrologist	$3,600.00
151	Water Acquisition	$50,620.00
157	Water Delivery	$17,746.40
161	Water implementation	$49,710.00
164	Dragoon Metals, Inc. (Milling Company)	$3,161,917.76
165	Final Metallurgical Feasibility	$175,579.08
166	Definitive Metallurgical Testing	$112,708.04
169	Sample Collection	$31,008.04
170	Underground	$12,252.50
172	Collect Samples	$12,252.50
177	Surface	$14,097.50
179	Collect Samples	$14,097.50
190	Site layout and design	$12,560.64
195	Utility requirements	$2,093.44
201	Schedule	$3,827.04
202	Define requirements	$0.00
211	Construction Solicitation	$9,699.84
216	Mill Construction Phase	$2,976,638.84
220	Mill	$297,900.00
226	Pads (1 yr production 1.25mm tons)	$1,150,000.00
237	Ponds	$595,300.00
240	Preg pond	$0.00
246	Barren pond	$0.00
252	Safety pond	$0.00
259	Preg circuit	$10,220.00
262	Barren circuit	$9,780.00
265	Buildings	$390,332.24
267	Office, Assay and Lab	$222,480.00
273	Security Facility	$51,584.24
278	Utility construction	$175,435.00
279	Electric	$164,195.00
284	Propane	$6,040.00
287	Domestic Water	$5,200.00



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MINESITE PERMITTING
and
CULTURAL CONCERNS
at the
COMMONWEALTH PROPERTY
Cochise County, Arizona, USA

DISCUSSION

Proposed Operation

The Commonwealth Property, located upon patented mining claims controlled by Harvest Gold Corporation, contains upwards of **7.7 million tons** of potentially mineable heap leach mineralization grading approximately **0.035 ounce per ton recoverable gold** equivalent. A smaller reserve at a average higher grade could be developed. Gold recovery by heap leach methods will likely exceed 75% of the contained metal. Mineralization is open at depth and several potential exploration targets may yield abundant additional mineralization adjacent to the developed reserve.

The resulting salable product from mining and processing at Commonwealth would be an impure dore' composed of both gold and silver metals. Chemical recovery costs are estimated to be quite low by heap leaching standards. Geological, engineering and metallurgical results obtained to date have been favorable toward the development of a 3000 ton per day cyanide heap leach operation utilizing a Merrill-Crowe zinc precipitation process. Extra fee land lying southeast of the developed deposit has been acquired for facility, pad and pond purposes.

Full development of an integrated mining operation at Commonwealth will be dependent upon the application for and the receipt of the requisite Arizona and Cochise County permits for development. Initial contacts with Arizona state officials has been favorable for the rapid acquisition of the necessary documents.

Old Pearce Townsite

A significant hurtle in developing the Commonwealth Property lies with its location immediately adjacent to a former mine townsite known as the old town of Pearce, Arizona. In the early 1900's old Pearce was once home to some 2,500 residents. It is now occupied by less than 25 people in about a dozen inhabitable structures just north and west of the mine site. Numerous old out buildings and abandoned facilities attest to its better years. Scattered old prospect shafts penetrate the alluvium around the townsite, but most have been filled with waste. The major remaining establishment of the old Pearce townsite is the local elementary school.

The old Commonwealth Mine and the majority of mineable reserves are located immediately south and east old Pearce on the north and west flank of Pearce Hill, 500 feet to 1500 feet distant. A large portion of the old townlots are owned by the Commonwealth's underlying patented claim holders thereby making them subject to the mining lease agreement with Harvest Gold. Strangely, an 18-acre portion of the presumed townsite is seemly unowned and untaxed to any party including the US BLM. Harvest is attempting to acquire this "lost" acreage.

The best preserved old historic buildings are an old store and the old post office lying at the Tombstone-Courtland road junction about 1100 feet north of potential development. Two more modern, occupied residences in are within 500 to 600 feet of potential open pit operations.

The active Pearce Elementary School serves the surrounding 25-mile area, and consists of one old, and one newer brick structure, several temporary buildings and a large cinder block gymnasium. The school, originally founded in the early 1900's, has been in continual operation since then. In 1992 the school had approximately 170 students and predominately serves the nearby community of Pearce-Sunsites with bus service.

The school lies on the western edge of the old patented mining claim, the Ocean Wave. It partially occupies land donated by Mr. and Mrs. Carl Thetford, the parents of the current underlying claim owners. Rumor has it that old mine workings underlie the school, but no map evidence indicates this as fact. According to preliminary engineering designs the nearest school buildings lie about 750 north and west of a possible openpit boundary.

In 1990, Mr. Fronk a director of Harvest Gold, met with the local school board to assess their potential concerns with a mining project. Suprisingly the school board was favorable and no objections or even concerns were raised. Shortly thereafter, Western States Minerals made a lengthy presentation on the entire scope of a proposed heap leach project to the board and local citizens. This presentation stressed the environmental issues such as cyanide, blasting, waste rock, etc. and Western States' desire to mitigate such problems. Again, many school board members actually welcomed development and expressed no concerns on the nearby location. Western States subsequently entered into a joint venture for development of Commonwealth, but later retired due to geologic limitations on the upside of potential reserves.

With continued open and honest communication and financial assistance to the local community and school, Harvest management believes that proximity to the old townsite will not be a significant problem.

New Pearce-Sunsites Townsite

Pearce-Sunsites, founded in the early 1960's, is a self-supporting, non-incorporated retirement community two miles north of old Pearce. The Pearce Post Office moved to Sunsites when old Pearce was virtually abandoned in the late 1960's. Sunsites has languished somewhat as a retirement community with only local agricultural industries for employment. A recent economic boom in Arizona has filtered through to Sunsites with some renewed building activity.

The town and surrounding rural area has some 1300 residents, and boasts of a monthly newspaper, a Bank One Branch, two auto part stores, an ACE hardware, three gas stations, several apartments, trailer parks, churches, miscellaneous businesses and cafes, plus a fine 18 hole championship golf course. A zoned 800-acre industrial park has no established businesses. Industry and high wage employment are lacking in Sunsites.

Preliminary discussions by Harvest personnel and directors with the local town officials and business owners confirms that Sunsites is in need of an industrial boost. Most business owners recognize the potential benefits of a high-paying industrial development. Mr. Fronk, a director of Harvest has been involved with the Commonwealth since 1989 and has not received any negative feedback since his involvement began. Harvest's onsite manager, a local resident for the past year has been an invited speaker at the local gem and rock club meetings and has received little negative comment.

PERMITTING REQUIREMENTS

The State of Arizona is the dominate government agency for permitting the proposed Commonwealth operation. One major permit and several minor permits or notices are required for any proposed new mining operation. The main permits are the Aquifer Protection Permit issued by the Arizona Department of Environmental Quality-Office of Water Quality, and secondarily a Air Emissions Permit from the Office of Air Quality. The Water Quality permit is deemed the critical path permit, partially because of their possible need for baseline and other technical information, and also the general length of time required to receive this permit with its requirement for public input and review.

Office of Water Quality - MAJOR PERMIT

The Arizona Office of Water Quality requires that an application for the Aquifer Protection Permit and a Notice of Discharge be filed and maintained with them for all mining and milling operations. Despite the intent of having a "zero discharge" facility, permitting is still required. The state insists that even "zero discharge" facilities leak.

Current regulations are such that Harvest Gold Corporation will be required to meet the Best Available Demonstrated Control Technology ("BADCT"). BADCT is the design and use of the most advanced and effective methods, currently known, for the use and containment of all liquid mining fluids and emissions. A BADCT Guidance Document, issued by the State, gives specific recommendations for the design and construction of heap leach pads and ponds together with suggested containment and monitoring requirements. Further directions specify closure requirements.

Issuance of this permit will require a minimum of 6 months from the date of application, however, longer periods approaching 12 months are possible. A recently constructed agitated cyanide leach facility complete with residual tailings impoundment (not required for heap leaching) required about 13 months from application to issuance.

In order to expedite the filing of the Aquifer Protection Permit, Harvest Gold has retained Errol Montgomery & Associates, Inc., hydrologists of Tucson, Arizona to assist in its preparation. To date, Montgomery has researched the regional water situation, toured the site and has prepared a map and water data summary for a three mile radius around the Commonwealth Mine. Montgomery quoted in their January 3, 1995 report: **...."Based on information reviewed thus far and our knowledge of the APP program, we do not foresee any substantial impediments to obtaining an APP for the Commonwealth Mine Project, especially if optimum Best Available Demonstrated Control Technology (BADCT) is used for construction of facilities"....** Montgomery and other consultants will be directly involved in discussions with the personnel of the Office of Water Quality, first as initial informal discussions and later as formal applications. Their work will include preparation of the following:

- site plan
- process flow diagrams
- facility design plans
- process description.

A cost estimate for completing the above is approximately $70,000 and would require approximately 60 days for completion prior to application.

The above information will be used to make an informal presentation to the Office of Water Quality to insure that our application is complete prior to filing. According to Arizona Revised Statutes R18-9-107:

> "B. A person who is required to obtain an individual Aquifer Protection permit shall submit a permit application to the Department according to the following:
>
> 1. For a new facility for which the owner is not subject to R18-9-103 A. and B., C. or D., not later than 180 days before the date on which the facility is expected to begin discharge."

Once filed in final form, the schedule for receiving the Aquifer Protection Permit is as follows:

1. The Director of the Department of Environmental Quality ("DEQ") will notify applicant in writing within 30 days if the application is complete, or if additional information is necessary.

2. The Director will notify applicant of the preliminary decision to issue or deny permit within 90 days of receipt of complete application. The Department will issue a draft of the proposed permit at its earliest opportunity.

3. The Director will cause publication of a "notice of preliminary decision to issue or deny permit" within 30 days after applicant is notified of the preliminary decision to issue or deny permit.

4. The DEQ will make a decision whether to conduct a public hearing within 45 days after publication of the public notice. If a hearing is to be held, the department will schedule a hearing on or before 75 days from the close of the public comment period. The hearing record shall close seven days after the hearing.

5. If a public hearing is not required, the Director shall notify the applicant within 30 days of the end of the public comment period of the final decision to issue or deny permit. If a public hearing is required, the Director shall notify applicant within 45 days after public hearing record is closed of the final decision to issue or deny permit. The Director may extend the final decision date to not more than 90 days following the closure of the public hearing record.

The maximum permissible period of application to issuance is approximately 322 days, but a minimum is probably 225 days. This assumes that all documents and data are complete at submission. Additional information requests may be made by the Director.

The application requires detailed information on the owner-operator, local topography and cultural development within 1/2 mile, geologic and hydrologic data, a proposed facility site plan, a monitoring plan, anticipated discharges, a description and discussion of BADCT implementation, a description of alert levels and final closure plans plus a statement of qualifications including proof of sufficient funds for closure.

Consultant fees to shepherd the application through the Office may approximate $25,000. Actual application fees are estimated at a minimum of $11,300, but have not yet been fully determined. A maximum permit fee could approach $25,600. Harvest has not yet submitted an initial Water Quality application, but has engaged in informal discussions. Total cost of permit estimated at $100,000 exclusive of Company personnel time and incidental expenses.

Office of Air Quality- MINOR PERMIT

The Air Emissions Permit issued by the Office of Air Quality will require at least 6 to 8 weeks to be issued following application. Harvest has commenced initial discussions with the

agency. The proposed operation would most likely be classified as a Class C (minor emission source) permit and require an application fee of approximately $1,000.

Initial discussions with Air Quality personnel have been made in regards to monitoring requirements. The agency has requested details of minesite operation, and have tentatively indicated that the Commonwealth Mine may not be a significant particulate emission source, hence does not require a monitoring system. If however, a baseline measurement of air quality for solid particulate is necessary, the Company has already acquired the necessary monitoring equipment. For the type of operation anticipated, one EPA approved PM-10 Monitor would need to be installed down wind of the intended dust source. Filters must be changed following each sampling period which is anticipated to be every other day. As much base line data as possible would be collected before applying for the final permit. Most work can be completed by Company personnel, however, $10,000 in consultant fees may be prudent.

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Commonwealth is not located in a controlled or restricted water use area. No special permits for water development or water adjudication are required. Once potential well sites are located only a notice of intent to develop water resources needs to be filed. No monitoring activities are required. Costs are minimal.

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The Inspector must be notified of an intent to operate a mining facility. Only notification is necessary. No ongoing monitoring is required. All cyanide operations required that at least six employees undergo the state cyanidation plant training course at Company expense. Cost are minimal.

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Cochise County Department of Health requires notification of pending sewerage and potable water facilities, however no specific building permits or zoning laws infringe upon mining claim development.

Federal Agencies

All operations at Commonwealth are anticipated to be conducted upon private land. If federal lands can be avoided, then no federal permitting requirements need be met. Any attempt to use federal lands may subject the entire operation to federal requirements. Once operations have commenced, the federal Mine Safety and Health Administration, the Occupational Safety

and Health Administration and other agencies may be involved in monitoring operational activities. Federal endangered species, water quality and other regulatory requirements may need to be met. Specific consultants will be retained to define and comply with any applicable federal requirements.

Conclusions

Development of the Commonwealth Mine will not be prohibitively delayed by cultural or permitting requirements. Local residents of Pearce and Sunsites predominately favor industrial development to expand a dwindling job base. The local school board supports development particularly if financial incentives are available for school use. The local Chamber of Commerce welcomes new business, particularly for high paying mining jobs. A recent ugly scar of an operating crushed rock and gravel quarry, excavated for the nearby power station, has not fazed local residents significantly, despite its nearby and prominent locale.

Innovative construction and mining techniques used by the operator should mitigate most potential citizen complaints. A valid effort to communicate with the citizens and then maintain a good follow through with promises is necessary. A determined effort to mine and reclaim the site in an ongoing and responsible fashion will yield good co-operation with local officials.

Scattered, unorganized opposition from local anti-development citizens and/or out-of-state landholders can be expected. Nationally-oriented environmental concerns have limited standing with an operation contained exclusively upon private lands, especially amongst the local, rural community. The immediate vicinity of Commonwealth contains no significant visual sites or endangered species worthy of national or even state-wide attention.

The State of Arizona has establish specific criteria for the development of mines and facilities without undue time or confusion. Guidelines have been created for the use of Best Available Control Technology, limiting discretionary public input and delay. Close co-operation with state officials would yield rapid permit acquisition at a minimum of cost.

Harvest personnel have already commenced the permitting process, easily streamlining future required activities. A nine month time frame for complete permit acquisition is a realistic expectation

Atlas:

26 RC

4 Core Geo tec

Met work 110 day column test.

Mapping UG

Sampled K-cuts 2500'

3-D model.

500' @ .03 width.

High-grade @ 7 level.

320, Minable. oz

260 Recoverable oz

Atlas Deal $25/oz Feasibility

$1.5 cash

Rest Stock.

Clive Baily 520-826-3175 cel 303 809 0255

4077

303-674-3222 FAX Watson

Harvest Gold Corporation

Box 2590
Evergreen, Colorado 80437
Ph: 303-674-3111, Fax: 303-674-3222

Date: October 10, 1996

Randy Moore
Cambior Explorations
230 S. Rock Blvd.
Reno, Nevada 89502

Sent: US Priority Mail

Re: Commonwealth Project, Cochise County, AZ (the "Project)

Dear Mr. Moore:

Enclosed please find the following information on the above referenced project:

- 1) Pre-feasibility Report, 45 pages, April 1995 (general review of project, currently being updated).
- 2) Analysis of Past Exploration Work, 8 pages, September, 1996 (review of past work).
- 3) Ultimate Area Reserve potential, 7 pages, September, 1996 (summary of exploration targets).
- 4) Metallurgical Testing, 17 pages, Septembe,r 1996 (review of met testing, currently being updated)
- 5) Minesite Permitting & Cultural Concerns, 8 pages, April, 1995 (currently being updated, a long Harding-Lawson report is available covering all environmental aspects - no problems noted)
- 6) Kappas-Cassiday, Prelim report, Summary pages only(entire report is +85 pgs w/ appendices) dated May, 1996 (recent met testing)
- 7) Capital budget and timeline, 17 pages, April, 1995 (currently being updated)
- 8) Sovereign Gold Company (Harvest's Argentine assets)

Please call John Watson, Harvest's President at 303-674-3111 for further general information, or you may contact me at 303-674-4418 for a discussion of detailed property information. Thank you for your interest.

cordially,

Rich Forrest, Vice President

ID	Name	Fixed Cost	Total Cost
277	Cyanide Handing facility	$5,500.00	$6,812.00
278	Utility construction	$0.00	$175,435.00
279	Electric	$0.00	$164,195.00
280	440 Volt main line	$52,185.00	$52,185.00
281	220 Volt distribution	$23,000.00	$23,000.00
282	110 Volt distribution	$1,250.00	$2,450.00
283	Backup Generators	$86,000.00	$86,560.00
284	Propane	$0.00	$6,040.00
285	Tanks	$2,500.00	$3,140.00
286	Lines	$500.00	$2,900.00
287	Domestic Water	$0.00	$5,200.00
288	Tanks	$1,200.00	$2,400.00
289	Hot & Cold Piping	$400.00	$2,800.00
290	Inital Chemical inventory	$72,000.00	$72,000.00
291	Site fencing	$3,000.00	$6,200.00
292	Signage	$3,200.00	$3,680.00
293			
294	FINAL FEASIBILITY REVIEW	$3,500.00	$71,311.60
295	"GO" DECISION	$0.00	$0.00

CAMBIOR

Gary Parkison

Randy,

Here is some more stuff on Commonwealth. The fax you sent me sounds sort of interesting, so maybe you can look thru this and see if anything falls out.

Gary

GEOLOGICAL REPORT

ON THE

COMMONWEALTH MINE,

COCHISE COUNTY, ARIZONA

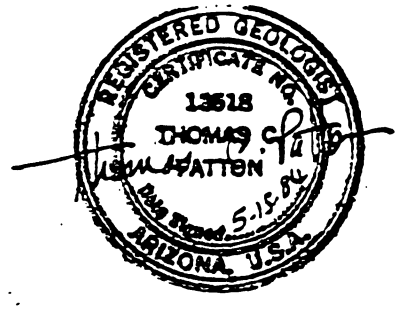
for

Alpine Resources, Ltd.
11471 Sutton Way, Suite 207
Grass Valley, California 95945

by

Thomas C. Patton

May 15, 1984



CONTENTS

ILLUSTRATIONS

(Plates are in pocket)

THOMAS C. PATTON
CONSULTING GEOLOGIST

GEOLOGICAL REPORT ON THE COMMONWEALTH MINE COCHISE COUNTY, ARIZONA

SUMMARY

The Commonwealth Mine in Cochise County, Arizona is a bonanza-type epithermal silver-gold deposit which produced 12.9 million ounces of silver and 122,000 ounces of gold during the period 1895-1942. The Tertiary rocks around the Commonwealth Mine (probable age 20-40 m.y.) originally formed a conformable sequence which were subsequently fractured, mineralized, and complexly faulted. This study has shown that

1) Huddy Hill is probably a faulted segment of Pearce Hill due to right-lateral offset along the Main and North veins.

2) The North vein is later and lower grade than the Main vein and probably cuts if off at depth.

3) The best chance for a bulk-tonnage silver-gold deposit occurs in the footwall portion of the Main vein. The entire wedge of rocks between the Main and North veins is prospective, but areas outside this zone are not prospective.

4) The area on the west end of Pearce Hill has potential for significant tonnages of high grade gold and silver ore.

In my opinion, the Thetford property has potential for 5 million tons of open pit ore averaging 3 oz/ton silver and 0.02 oz/ton gold. The 22 hole reverse circulation drilling program recommended in the West and East zones (Plate 1) is intended to outline the extent of the anticipated orebody. Following the successful completion of this program, an additional 20 to 40 close-spaced holes will be necessary to delineate fully 5 million tons of proven ore reserves.

INTRODUCTION

The Commonwealth Mine in Cochise County, Arizona is a bonanza-type epithermal silver-gold deposit which produced 12.9 million ounces of silver and 122,000 ounces of gold during the period 1895-1942. My preliminary report of February 25, 1983 reviewed the early history and results of previous exploration programs at the Commonwealth Mine and called attention to its potential as a bulk-tonnage open pit producer of silver and gold. Alpine Resources, Inc. of Grass Valley, California subsequently acquired the center of the district from Carl Thetford on May 30, 1983 and leased contiguous claims from L.A. Gaylen on July 1, 1983.

The purpose of this study was to

1) Prepare a geologic map of the area on the new topographic base (1" = 100') flown by McClain Aerial Mapping and Surveying, Inc.

2) Compile and interpret all previous exploration data.

3) Lay out a drilling program to evaluate previously identified mineralization on the east and west ends of Pearce Hill.

I have attempted to include all information which will be useful in the on-going evaluation of the Commonwealth property. To avoid repetition of data covered in my earlier report, a copy is included in the Appendices for reference.

LOCATION

The Commonwealth Mine is in central Cochise County (T18S, R25E, secs. 4,5) about twenty-five miles south of Wilcox and 70 miles east of Tucson (Fig. 1). The old mine workings are located on Pearce Hill, one of several low hills which rise abruptly above the Sulphur Springs Valley (Fig. 2). The property is less than a half mile south of U.S. Highway 666 and 2 miles south of the retirement village of Sunsites.

LAND STATUS

A claim map compiled in 1981 by E. Grover Heinrichs and Associates is shown in Figure 3. To the best of my knowledge, the claims are accurately located, although a detailed land take-off would be necessary to be sure. The mineral survey monument which marks the common corners of patented claims Commonwealth, Silver Crown, and One and All is plotted on Plate 1.

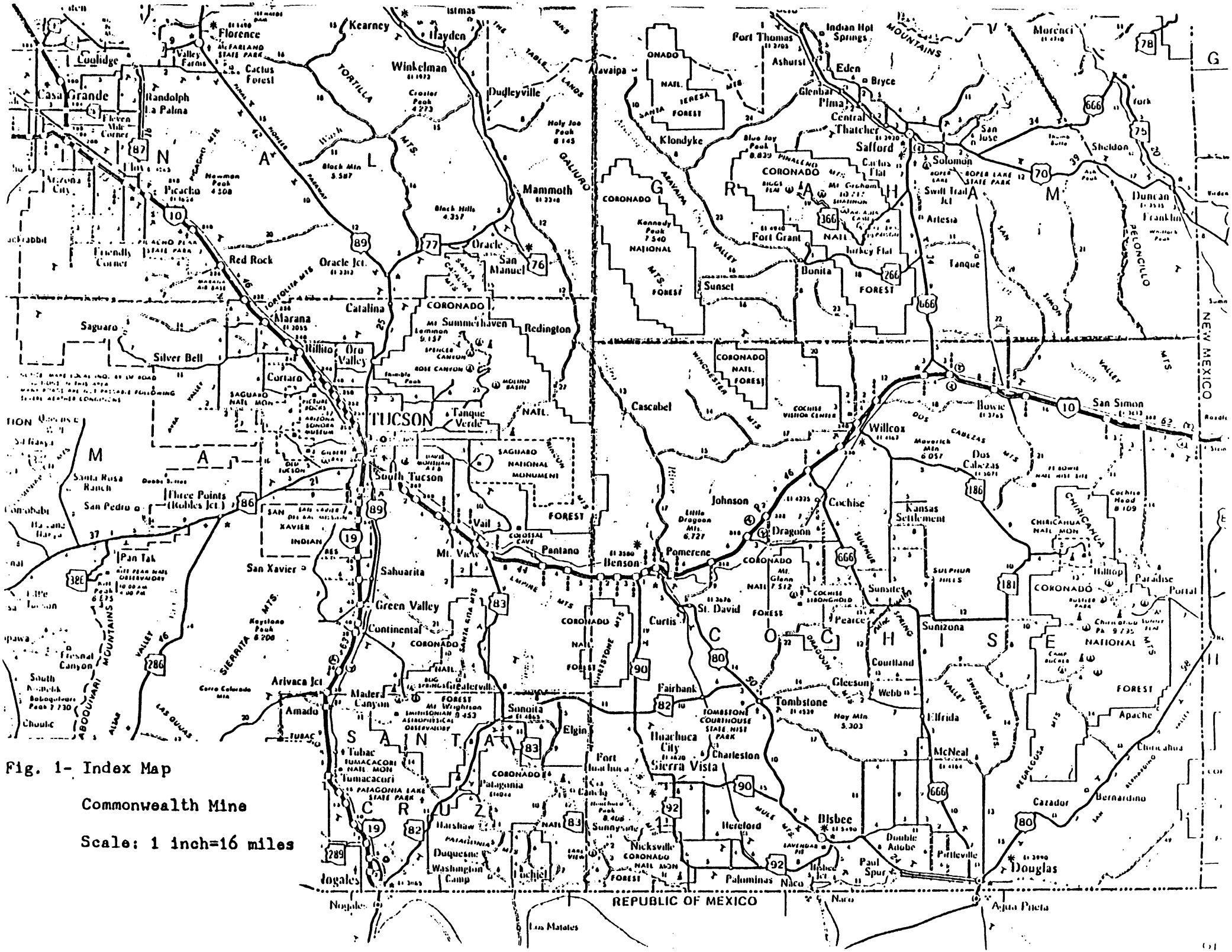


Fig. 1- Index Map

Commonwealth Mine

Scale: 1 inch=16 miles

Alpine Resources, Inc. currently has under lease 21 patented claims, 77 unpatented claims and 2 patented millsites distributed as follows:

1. From Carl Thetford

   a. Patented Claims- 88% interest in 7 claims, 142.3 acres (Sulphur Springs Valley, Ocean Wave, Silver Wave, North Bell, One and All, Commonwealth, Silver Crown).

   b. Patented Millsites- 10 acres (Ocean Wave Millsite, One and All Millsite).

   c. Unpatented Lode Claims (17)
   Lyle 1 thru 6- BLM Nos. 50140 thru 50145
   Pan 8 thru 15- BLM Nos. 50146 thru 50153
   Mamie V thru VII- BLM Nos. 128288 thru 128290

   d. Unpatented placer claims (4)
   Mamie I thru IV- BLM Nos. 50136 thru 50139

2. From L.A. Galyen

   a. Patented Lode Claims (4)
   Arthur, Rainbow, Hornspoon, Silver Thread

   b. Unpatented Claims (74)
   Pan 1 thru 7- BLM Nos. 38050 thru 38056
   Pan 16 thru 78- BLM Nos. 38057 thru 38119
   Ayn Rand 1 thru 4- BLM Nos. 38120 thru 38123

   c. Unpatented Placer Claims (3)
   Bill B 1 thru 3- BLM Nos. 38047 thru 38049

   d. Patented Fee Acreage, Surface and Minerals- 320 acres in sec. 4 (80 acres); sec. 9(240 acres)

   e. Patented Fee Acreage, Surface only- about 550 acres in sec. 4 (390 acres); sec. 9 (120 acres); sec. 16 (40 acres).

Fig. 2. View looking south toward Commonwealth Mine. Caved area along Main vein is visible in center of Pearce Hill. Note old Pearce townsite at right base of Pearce Hill near center of photo.
1= Metat Hill 2= Huddy Hill 3= Pearce Hill 4= Sixmile Hill 5= Dragoon Mountains
6= Swisshelm Mountains

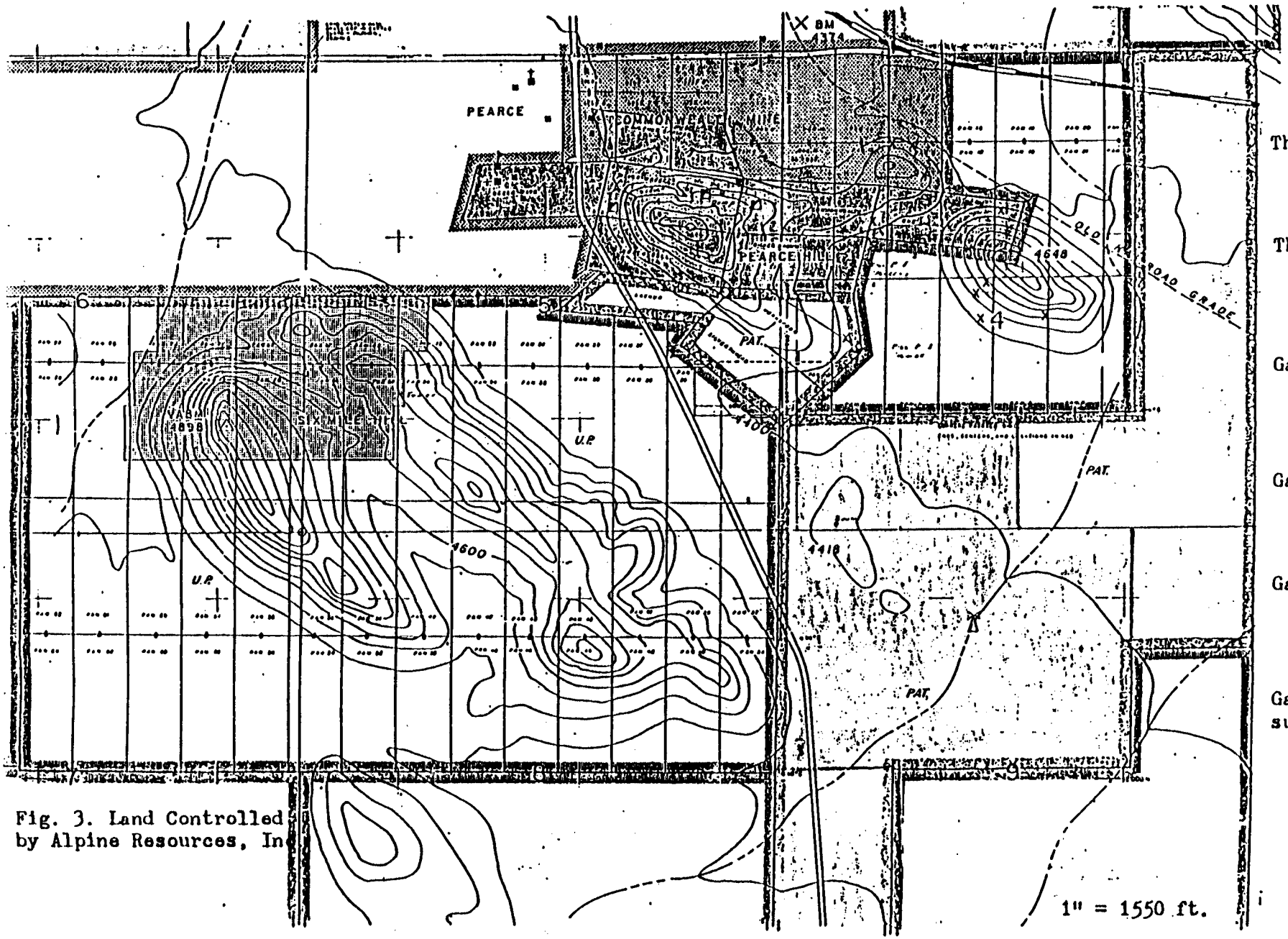


Fig. 3. Land Controlled by Alpine Resources, In

Thetford's Mamie V, VI and VII lode claims in the SW¼ of section 4, T18S, R25E appear to be in conflict with Galyen's Pan claims. However, as long as both blocks are under lease, no problem exists. Bureau of Land Management records dated March 7, 1984 show that 1983 assessment work has been filed for all unpatented claims under lease to Alpine Resources, Inc. The only claims in the Pearce Hill-Sixmile Hill area not controlled by Alpine Resources are the Ramon 1 thru 6 claims on the north end of Sixmile Hill owned by Manuel R. Hernandez.

SCOPE OF INVESTIGATION

I spent 7 days at the property mapping the surface geology, locating drill holes, and doing a limited amount of underground work. The following points should be emphasized:

1. Geologic mapping. Data were plotted on orthophotos with topography and subsequently transferred to the topographic base shown in Plate 1. Rock names used in this report are descriptive field terms based on the hand lens examination of hand specimens. A petrographic study of the rocks in the Commonwealth Mine area was made by Howell (1977) and should be consulted for more detailed information. The geologic map reflects subsurface drilling information, especially in areas of sparse outcrop.

2. Drill hole locations. Holes drilled by Platoro (CS-1 thru CS-5) were surveyed as part of this study. Bethex surveyed all of their drill holes and these coordinates correspond very closely with actual collar locations. The holes drilled by Western States Minerals Corporation apparently were not surveyed. The only record of their locations is a copy of a Bethex drill map with the holes sketched in. I found several discrepancies between these locations and their actual positions on the ground. The Western States drill holes shown on Plate 1 are actual field locations except in cases where the collar could not be found.

3. I mapped the Huddy tunnel and checked the mapping of Howell (1977) on the 3rd, 5th, 6th, and 7th levels accessible from C shaft. The Brockman shaft is open but the ladder is in such poor condition that I did not attempt to go down.

4. The vein locations shown in the cross sections on Plate 2 were taken from the level maps of Smith (1927) and Howell (1977) which were reduced to 1" = 100'. Information shown on the drill holes in the cross sections was taken from available data ranging from detailed (Bethex) to sketchy (Western States and Platoro). All assays and some drill logs are included in the Appendices.

5. For details relating to production statistics and the history of mining and exploration at the Commonwealth Mine, please refer to my report of February 25, 1984.

GEOLOGY

The Pearce Hills and other low hills in the Sulphur Springs Valley between the Willcox Playa and the Swisshelm Mountains are composed of middle Tertiary flows, welded tuffs, and pyroclastic rocks which were extruded over a platform of Cretaceous and older sediments. The Tectonic Map of Southeast Arizona by Drewes (1980) shows that these tilted volcanic blocks strike northwest, dip northeast at 10°-40°, and are separated by a series of northwesterly trending Basin and Range faults. Drewes' map strongly suggests that the Pearce Hills are a northwestern continuation of the Swisshelm Mountains, a theory that appears to be supported by regional gravity and magnetic data. Although Tertiary rocks in the vicinity of Pearce have not been dated, an Oligocene-Miocene age (20-40 m.y.) is probable based on correlation with similar rocks in the Swisshelm and Chiricahua Mountains (Drewes, 1980). The rock units shown on Plates 1 and 2 are discussed in the following paragraphs.

Bisbee Formation (Kb). The oldest rocks in the mine area are well sorted sandstones and mudstones of late Early Cretaceous age that are referred to as Bisbee Formation following the terminology proposed by Hayes (1970b). In several nearby mountain ranges, Bisbee sediments can be divided into four units of formation rank: Glance Conglomerate, Morita Formation, Mural Limestone and Cintura Formation (ascending order), which collectively form the Bisbee Group. However, at Pearce the absence of Mural Limestone, which is the only distinctive unit within the Bisbee sediments, prevents correlation of these rocks with any of the units listed above. In my opinion, the Bisbee Formation in the Commonwealth Mine area probably is correlative with the Morita Formation of Hayes (1970a) in the Mule and Huachuca Mountains.

Because the Bisbee Formation is soft and easily eroded, outcrops are limited to a few small exposures along the north side of Pearce Hill near the footwall of the North Vein (Plate 1). However, Bisbee sediments are exposed in several underground workings on the north side of Pearce Hill (especially in the adit to the third level), and in numerous drill holes. As the cross sections in Plate 2 show, Bisbee sediments form the footwall of the North vein and underlie the entire area north of the North vein, including the cyanide tailings and Thetford mill. Bisbee sediments also occur at the extreme western end of Pearce Hill south of the Main vein in the Brockman-Mominier shaft area (See Plate 2, cross section D-D').

Where I observed Bisbee Formation along the North and Main vein, it is a clean, fine to medium-grained sandstone with abundant silicification, fracturing and iron staining. Drill logs indicate that the formation also contains siltstones and sandy,calcareous mudstones which do not crop out.

Lower Andesite (Ta; Tf_1 of Howell, 1977; Earlier andesite of Smith, 1927). The lower andesite is identifiable largely on the basis of its stratigraphic position between underlying Bisbee Formation and overlying rhyolite breccia, and to a lesser degree because of observable differences with the Upper andesite. Although numerous textural variations make generalizations hazardous, the following features are typical of Lower andesite: 1) low-profile, dense, smooth, and well-fractured outcrops 2) stubby plagioclase phenocrysts set in a light gray to black aphanitic matrix 3) autobrecciated fragments present but subordinate 4) generally weak to non-magnetic.Lower andesite crops out on the west end of Pearce Hill (Plate 1; Fig. 4), where drill holes show that it unconformably overlies Bisbee Formation (Plate 2, section D-D'). A few outcrops and abundant float also occur on the west side of Huddy Hill, which is presumably the faulted offset of the Pearce Hill outcrop. Several outcrops of andesite occur along the Main vein near its point of intersection with the North vein (Plate 1). The rock is so shattered, silicified and iron-stained that positive identification is impossible, but in my opinion, it is lower andesite.

Rhyolite Breccia (Trb; Ta_1 of Howell, 1977; Earlier breccia of Smith, 1927). This rock is a distinctive rhyolite crystal lithic tuff (Fig. 5) with phenocrysts of square quartz, potassium feldspar and minor biotite; and fragments of andesite and locally minor Bisbee formation. It forms massive, easily recognizable outcrops on Pearce and Huddy Hills (Plate 1). Faulted slices of rhyolite breccia also form bold outcrops along the Main and North veins in the center of the area of previous mining. Smith (1927, p. 26) believed that the rhyolite breccia extending from C shaft eastward to Huddy Hill was later than the breccia on Pearce Hill. He based this conclusion on differences in color and fragment size and composition.

I believe that the rhyolite breccia is all part of the same crystal lithic tuff unit, with the differences noted by Smith attributable to alteration and silicification along the Main and North Vein systems. Relatively unaltered rhyolite breccia occurs on Pearce and Huddy Hills (Plate 1; Fig. 5a). The rock is white to light brown with sharply outlined fragments of andesite and minor Bisbee formation. The same rock occurs in fault slices along the Main and North veins but its appearance has been altered by silicification, quartz veining, and iron staining (Fig. 5b).

Upper Andesite (Tau; Tf_2 of Howell, 1977; Middle andesite of Smith,1927). This rock type is the most areally extensive at the Commonwealth Mine,

Fig. 4. Contact between lower andesite (Ta) and rhyolite breccia (Trb) in caved area near No. 1 shaft at northwest end of Pearce Hill (Plate 1). Contact strikes N20W, dips 40° NE.

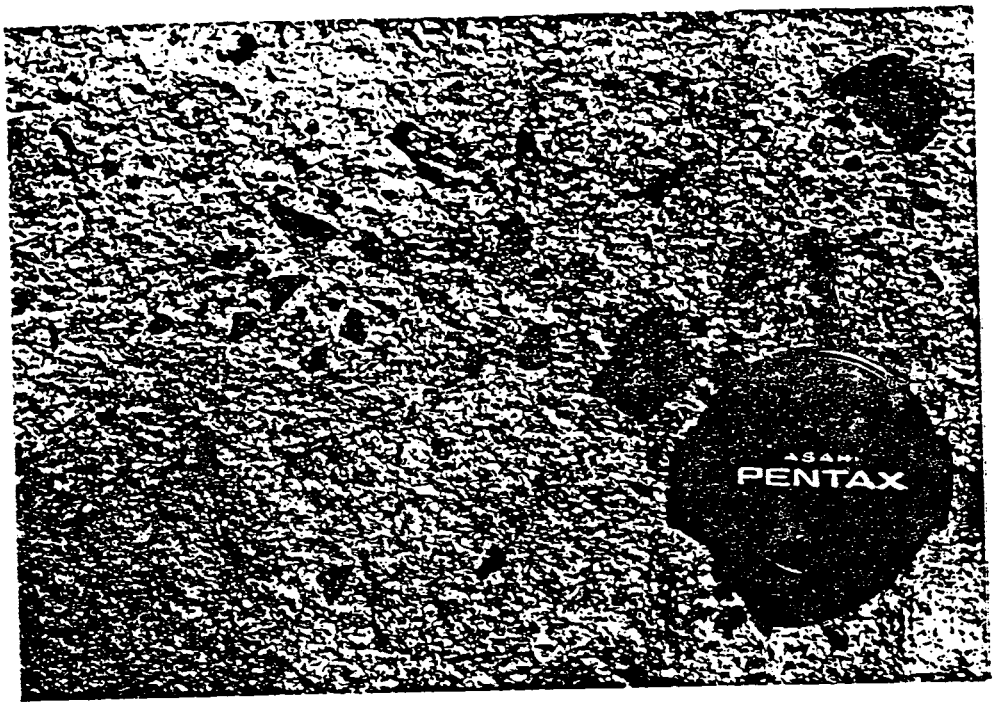


Fig. 5a. Unaltered rhyolite breccia on dump of Commonwealth Ext. 2 shaft, southeast end of Pearce Hill. Note andesite fragments in rhyolite matrix.

Fig. 5b. Altered rhyolite breccia exposed in cliff 150 feet east of C shaft. Easily recognizable texture shown in Fig. 5a is obscured by quartz veining and iron staining, but is still visible.

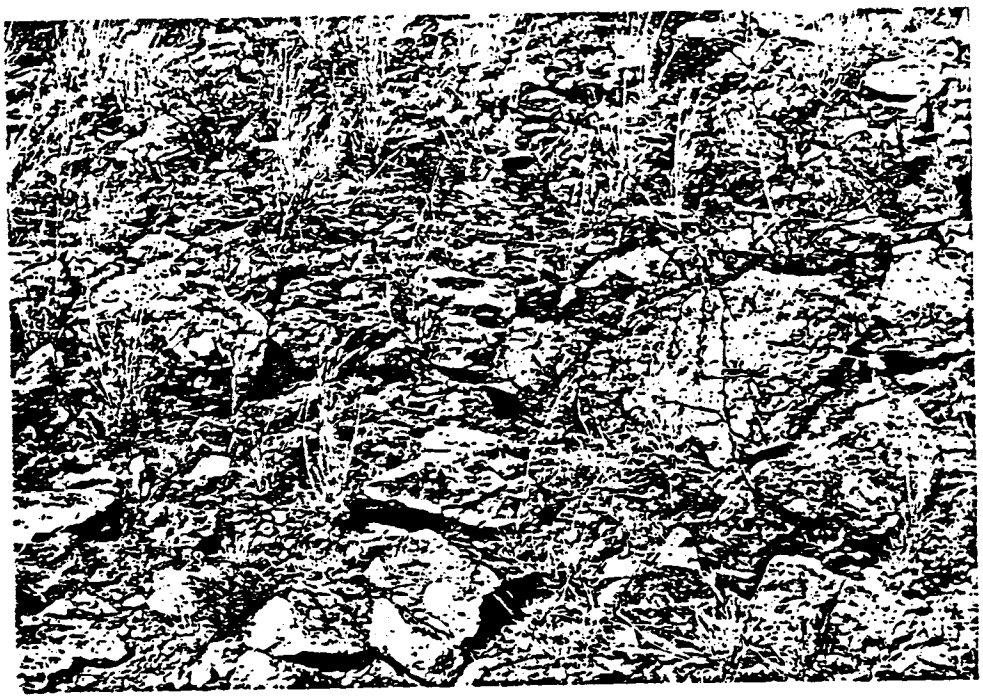


Fig. 6. Upper andesite on southeast end of Pearce Hill showing typical rubbly appearance.

covering the entire southern and eastern parts of Pearce Hill and the extreme eastern side of Huddy Hill. The Upper andesite typically forms light gray to brown, scabby, rubbly weathering outcrops (Fig. 6); has a light to dark brown, fine-grained matrix with plagioclase laths; is commonly weakly magnetic; has easily recognizable hornblende crystals and/or breccia fragments. A vesicular basalt noted on Plate 1 at the north end of Metat Hill may be a scoriaceous flow top of the upper andesite as noted by Howell (1977, p. 38). The eastern extent of the Upper andesite is based largely on drill hole information and examination of dump material.

Arkosic Sandstone (Tss; Tw3 of Howell, 1977). Outcrops of this easily eroded unit are sparse, and the distribution shown on Plate 1 is based in part on drill hole and dump information and in part on speculation that the valley between Pearce and Metat Hills is caused by the weathering of this friable arkosic sandstone.

The rock is fairly distinctive, with rounded fragments of limestone, Bisbee Formation and andesite set in an arkosic sandstone matrix. Along the North vein south of Huddy Hill, the sandstone has been silicified and superficially resembles the rhyolite breccia (Trb). The contacts of this unit are not exposed, and the distribution shown on Plate 1 is based on examination of float. The arkosic sandstone is probably an intervolcanic sedimentary unit laid down between volcanic eruptions.

Ash Flow Tuff (Taf; Ta3 of Howell, 1977). This unit caps Metat Hill (Plate 1) and is similar to rocks in the Sixmile Hill area. It is not mineralized and was only briefly examined. The rock is a dense, welded tuff with flattened pumice fragments, quartz phenocrysts and local vitrophyric textures (Fig. 7).

STRUCTURE

A discussion of the regional structure in Southeastern Arizona is beyond the scope of this report. The subject has been reviewed in detail by Drewes (1980,1981) and should be consulted by the interested reader. It is important to note that Tertiary volcanism, mineralization, and Basin and Range orogeny in the Commonwealth Mine area were synchronous events that combined to produce the complex series of veins and faults visible today on Pearce Hill. The following interpretation of these intertwined events is based on the field evidence as I see it, and almost certainly will require modification as additional information becomes available.

The Tertiary rocks around the Commonwealth Mine originally formed a conformable sequence which were subsequently fractured, mineralized and complexly faulted. The individual events leading to the present day

Fig. 7. Typical outcrop of ash flow tuff (Taf) exposed near top of Huddy Hill.

relationships are summarized below:

1. The Tertiary volcanic rocks described above (Lower andesite, rhyolite breccia, Upper andesite, arkosic sandstone, and ash flow tuff) were poured out on a platform of Bisbee Formation sediments during Oligocene-Miocene time. These rocks appear to represent a conformable sequence, because no angular unconformities have been noted. The contacts between individual volcanic units are faulted in places (for instance in the Huddy tunnel where gouge separates rhyolite breccia from Upper andesite). However, I don't believe these faults have had substantial movement, and probably reflect minor adjustments in response to later post-mineral faulting.

2. This package of relatively flat-lying Tertiary volcanic rocks was subsequently fractured and faulted along what is now the Main vein. Fault movement was predominately strike-slip and resulted in apparent right lateral offset of 600-800 feet along the Main vein (Plate 1). The absence of tectonically brecciated vein material along the Main vein suggests that mineralization post-dated at least some of this movement. Several smaller subsidiary structures with no apparent movement were also mineralized at this time (J. Pearce- Ext. No. 2-Brockman vein system; Huddy Hill vein system). It is possible, although purely conjectural, that the Huddy Hill vein-fracture system is the offset portion of the Main vein. Northeastward tilting of the volcanic sequence had probably begun at this time.

Fault offset along the Main vein is well illustrated in section C-C'. The offset is not apparent in sections A-A' and B-B' because faulting has juxtaposed Upper andesite on either side of the vein.

3. Possibly in response to a shift in the stress field, recurrent fracturing and lower grade mineralization took place along the North vein. The wedge of rocks between the Main and North veins was intensely fractured, silicified, and cut by quartz stringers. The bonanza orebodies of the Commonwealth Mine occurred near the intersection of these veins.

4. Major faulting occurred along North vein during the waning stages of mineralization, with apparent strike-slip displacement of about 3000 feet (Plate 1). The fault may have had a significant dip-slip component, but movement was primarily right lateral strike-slip. Conspicuous tectonic brecciation (quartz fragments recemented by silica) along the North vein is strong evidence for this faulting. Movement took place on a least two splays of the North vein (Plate 1) and resulted in several wedges of rhyolite breccia and lower andesite aligned parallel to the fault. The cross sections in Plate 2 suggest that movement along the North vein cut off the Main vein at depth but additional drilling would be necessary to confirm this.

5. Basin and Range faulting and subsequent erosion cut the volcanic sequence into the individual fault blocks that we see today. The Brockman fault mapped by Smith (1927) at the western edge of Pearce Hill is presumably one of these post-mineral Basin and Range faults.

These events have resulted in a generally conformable sequence of rocks south of the Main vein and a faulted sequence of the same rocks on Huddy Hill. Silver-gold mineralization of economic significance is restricted to the pie-shaped wedge of sediments between the North and Main veins; and along the Main vein at the western edge of Pearce Hill.

MINERALIZATION

The Commonwealth Mine is typical of Tertiary epithermal precious metal systems found throughout the western United States. Silver and gold mineralization occurs within a series of quartz veins localized along and between the Main and North veins (Plate 1). The veins exhibit classical epithermal features, including drusy quartz-lined vugs, crustification, comb and cockade textures. Historical production came from supergene-enriched ores of silver (cerargyrite, embolite argentite, native silver) and native gold (Smith, 1927). Gangue minerals include quartz, black and white calcite, adularia, montmorillonite, and sericite. Iron oxides are abundant along fractures in the mineralized zone, but the original sulfide content of the system was low. Minor copper oxides are found on some dumps, most notably in the vicinity of the J. Pearce shaft.

Two distinctive types of quartz veins have been recognized:

1. Main vein. Quartz is clear to yellow-green, exhibits crustification and cockade textures, and has late amethystine quartz crystals projecting from vein walls to form prominent comb structures. High grade silver-gold mineralization is associated with these veins.

2. North vein (Figs. 8,9). Quartz is massive, white, and delicately banded with abundant amethyst and some cockade textures. This type of quartz for the most part is associated with low grade silver mineralization and appears to be a lower temperature variety than the quartz in the Main vein.

K.D. Cornelius determined that the trace of the Main and North veins at their point of intersection strikes N55W and plunges southeast at 30° (Plate 1). This calculation assumed an average attitude of N70W/SW70° on the Main vein and N88W/45°SW on the North vein. The trace of this critical intersection projects very close to the North Shaft where high grade mineralization has been found on the dump.

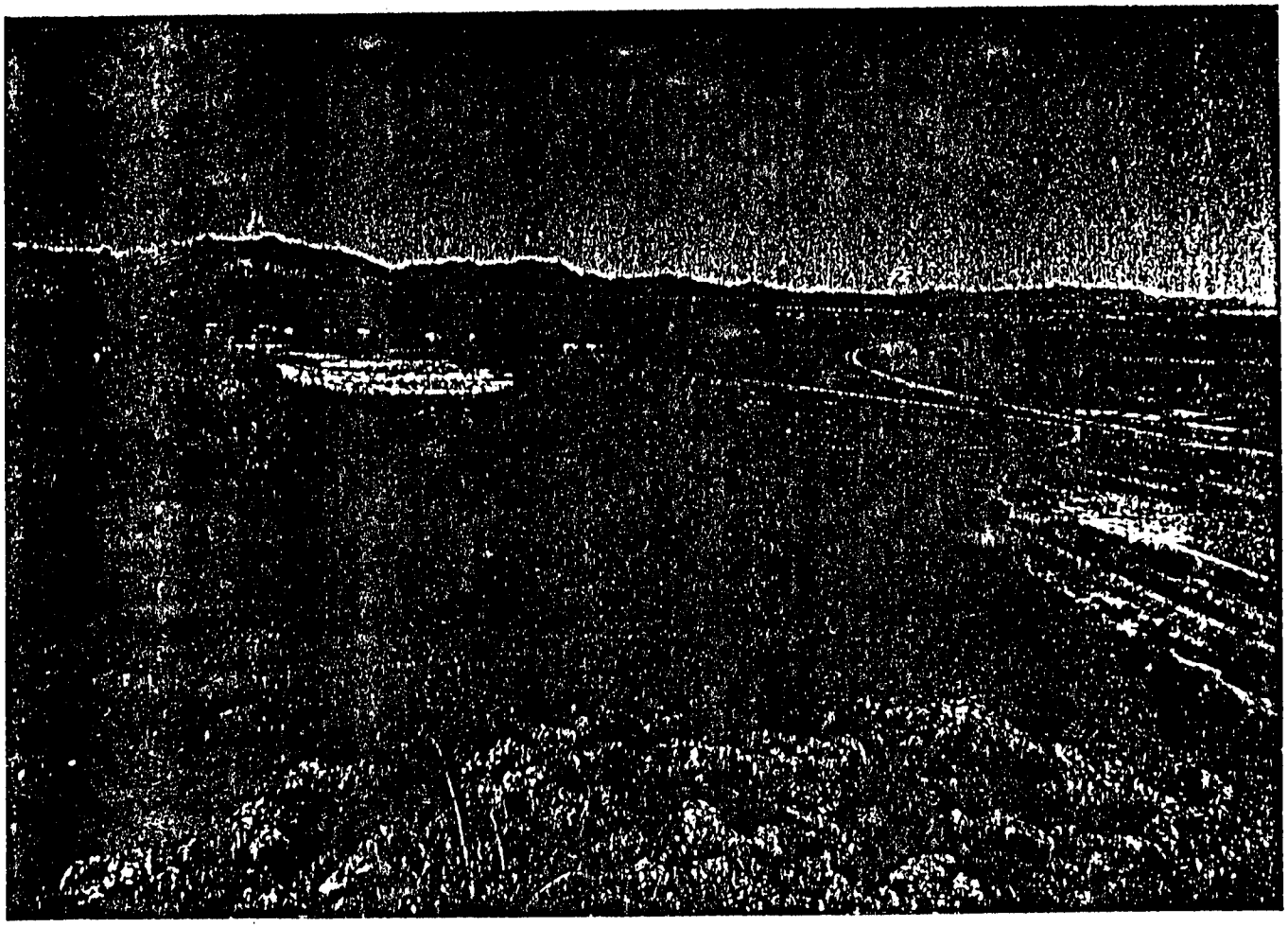


Figure 8. Huddy Hill as viewed from Metat Hill. The contacts between Upper andesite (Tau) and rhyolite breccia (Trb) are marked by distinct color changes. Note the easterly continuation of the North vein as shown on photo. Rocks in foreground are welded ash flow tuffs (Taf) which cap Metat Hill. A portion of the old railroad bed which connected Pearce with Cochise and Douglas is visible on the extreme right.

1= Cochise Stronghold 2= town of Sunsites

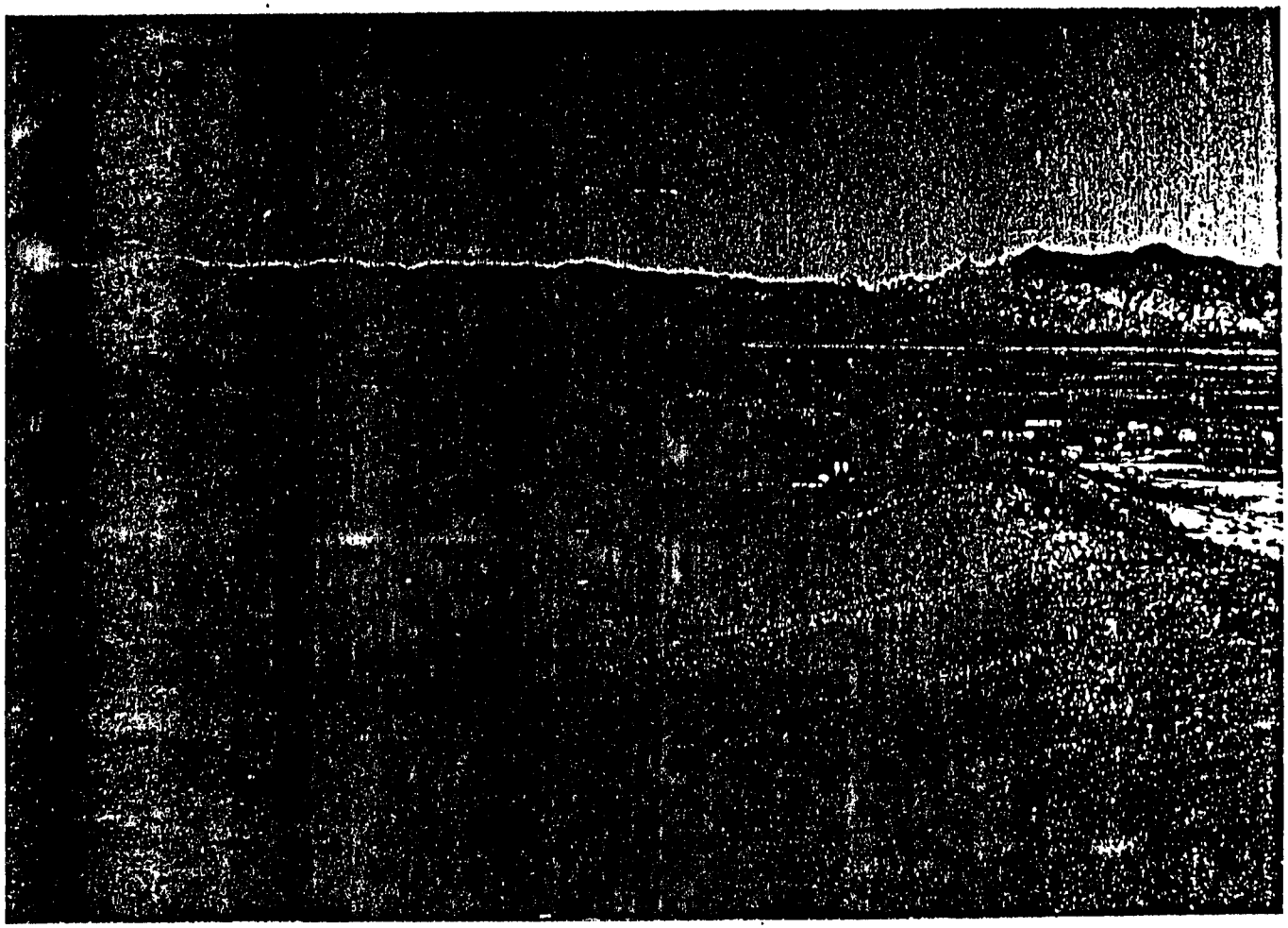


Fig. 9. Pearce Hill as seen looking due west from Metat Hill. Drill roads show general area tested for eastern continuation of Main vein. Caved areas on north side of hill are over principal mined out bonanza orebodies. Tanks shown below D shaft mark site of abortive 1982 attempt to leach dump material. Dragoon Mountains in background.
1-5 = Platoro holes CS-1 thru CS-5 (approximate locations)
D= D shaft dump N= North shaft dump CE= Commonwealth Ext. No. 1 dump
NV= Bold outcrop of North vein

INTERPRETATION OF SAMPLING AND DRILLING RESULTS

The Commonwealth Mine represents a difficult exploration problem. The majority of the old mine workings are inaccessible, assays tend to be erratic on a small scale, and caving has obscured many key relationships along the surface trace of the mineralized zone. However, enough data have been accumulated through this investigation and previous drilling programs to make some generalizations about what is known at this time and where to look (and where not to look) for more ore. Fortunately drill cuttings and core from all previous programs are stored on the property (Fig. 10) and are available for re-logging or check assays.

Rock chip and dump sampling. A limited amount of rock chip and dump sampling during the mapping program (Tables 1,2) showed 2 unexpectedly high values and raise questions about geological relationships:

1. A dump sample from North shaft (Fig. 9) assayed 0.068 oz/ton gold and 15.94 oz/ton silver. This rock shows the best looking mineralization I have seen on the property, with yellow-green crustified quartz, cockade textures and late combs of amethystine quartz. Several fragments have specks of a dark gray metallic mineral which appears to be argentite. I am convinced that this mineralization came from the eastern continuation of the Main vein. However, the trend of the Main vein beyond the last point where its location is known with certainty (Plate 1; Plate 2, cross section A-A') is problematic. Either the Main vein bends sharply, as I have suggested on Plate 1, or is faulted to account for its position at North shaft. In any case, this mineralization is 600 feet from the nearest drill hole and represents an excellent opportunity to expand ore reserves eastward along the Main vein.

2. A dump sample from the Mominier shaft at the extreme west end of the property (Fig. 11) ran 8.12 oz/ton silver and 0.70 oz/ton gold (ave. of 2 assays- see Table 2). This high grade material, in conjunction with the high gold values intersected in holes WC-7 and WC-14, raises questions about the grade, extent, and ore controls in this area which can only be answered by drilling. The high grade assays reported from holes WC-7 and WC-14 by Western States Minerals Corporation were confirmed by check assays run during this study (See Patton- Appendix A).

Bulk dump sampling program. The B, C, and D shaft dumps were bulk sampled with a backhoe. Sample locations are shown on Plate 1, values are reported in Table 3, and details of the entire program are in Appendix A. This work showed that the dumps comprise about 50,000 tons of material with a weighted average of 1.66 oz/ton silver and 0.021 oz/ton gold. It should be noted that the alluvial material near the Thetford mill (samples D-21 thru D-23) averages 1.90 oz/ton silver and 0.033 oz/ton gold.

Fig. 10. View from Pearce Hill toward core storage shed (1) and office (2) of Alpine Resources, Inc.

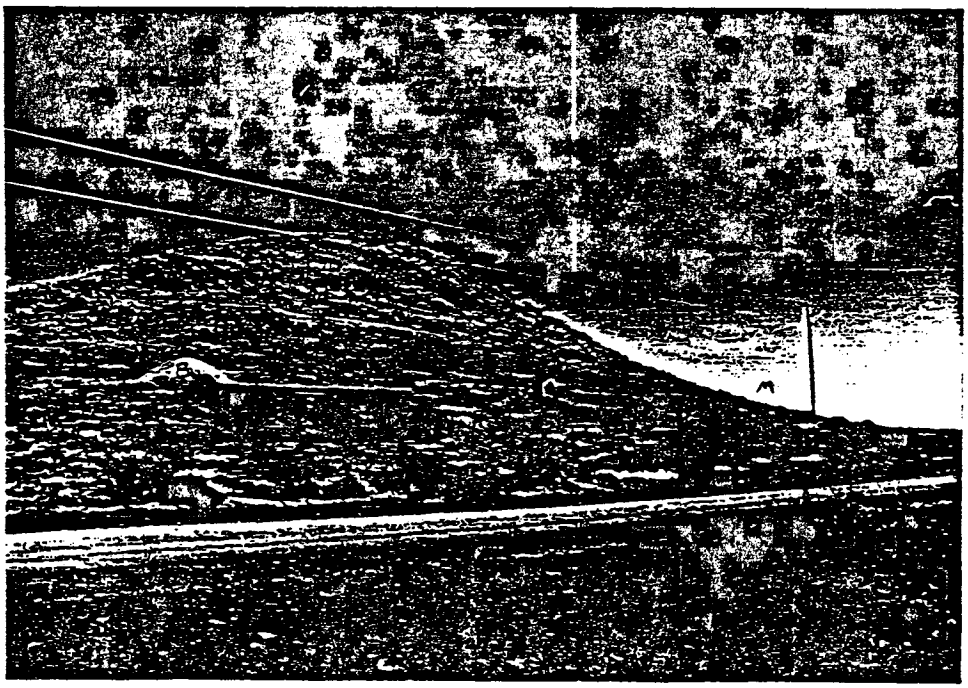


Fig. 11. Western end of Pearce Hill viewed from east. Note approximate positions of holes WC-7 and WC-14.
Ta= Lower andesite Trb= rhyolite breccia
B= Brockman shaft dump M= Mominier shaft dump

Tailings. The large cyanide tailings pond (Plate 1; Figure 12) is not included in the Alpine Resources contract with Carl Thetford. However, in case the tailings become available in the future, it should be noted that about 350,000 to 450,000 tons of tailings remain which average approximately 1.8-2.0 oz/ton silver and less than .01 oz/ton gold. Detailed sampling would be necessary to determine exact tonnages and grades.

Previous drilling programs. All available assays and drill logs from holes drilled by Platoro, Bethlehem Copper, Western States Minerals Corporation and Stephens-Heinrichs are included in Appendices B thru E, respectively. Mineralized intercepts from most of the holes are summarized on Plate 2 cross sections.

1. Platoro Mines drilled 5 holes during 1975 (CS 1-5), 4 of which intersected thick zones of well-mineralized andesite in the footwall of the Main vein (Plate 2, section B-B'). Smith (1927, p. 5) noted that in 1901 the method of mining was changed from stulls to square sets to accomodate the widening of stopes to 60 feet in order to mine the footwall zone of the main vein. This zone offers the best bulk tonnage potential on the property, but has not been tested since the initial holes by Platoro.

2. The Bethlehem Copper drilling program did not accomplish its objectives. They attempted to extend the mineralization delineated by Platoro to the east with the following results:

a) Angle holes 76-1 thru 3 ended in old stopes without testing the footwall zone.

b) Vertical holes 76-6, 8, 9, and 10 were drilled in the hanging wall of the Main vein (Plate 2, cross sections A-A', B-B') and hit spotty zones of low grade silver.

c) Hole 76-7 did test the footwall zone and hit thick zones of silver mineralization. The assay values are suspect because sampling was done on 10 foot intervals. Hole 76-11 tested the zone north of the best area (cross section A-A') and still hit 65 feet of mineralization which averaged 2.27 oz/ton silver. All other holes were drilled outside of the prospective area. Thus only 2 holes out of 16 tested the key target area, and both hit zones of good mineralization.

3. Western States Minerals Corporation drilled 13 percussion holes in 1978. Nine of these holes were drilled in low-potential areas. Holes WC-7 and WC-14 hit high grade gold on the western end of Pearce Hill (Plate 2, section D-D'). Holes WC-5 and WC-11 (Plate 2, section C-C') hit significant zones of silver mineralization in the prospective area between the North and Main veins.

Fig. 12. Commonwealth mine cyanide tailings as seen from D shaft. Tailings are currently being shipped to the Phelps Dodge smelter at Animas, New Mexico, about 55 airline miles east of Pearce.

4. John A. Stephens and Grover Heinrichs drilled zones north and south of Metat Hill (See Appendix E) with totally negative results. Rapid reconnaissance of the Sixmile Hill area, also drilled by Stephens and later by Santa Fe, shows a few low temperature amethystine quartz veins of the North vein type which are not prospective for bulk silver-gold deposits. No additional work is warranted in either of these areas.

Key target areas. All work performed during the course of this and previous studies has focused attention on 1) the zone between the Main and North veins 2) the western end of Pearce Hill. Previous drilling has shown that holes placed north of the North vein or south of the Main vein will result in failure.

The zone between the North and Main veins has the best chance of hosting a bulk tonnage deposit. The entire wedge of rocks between these faults is silicified and cut by quartz stringers. Although the andesite (Tau) appears to fracture better than the massive rhyolite breccia (Trb), both rock types are good hosts for mineralization (See Plate 2). It is probable that mineralized zones will progressively decrease in thickness with increasing distance away from the North/Main vein intersection. However, drilling will be necessary to confirm this. It is also possible that ore shoots may occur at depth along the trace of the North/Main vein intersection shown in Plate 1.

RECOMMENDED DRILLING PROGRAM

All holes listed below are shown on Plate 1 and are numbered in relative order of priority.

West end of Pearce Hill. Seven holes, average depth 300-400 feet per hole. This drilling will not block out ore reserves but will establish whether the zone has any significant tonnage potential. The interval in WC-14 between 355-380 feet is the only high gold-low silver zone that I am aware of in the area. As shown in Plate 2 on section D-D', mineralization may be related to a number of steeply dipping quartz veins. This drilling should also determine whether it is worthwhile to explore west of the Brockman fault for a possible faulted segment of the Main vein.

1. Test updip portion of mineralized intercept in WC-7.
2. Test updip portion of WC-7 in Discovery stope area.
3. Test western extension of Main vein.
4. Test footwall of Main vein in Discovery stope area (this zone could be a sleeper).
5. Test hanging wall of Main vein, area stoped near Brockman shaft.
6. Test updip portion of mineralization hit in WC-14.
7. Test for gold in area of high values found on Mominier shaft dump.

East end of Pearce Hill. Fifteen holes, average depth 400 feet per hole. This drilling will in part offset previously identified mineralization and will also test its continuity to the east and west. The successful completion of these holes could delineate up to 1 million tons of proven and probable ore (500 ft. long x 250 ft. deep x 100 ft. wide) and at least an additional 1 million tons of possible ore. Hole placement will be critical to insure that the footwall of the Main vein is intersected.

1. Test footwall between CS-1 and CS-3.
2. Test footwall between CS-4 and CS-5
3. Test footwall west of CS-5
4. Test footwall southeast of CS-3 near No. 8 shaft.
5,6. Collar in hanging wall, test footwall at depth.
7,8. Test eastern continuation of footwall mineralization.
9,10,11. Test western continuation of footwall mineralization (See cross section C-C')
12. Test footwall mineralization near C shaft.
13,14,15. Test area for high grade silver/gold mineralization present on North shaft dump.

All holes should be drilled with a reverse circulation rig to prevent possible downhole contamination and to get through the old workings which are sure to be intersected.

I want to emphasize that the 22 drill holes discussed above will outline the expected target area but will not be adequate to fully delineate 5 million tons of proven ore. Following successful completion of this program, an additional 20-40 holes will be necessary to drill out the orebody.

Based on the results of my study, past production records, and previous drilling, the Commonwealth mine has an excellent chance to contain at least 5 million tons of open pit silver ore. The project represents an attractive, low risk exploration opportunity to identify a major open pit silver mine.

TABLE 1

SAMPLE DESCRIPTIONS (Locations Shown on Plate 1)

1-25-84-1. Southeast side of Pearce Hill. Upper andesite cut by vuggy, open-space quartz veins. Veins trend N35W, dip 55° NE.

1-25-84-2. Pit 400 feet west of Pearce shaft. Quartz vein stockwork, minor calcite, cutting upper andesite (N60W/90°).

1-25-84-3. Vein material exposed between upper and lower J. Pearce shafts. Minor quartz veining and brown calcite cut upper andesite. Minor copper oxide.

1-26-84-4. Dump sample from Mominier shaft. Cretaceous Bisbee sandstone, with abundant iron oxide and quartz veining.

1-26-84-5. Dump sample from Brockman shaft. Same as 1-26-84-4.

2-10-84-6. Rock chip sample about 200 south of No. 9 shaft in area of intensely silicified andesite. Banded silica with abundant amethyst.

2-10-84-7. Rock chip sample from cat trench about 300 feet north of No. 9 shaft. Fragments of quartz in earthy red-brown clay matrix, which is probably altered Cretaceous Bisbee formation.

2-10-84-8. Rock chip sample from trench on southeastern flank of Huddy Hill. Andesite cut by numerous quartz stringers of North vein type. Abundant tectonic breccia with quartz fragments.

2-10-84-9. Rock chip sample from zone of intensely silicified andesite on southeastern flank of Huddy Hill. Veins trend N10-40W, with steep dips.

2-10-84-10. Dump sample from shaft on southeastern flank of Huddy Hill. Silicified andesite cut by numerous quartz veins.

2-10-84-11. Dump sample from shaft sunk on N60W/70NE- trending shear zone, southeastern flank of Huddy Hill. Andesite cut by quartz veins.

2-10-84-12. Dump sample from prospect on northwestern flank of Metat Hill. Welded ash-flow tuffs with brick red hematite along fractures.

3-1-84-13. Rock chip sample from face of southeast drift in Huddy tunnel. Andesite cut by quartz veins.

3-1-84-14. Rock chip sample from pit on southeastern flank of Metat Hill. Silicified welded tuff with disseminated amethyst in matrix.

Sample Descriptions (con't)

3-23-84-15. Rock chip sample from caved area 150 feet southwest of D shaft. Silicified rhyolite breccia with iron oxide on fractures.

CD 76-7. Dump sample. Andesite with iron oxide, quartz veining, amethyst, minor copper oxide.

CD Ext. 1. Commonwealth Ext. 1 dump. Arkose, both silicified and fresh.

CD-3. Lemmon shaft dump.

TABLE 2

COPPER STATE ANALYTICAL LAB., INC.

ONYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602-884-5811
884-5812

JOB# 002815
RECEIVED 1/31/84
REPORTED 2/6/84
INVOICE# C 3105

cc: ARI Operating Co. - Tucson, AZ

SAMPLE NUMBER	Au opt	Ag opt	RECHECK Au opt				
1-25-84-1	<.001	0.10					
1-25-84-2	<.001	0.12					
1-25-84-3	0.012	4.92					
1-25-84-4	0.685	8.12	0.720				
1-25-84-5	0.018	1.18					
2-10-84-6	0.002	0.08					
2-10-84-7	0.001	0.42					
2-10-84-8	0.006	1.28					
2-10-84-9	0.002	0.08					
2-10-84-10	0.003	0.38					
2-10-84-11	0.003	1.92					
2-10-84-12	< 0.001	< 0.05					
3-1-84-13	0.004	0.14					
3-1-84-14	0.002	0.07					
3-23-84-15	0.003	1.98					

REGISTERED ASSAYER CERTIFICATE NO. 8888 Onyanendra Amrida Shah DATE SIGNED Arizona U.S.A.

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

TO:

DATE: 9/28/83

REPORT NO: 398

ASSAY REPORT

CEC CONTROL NO.	CLIENT SAMPLE NO.	DESCRIPTION	ASSAY						
			Au T.Oz/T	Ag T.Oz/T					
4628	CD-76-7	No. 8 shaft dump	0.010	2.16					
4629	CD EXT-1	Commonwealth Ext.No.1 dump	TR	0.27					
4630	CD-3	Lemmon shaft dump	TR	1.23	$sw\frac{1}{4}$ $sw\frac{1}{4}$	sec.4, T18S,R25E			
3047		N. shaft dump	0.068	15.94					

CERTIFIED BY:

P O BOX 38448

Cimetta Engineering &

TO: ARI Operating
83-420
Commonwealth Dump Testing

DATE: 11/4/83
REPORT NO: 437-1

ASSAY REPORT

CEC CONTROL NO.	CLIENT SAMPLE NO.	DESCRIPTION	ASSAY						
			Au	Ag					
			T.Oz/T	T.Oz/T					
5057	CMD-1	C shaft, backhoe cut	0.025	4.63					
5058	CMD-2	C shaft, backhoe cut	0.013	1.76					
5059	CMD-3	C shaft, backhoe cut	0.029	1.25					
5060	CMD-4	C shaft, backhoe cut	0.008	1.37					
5061	CMD-5	C shaft, backhoe cut	0.016	1.30					
5062	CMD-6	C shaft, backhoe cut	0.017	1.91					
5063	CMD-7	C shaft, backhoe cut	0.021	2.63					
5064	CMD-8	C shaft, backhoe cut	0.011	1.68					
5065	CMD-9	D shaft ext., backhoe cut	TR	1.86					
5066	CMD-10	D shaft, backhoe cut	0.020	1.37					
5067	CMD-11	D shaft, backhoe cut	0.009	0.44					
5068	CMD-12	D shaft, backhoe cut	0.010	0.75					
5069	CMD-13	D shaft, backhoe cut	0.016	1.10					

TABLE 3

APPROVED BY:

P.O. BOX 36446
TUCSON ARIZONA 85740

Cimetta Engineering & Construction Co., Inc.

(602) 297-7231

TO: ARI Operating
83-420
Commonwealth Dump Testing

DATE: 11/4/83
REPORT NO: 437-2

ASSAY REPORT

CEC CONTROL NO.	CLIENT SAMPLE NO.	DESCRIPTION	ASSAY						
			Au T.Oz/T	Ag T.Oz/T			Au T.oz/t	Ag T.oz/t	CEC Control No.
5070	CMD-14	D shaft, backhoe cut	0.048	1.89					
5071	CMD-15	D shaft, backhoe cut	0.045	1.70					
5072	CMD-16	B shaft area, grab sample	0.023	1.12					
5073	CMD-17	B shaft area, grab sample	0.431	9.09	Duplicate	Sample 17B	0.315	5.55	5240
5074	CMD-18	B shaft area, grab sample	0.023	1.29					
5075	CMD-19	B shaft area, grab sample	0.019	2.26					
5076	CMD-20	near $\frac{1}{4}$ cor.sec.5-6,grab sample	0.004	0.11					
5077	CMD-21	alluvial material,backhoe cut	0.035	2.08					
5078	CMD-22	alluvial material,backhoe cut	0.038	2.17					
5079	CMD-23	alluvial material,backhoe cut	0.027	1.46					
5080	CMD-24	grab sample,vein material,at CMD-22	0.158	15.32					
5241	CMD-25	grab sample,NW of D shaft	0.01	0.39					

APPROVED BY:

Cimetta Engineering & Construction Co., Inc.
P.O. BOX 36446
TUCSON ARIZONA 85740
(602) 297-7231

REFERENCES CITED

Drewes, H. D., 1980, Tectonic map of southeast Arizona: U.S. Geological Survey, Map I-1109.

_____, 1981, Tectonics of southeastern Arizona: U.S. Geol. Survey Prof. Paper 1144, 96 p.

Hayes, P. T., 1970a, Mesozoic stratigraphy of the Mule and Huachuca Mountains, Arizona: U.S. Geol. Survey Prof. Paper 658-A, 27 p.

_____, 1970b, Cretaceous paleogeography of southeastern Arizona and adjacent areas: U.S. Geol. Survey Prof. Paper 658-B, 42 p.

Howell, K. K., 1977, Geology and alteration of the Commonwealth mine, Cochise County, Arizona: M.S. Thesis, Univ. Arizona, 225 p.

Smith, L. A., 1927, The geology of the Commonwealth Mine: M.S. Thesis, Univ. Arizona, 73 p.

FIELD GUIDE-NOTES
to the
COMMONWEALTH MINE,
Pearce, Cochise County, Arizona

Prepared for the 1988 Field Trip,
Arizona Geological Society,
October 22-23, 1988
by

John M. Guilbert,
Department of Geosciences,
The University of Arizona,
Tucson, Arizona,
85721

INTRODUCTION

It is a little-known fact that R.A.F. Penrose, he who was to become the greatest benefactor of the Geological Society of America in its history and one of the founders of the Society of Economic Geologists, visited the Pearce area in 1893. Recently graduated from Harvard (in 1886), he was seeking to make his fortune. Optimist that he was, and already philanthropically inclined, he renamed the prospect at Pearce "The Commonwealth", and acquired it in 1895. It proved to be the basis of a career that included co-founding the Utah Copper Corporation that was to become Kennecott. He sold his interest in the Commonwealth at a huge profit in 1903 and went onward to the benefit of us all.

The mine itself is a 'little-known fact'. Oddly, the Commonwealth, along with the Great American, Ash Creek, Stein's Pass, and other epithermal mines and prospects in southeastern Arizona, has never been included on maps and inventories by USGS scientists, in spite of excellent exposures of classic volcanic-hosted epithermal mineralization that occur there. There are only two publications of any consequence on the Commonwealth, namely M.S. theses by Lewis A. Smith (1927) and Kim K. Howell (1977), both at the University of Arizona. The Advanced Ore Deposits class at The University of Arizona is currently engaged in a comprehensive study of the district, with the cooperation of Warren Hinks and Westland Minerals Corporation, that will result in a 1989 paper.

PRODUCTION

Smith (1927) reported that production from the Commonwealth to that date had been 940,000 tons at an average grade of $11.71 per ton. The price of silver in 1927 was $0.65 per ounce, close to the average for the 1895-1927 period, so the average grade was about 18 ounces per ton (560 ppm). The value then was $10,407,000, about half of which was profit. At today's $6.50 per ounce, gross modern revenue would be over $100 million from the 17 million ounces of silver extracted. Gold apparently ran about 0.1 oz. per ton (3 ppm), so some of the $11.71 historic value (about $2 at $20.00 gold) resulted therefrom.

The mine closed in depression times, and has been sporadically and trivially operated, mainly by leasors, since then. Stamp-milled amalgamation and younger cyanidation tailings piles north of Pearce Hill (Figure 2) have recently been reprocessed.

The mine reached the 8th level about 500 feet deep down dip from the "D" Shaft near the east end of the main hill. A major collapse of some 500,000 tons of hangingwall volcanics in 1905 resulted in the slot at the surface and the dangerous glory hole at the east ead of the main hill near "D" Shaft.

Modern exploration -- mostly shallow drilling without known benefit of modern lithologic-structural mapping until now -- has not revealed significant new ore. Westland Minerals seeks new extensions of the Main Vein and intercepts of disseminated values that would permit bulk mining methods. About 20 reverse circulation rotary holes are planned for completion before year's end.

GEOLOGY

The Commonwealth Mine (Figure 1) is a classic vest-pocket-size epithermal volcanic-hosted bonanza precious metal silver-gold deposit in Bisbee Group sediments (?) and, almost totally, Mid-Tertiary felsic volcanics. Bisbee Group sediments outcrop at the base of the Pearce Hill and to the east near Huddy Hill. The Pearce volcanics that make up the whole of the Pearce Hill surface include andesite flows described by Drewes (1980) as Eocene or Oligocene mainly greenish-gray propylitized pyroxene, amphibole, and feldspar porphyritic flows and pyroclastics, and younger extrusive vitric and crystal rhyolitic and rhyodacitic flows, welded tuffs, and pyroclastics with sparse volcaniclastic sedimentary units. These younger units are coeval with the main Chiricahua volcanic event at 25±2 my. Excellent petrographic description and stratigraphy is provided by Howell (1977), who distinguished several easily recognized subtypes on the Pearce Hill.

The principal veins (Figure 2) are the east-west North Vein that dips 40-50° S and the N70°W Main Vein that dips 60-80° S. The North Vein can be traced along surface through the silicified, heavily veined area east of D Shaft; the Main Vein runs through the collapsed zone and the glory hole and on to the southeast. They comprise massive to banded and comb quartz in normal faults with associated steep sheeted zones. Clear quartz and amethyst predominate, but values lay in greenish, oily chalcedonic veins and veinlets.The vein structures contained high grade ore shoots that were originally sulfide-sulfosalt (proustite, tetrahedrite, chalcopyrite, galena) but were silver halides (embolite, bromyrite) and native gold, oxidized and locally redistributed by supergene processes, when mined. Smith (1927) described several subhorizontal enrichment bands that he related to old proto-Wilcox-Playa lake levels. The primary system was undoubtedly a near-surface hot-spring environment.

Alteration consisted of ubiquitous silicification, with propylitization in andesite and potassic alteration in all rocks at upper levels and near the veins that 'upgraded' rhyodacites and latites to trachyte-rhyolite compositions.

BE CAREFUL -- OPEN SHAFTS, STEEP SLOPES, LOOSE ROCK !!!

FIELD TRIP TARGETS

We will park at D Shaft if the bus can make it or at the base of the hill on the north side east of the Thetford mill if it cannot. In either case, proceed to the D shaft where maps and sections will be posted. There are excellent specimens of classic epithermal textures on dumps, in outcrop, almost everywhere. It is especially worthwhile to roam the hill west of D Shaft and east along the North Vein to see "exploration outcrops" of undisturbed surface.

Two maps will be provided, one 1:1200 (1"=100 feet) by Tom Patton, courtesy of Tom Patton and Westland Minerals, one 1:920 (1"= 85 feet) by Kim Howell. Use them to establish your own traverse, which should include a trip through the caved area to see the contact in the west wall of rhyolite breccia (TCP)-First Flow (KKH) beneath and Upper Andesite (TCP)-Second Flow (KKH) above. The veins and workings are exposed here too. Waxy green mineraloid like Vaseline is embolite; earthy green is montmorillonite. Bisbee Group outcrops at the west end near the Thetford mill building. (NOTE: fragments of specularite-diopside-pyrite-chalcopyrite skarn here are from the Black Diamond in the Dragoons, not the Commonwealth. Custom milling was done here.) Work along eastward past the glory hole, with splendid samples of comb quartz, amethyst, etc. As you proceed east with Huddy Hill to the near east-northeast and Metat Hill to the near east-southeast you pass over outcrops of Upper Andesite-Second Flow that have been extensively potassically altered to trachyte-rhyolite. The new drill-hole location stakes in general bracket and define the trace of the Main Vein. Don't miss the strong veining that webs between the North and Main Veins out to the east along the ridge before you get to Huddy Hill. All the while imagine yourself in the shallow roots of a hot-spring system -- sulfur-depositing springs were active a few miles east (hence the Sulphur Springs Valley name) until the 1887 Bavispe Sonora earthquake.

REFERENCES

Drewes, Harald, 1980. Tectonic Map of Southeast Arizona, Map I-1109, USGS.

Howell, Kim K, 1977. Geology and Alteration of the Commonwealth Mine, Cochise County, Arizona. Unpub. M.S. Thesis, University of Arizona, 225 p.

Smith, Lewis A., 1927. The Geology of the Commonwealth Mine. Unpub. M.S. Thesis, University of Arizona, 73 p.

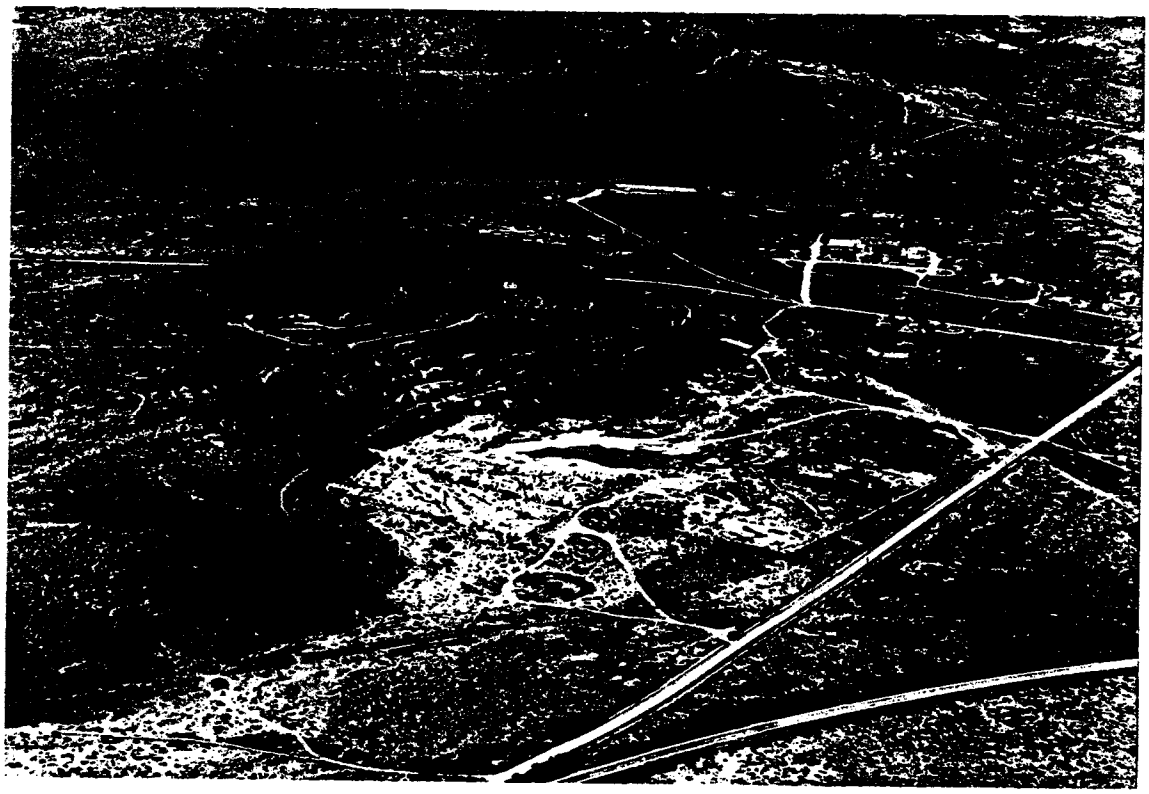
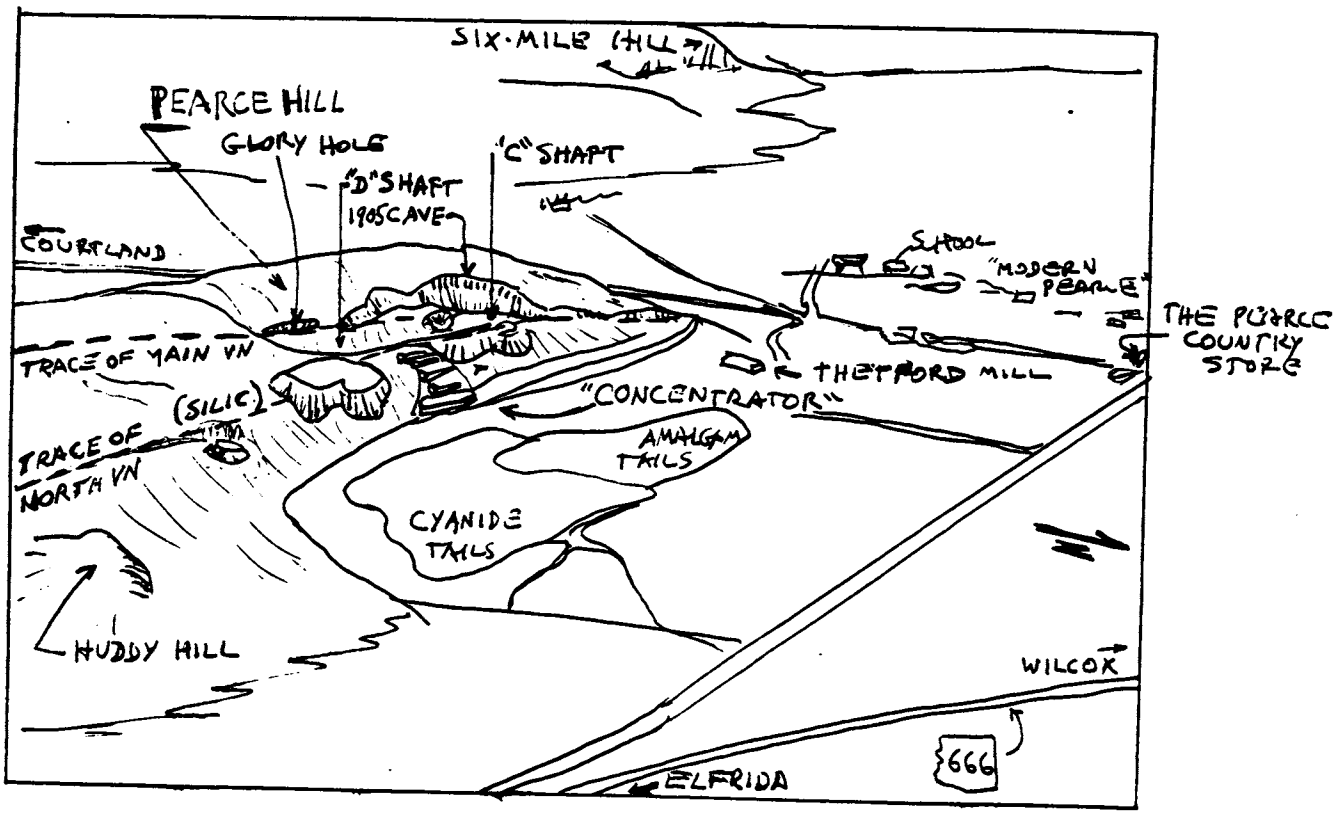


Figure 1 (above). Oblique aerial photo toward the southwest showing Huddy Hill (lower left), the old concentator foundations downhill from the Main Vein cave zone on Pearce Hill, and Six-Mile Hill (right center, upper margin) The old Pearce store is at the upper right margin.

Figure 2 (below). An overlay sketch map showing pertinent geography-geology and culture.



Commonwealth Mine

ID	Name	Fixed Cost	Total Cost
1	Commonwealth Operation (assumes 2/1/97 startup)	$0.00	$6,508,253.00
2	Commonwealth Rock Products (Mining Co.)	$0.00	$2,981,893.78
3	Ore Reserve Extension	$0.00	$343,342.40
4	Phase 1 drill program	$154,078.00	$154,078.00
5	Site Prep	$0.00	$0.00
6	Drilling	$0.00	$0.00
7	Assays	$0.00	$0.00
8	Reserve estimation	$0.00	$5,000.00
9	Phase 2 drill program	$118,586.00	$128,630.80
10	Locate Holes	$0.00	$0.00
11	Site Prep	$0.00	$0.00
12	Drilling	$0.00	$0.00
13	Assays	$0.00	$0.00
14	Global reserve estimation	$1,500.00	$11,500.00
15	Final Ore Reserve definition	$1,500.00	$7,668.00
16	Mining Feasibility	$6,000.00	$77,180.00
17	Mine Design	$0.00	$0.00
18	Capital cost estimate	$0.00	$0.00
19	Project Schedule	$0.00	$0.00
20	Operating Cost Estimate	$0.00	$0.00
21	Final feasibility report	$3,500.00	$53,500.00
22	MINING PRODUCTION DECISION	$0.00	$0.00
23	Permitting	$0.00	$420,335.37
24	Legal Review	$2,200.00	$7,600.00
25	Title review	$1,250.00	$3,051.80
26	Cor-ford Property	$0.00	$0.00
27	Galyen Property	$0.00	$0.00
28	Other Property	$0.00	$0.00
29	Pearce townsite	$0.00	$0.00
30	Title Report	$1,250.00	$5,288.00
31	Clear Tiltle Items	$3,500.00	$12,776.00
32	Permitting requirements	$0.00	$391,619.57
33	Federal Requirements	$5,500.00	$83,825.25
34	MSHA	$0.00	$0.00
35	Notice of Intent to Operate	$0.00	$0.00
36	USBLM (if required)	$0.00	$3,600.00
37	Enviromental Assessment	$0.00	$0.00
38	Plan of Operations	$0.00	$3,600.00
39	Record of Decision	$0.00	$0.00
40	OSHA	$0.00	$600.00
41	EPA	$0.00	$12,000.00
42	CIRCLA	$0.00	$9,000.00
43	State Requirements	$12,500.00	$285,465.60
44	AZ Dept. of Enviromental Quality	$0.00	$101,340.00
45	Office of Water Quality	$0.00	$80,580.00
46	Office of Air Qualtiy	$0.00	$20,760.00
47	Baseline monitoring	$12,500.00	$12,500.00
48	Air Qualtiy Permit Class C	$0.00	$0.00
49	AZ Dept of Water Resources	$0.00	$0.00
50	Notice of Intent to drill	$0.00	$0.00
51	Development Phase I	$0.00	$0.00
52	Development Phase II	$0.00	$0.00
53	Water Wells	$0.00	$0.00
54	AZ State Mine Inspector	$0.00	$0.00
55	Notice of Intent to Operate	$0.00	$0.00
56	Cyanide Training certification	$0.00	$0.00
57	AZ Com. of Ag. & Horticulture	$0.00	$16,000.00
58	Biological Survey	$0.00	$16,000.00
59	Notice of Intent to Operate	$0.00	$0.00
60	AZ Corporation Commission	$0.00	$480.00
61	AZ Industrial commission	$0.00	$480.00
62	AZ Tax Commission	$0.00	$0.00
63	AZ Dept of Labor, Wage and Hour	$0.00	$0.00
64	AZ Dept of Mines	$0.00	$0.00
65	AZ Dept of Wildlife	$0.00	$0.00
66	Curtural Resources Review	$0.00	$19,600.00
67	Cochise County Requirements	$0.00	$3,886.32
68	Dept of Health	$0.00	$1,200.00
69	Water permit	$0.00	$0.00

ID	Name	Fixed Cost	Total Cost
70	Septic Permit	$0.00	$0.00
71	Solid Waste Disposal	$0.00	$1,200.00
72	Building Permits	$0.00	$0.00
73	Road & Utility easements	$0.00	$1,965.60
74	Reclamation Plan	$3,500.00	$16,476.80
75	Engineering Design	$1,250.00	$72,696.34
76	Site Access	$0.00	$72.64
77	Rock Mechanics	$1,500.00	$14,687.20
78	Blasting requirements (RQD study)	$0.00	$0.00
79	Loading requirements	$0.00	$0.00
80	Slope Stability	$0.00	$0.00
81	Townsite monitoring	$0.00	$4,000.00
82	Haulage requirements	$0.00	$560.64
83	Ore	$0.00	$0.00
84	Waste	$0.00	$0.00
85	Dumping requirements	$0.00	$1,401.60
86	Ore	$0.00	$0.00
87	Waste	$0.00	$0.00
88	Crusher requirements	$250.00	$850.00
89	Agglomeration requirements	$500.00	$1,500.00
90	Crushed Ore handling	$500.00	$1,500.00
91	Maintenance Requirements	$0.00	$1,500.00
92	Equipment	$0.00	$0.00
93	Buildings	$0.00	$0.00
94	Utility requirements	$250.00	$850.00
95	Site Plan	$1,250.00	$10,774.48
96	Pit	$0.00	$0.00
97	Waste dumps	$0.00	$0.00
98	Roads	$0.00	$0.00
99	Ore storage	$0.00	$0.00
100	Crushing & Agglomeration	$0.00	$0.00
101	Construction Solicitation	$0.00	$10,890.80
102	Prepare Construction bids	$500.00	$2,580.00
103	Solicit Construction bids	$0.00	$0.00
104	Review bids	$500.00	$1,500.00
105	Select Contractor	$500.00	$1,500.00
106	Mine Construction Phase	$0.00	$1,930,408.20
107	Contractor Mobilization	$112,500.00	$112,500.00
108	Purchase Equipment	$0.00	$0.00
109	Construction	$0.00	$1,689,858.00
110	Mine	$0.00	$415,530.00
111	Soil Stockpile	$0.00	$63,900.00
112	Pre-ore Dozing	$0.00	$118,230.00
113	Pre-ore stripping	$0.00	$233,400.00
114	Crushing Circuit	$225,000.00	$1,020,500.00
115	mobilization	$65,000.00	$65,000.00
116	Coarse Crushing	$167,000.00	$167,000.00
117	Fine Crushing	$307,000.00	$307,000.00
118	Dust surpression	$2,500.00	$2,500.00
119	Agglomeration Circuit	$85,000.00	$254,000.00
120	Agglomerator	$0.00	$0.00
121	Cement Facility	$0.00	$0.00
122	Water & Cyande piping	$0.00	$0.00
123	Weightometer	$0.00	$0.00
124	Exit Conveyor and stacker	$169,000.00	$169,000.00
125	Ore Storage Site	$0.00	$6,350.00
126	Dump Areas	$0.00	$7,620.00
127	Waste	$0.00	$6,350.00
128	Marginal Waste	$0.00	$1,270.00
129	Roads	$0.00	$16,160.00
130	Diversion ditches	$0.00	$12,700.00
131	Townsite shielding	$0.00	$5,600.00
132	Relocate County Road	$0.00	$11,196.00
133	Buildings	$0.00	$186,960.00
134	Main office (contract)	$0.00	$81,480.00
135	Building (contract)	$78,000.00	$78,000.00
136	Septic system	$1,800.00	$3,480.00
137	Maintenance Barn (Contract)	$57,000.00	$57,000.00
138	Warehouse	$0.00	$48,480.00

ID	Name	Fixed Cost	Total Cost
139	Building (contract)	$45,000.00	$45,000.00
140	Septic system	$1,800.00	$3,480.00
141	Solid Waste Facility	$0.00	$762.00
142	Site fencing	$1,500.00	$3,500.00
143	Signage	$2,500.00	$2,980.00
144	Water Well Program	$0.00	$127,040.67
145	Water rights	$0.00	$4,949.40
146	Research Water Rights	$0.00	$1,038.00
147	Retain Hydrologist	$0.00	$3,600.00
148	Site Review	$0.00	$0.00
149	Locate Potential Wellsites	$0.00	$0.00
150	Acquire water permit	$0.00	$311.40
151	Water Acquisition	$0.00	$50,620.00
152	Pump Test Kleckar Well	$0.00	$4,400.00
153	Drill Wells	$0.00	$22,000.00
154	Pump test	$0.00	$6,600.00
155	Set Casing and pump	$12,500.00	$16,900.00
156	Hookup electricity	$0.00	$720.00
157	Water Delivery	$0.00	$17,746.40
158	Survey pipelines	$0.00	$1,246.40
159	Locate Reserve Tank	$12,500.00	$12,500.00
160	Pump stations	$4,000.00	$4,000.00
161	Water implementation	$0.00	$49,710.00
162	Install reserve tank	$0.00	$9,710.00
163	Install pipeline	$28,000.00	$40,000.00
164	Dragoon Metals, Inc. (Milling Company)	$0.00	$3,162,532.48
165	Final Metallurgical Feasibility	$0.00	$180,401.80
166	Definitive Metallurgical Testing	$0.00	$117,530.76
167	DH cyande leaches	$2,200.00	$2,200.00
168	DH bottle Rolls	$4,500.00	$4,500.00
169	Sample Collection	$0.00	$35,830.76
170	Underground	$0.00	$14,282.50
171	Identify Samples	$0.00	$0.00
172	Collect Samples	$0.00	$14,282.50
173	Chip	$0.00	$0.00
174	Transport up	$0.00	$0.00
175	pack	$0.00	$0.00
176	ship	$0.00	$0.00
177	Surface	$0.00	$16,127.50
178	Identify Samples	$0.00	$0.00
179	Collect Samples	$0.00	$16,127.50
180	dozer	$0.00	$700.00
181	Drill	$0.00	$1,000.00
182	Assay	$0.00	$0.00
183	Blast	$0.00	$0.00
184	Muck	$0.00	$0.00
185	pack	$0.00	$0.00
186	ship	$0.00	$0.00
187	Laboratory Work UG	$0.00	$32,500.00
188	Laboratory Work Surface	$0.00	$32,500.00
189	Flow Sheet Design	$0.00	$10,000.00
190	Site layout and design	$0.00	$12,560.64
191	Pad design	$0.00	$0.00
192	Collection & storage	$0.00	$0.00
193	Pond design	$0.00	$0.00
194	Piping and Instrumentation	$0.00	$0.00
195	Utility requirements	$0.00	$2,093.44
196	Capital Cost Estimate	$0.00	$0.00
197	Project Schedule	$0.00	$0.00
198	Operating Cost Estimate	$0.00	$0.00
199	Labor requirements	$0.00	$3,000.00
200	Capital requirements	$0.00	$10,233.60
201	Schedule	$0.00	$3,827.04
202	Define requirements	$0.00	$0.00
203	Electricity	$0.00	$0.00
204	Water	$0.00	$0.00
205	Propane gas	$0.00	$0.00
206	Diesel	$0.00	$0.00
207	Oil	$0.00	$0.00

HARVEST GOLD CORPORATION

MINESITE PERMITTING

and

CULTURAL CONCERNS

at the

COMMONWEALTH PROPERTY

Cochise County, Arizona, USA

April 13, 1995

compiled by: R.A. Forrest

Contact:

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MINESITE PERMITTING
and
CULTURAL CONCERNS
at the
COMMONWEALTH PROPERTY

Cochise County, Arizona, USA

DISCUSSION

Proposed Operation

The Commonwealth Property, located upon patented mining claims controlled by Harvest Gold Corporation, contains upwards of **7.7 million tons** of potentially mineable heap leach mineralization grading approximately **0.035 ounce per ton recoverable gold** equivalent. A smaller reserve at a average higher grade could be developed. Gold recovery by heap leach methods will likely exceed 75% of the contained metal. Mineralization is open at depth and several potential exploration targets may yield abundant additional mineralization adjacent to the developed reserve.

The resulting salable product from mining and processing at Commonwealth would be an impure dore' composed of both gold and silver metals. Chemical recovery costs are estimated to be quite low by heap leaching standards. Geological, engineering and metallurgical results obtained to date have been favorable toward the development of a 3000 ton per day cyanide heap leach operation utilizing a Merrill-Crowe zinc precipitation process. Extra fee land lying southeast of the developed deposit has been acquired for facility, pad and pond purposes.

Full development of an integrated mining operation at Commonwealth will be dependent upon the application for and the receipt of the requisite Arizona and Cochise County permits for development. Initial contacts with Arizona state officials has been favorable for the rapid acquisition of the necessary documents.

Old Pearce Townsite

A significant hurtle in developing the Commonwealth Property lies with its location immediately adjacent to a former mine townsite known as the old town of Pearce, Arizona. In the early 1900's old Pearce was once home to some 2,500 residents. It is now occupied by less than 25 people in about a dozen inhabitable structures just north and west of the mine site. Numerous old out buildings and abandoned facilities attest to its better years. Scattered old prospect shafts penetrate the alluvium around the townsite, but most have been filled with waste. The major remaining establishment of the old Pearce townsite is the local elementary school.

The old Commonwealth Mine and the majority of mineable reserves are located immediately south and east old Pearce on the north and west flank of Pearce Hill, 500 feet to 1500 feet distant. A large portion of the old townlots are owned by the Commonwealth's underlying patented claim holders thereby making them subject to the mining lease agreement with Harvest Gold. Strangely, an 18-acre portion of the presumed townsite is seemly unowned and untaxed to any party including the US BLM. Harvest is attempting to acquire this "lost" acreage.

The best preserved old historic buildings are an old store and the old post office lying at the Tombstone-Courtland road junction about 1100 feet north of potential development. Two more modern, occupied residences in are within 500 to 600 feet of potential open pit operations.

The active Pearce Elementary School serves the surrounding 25-mile area, and consists of one old, and one newer brick structure, several temporary buildings and a large cinder block gymnasium. The school, originally founded in the early 1900's, has been in continual operation since then. In 1992 the school had approximately 170 students and predominately serves the nearby community of Pearce-Sunsites with bus service.

The school lies on the western edge of the old patented mining claim, the Ocean Wave. It partially occupies land donated by Mr. and Mrs. Carl Thetford, the parents of the current underlying claim owners. Rumor has it that old mine workings underlie the school, but no map evidence indicates this as fact. According to preliminary engineering designs the nearest school buildings lie about 750 north and west of a possible openpit boundary.

In 1990, Mr. Fronk a director of Harvest Gold, met with the local school board to assess their potential concerns with a mining project. Suprisingly the school board was favorable and no objections or even concerns were raised. Shortly thereafter, Western States Minerals made a lengthy presentation on the entire scope of a proposed heap leach project to the board and local citizens. This presentation stressed the environmental issues such as cyanide, blasting, waste rock, etc. and Western States' desire to mitigate such problems. Again, many school board members actually welcomed development and expressed no concerns on the nearby location. Western States subsequently entered into a joint venture for development of Commonwealth, but later retired due to geologic limitations on the upside of potential reserves.

With continued open and honest communication and financial assistance to the local community and school, Harvest management believes that proximity to the old townsite will not be a significant problem.

New Pearce-Sunsites Townsite

Pearce-Sunsites, founded in the early 1960's, is a self-supporting, non-incorporated retirement community two miles north of old Pearce. The Pearce Post Office moved to Sunsites when old Pearce was virtually abandoned in the late 1960's. Sunsites has languished somewhat as a retirement community with only local agricultural industries for employment. A recent economic boom in Arizona has filtered through to Sunsites with some renewed building activity.

The town and surrounding rural area has some 1300 residents, and boasts of a monthly newspaper, a Bank One Branch, two auto part stores, an ACE hardware, three gas stations, several apartments, trailer parks, churches, miscellaneous businesses and cafes, plus a fine 18 hole championship golf course. A zoned 800-acre industrial park has no established businesses. Industry and high wage employment are lacking in Sunsites.

Preliminary discussions by Harvest personnel and directors with the local town officials and business owners confirms that Sunsites is in need of an industrial boost. Most business owners recognize the potential benefits of a high-paying industrial development. Mr. Fronk, a director of Harvest has been involved with the Commonwealth since 1989 and has not received any negative feedback since his involvement began. Harvest's onsite manager, a local resident for the past year has been an invited speaker at the local gem and rock club meetings and has received little negative comment.

PERMITTING REQUIREMENTS

The State of Arizona is the dominate government agency for permitting the proposed Commonwealth operation. One major permit and several minor permits or notices are required for any proposed new mining operation. The main permits are the Aquifer Protection Permit issued by the Arizona Department of Environmental Quality-Office of Water Quality, and secondarily a Air Emissions Permit from the Office of Air Quality. The Water Quality permit is deemed the critical path permit, partially because of their possible need for baseline and other technical information, and also the general length of time required to receive this permit with its requirement for public input and review.

Office of Water Quality - MAJOR PERMIT

The Arizona Office of Water Quality requires that an application for the Aquifer Protection Permit and a Notice of Discharge be filed and maintained with them for all mining and milling operations. Despite the intent of having a "zero discharge" facility, permitting is still required. The state insists that even "zero discharge" facilities leak.

Current regulations are such that Harvest Gold Corporation will be required to meet the Best Available Demonstrated Control Technology ("BADCT"). BADCT is the design and use of the most advanced and effective methods, currently known, for the use and containment of all liquid mining fluids and emissions. A BADCT Guidance Document, issued by the State, gives specific recommendations for the design and construction of heap leach pads and ponds together with suggested containment and monitoring requirements. Further directions specify closure requirements.

Issuance of this permit will require a minimum of 6 months from the date of application, however, longer periods approaching 12 months are possible. A recently constructed agitated cyanide leach facility complete with residual tailings impoundment (not required for heap leaching) required about 13 months from application to issuance.

In order to expedite the filing of the Aquifer Protection Permit, Harvest Gold has retained Errol Montgomery & Associates, Inc., hydrologists of Tucson, Arizona to assist in its preparation. To date, Montgomery has researched the regional water situation, toured the site and has prepared a map and water data summary for a three mile radius around the Commonwealth Mine. Montgomery quoted in their January 3, 1995 report: ...."**Based on information reviewed thus far and our knowledge of the APP program, we do not foresee any substantial impediments to obtaining an APP for the Commonwealth Mine Project, especially if optimum Best Available Demonstrated Control Technology (BADCT) is used for construction of facilities**".... Montgomery and other consultants will be directly involved in discussions with the personnel of the Office of Water Quality, first as initial informal discussions and later as formal applications. Their work will include preparation of the following:

- site plan
- process flow diagrams
- facility design plans
- process description.

A cost estimate for completing the above is approximately $70,000 and would require approximately 60 days for completion prior to application.

The above information will be used to make an informal presentation to the Office of Water Quality to insure that our application is complete prior to filing. According to Arizona Revised Statutes R18-9-107:

> "B. A person who is required to obtain an individual Aquifer Protection permit shall submit a permit application to the Department according to the following:
>
> 1. For a new facility for which the owner is not subject to R18-9-103 A. and B., C. or D., not later than 180 days before the date on which the facility is expected to begin discharge."

Once filed in final form, the schedule for receiving the Aquifer Protection Permit is as follows:

agency. The proposed operation would most likely be classified as a Class C (minor emission source) permit and require an application fee of approximately $1,000.

Initial discussions with Air Quality personnel have been made in regards to monitoring requirements. The agency has requested details of minesite operation, and have tentatively indicated that the Commonwealth Mine may not be a significant particulate emission source, hence does not require a monitoring system. If however, a baseline measurement of air quality for solid particulate is necessary, the Company has already acquired the necessary monitoring equipment. For the type of operation anticipated, one EPA approved PM-10 Monitor would need to be installed down wind of the intended dust source. Filters must be changed following each sampling period which is anticipated to be every other day. As much base line data as possible would be collected before applying for the final permit. Most work can be completed by Company personnel, however, $10,000 in consultant fees may be prudent.

Department of Water Resources

Commonwealth is not located in a controlled or restricted water use area. No special permits for water development or water adjudication are required. Once potential well sites are located only a notice of intent to develop water resources needs to be filed. No monitoring activities are required. Costs are minimal.

Arizona State Mine Inspector

The Inspector must be notified of an intent to operate a mining facility. Only notification is necessary. No ongoing monitoring is required. All cyanide operations required that at least six employees undergo the state cyanidation plant training course at Company expense. Cost are minimal.

Arizona Commission of Agriculture and Horticulture

The Commonwealth Project is designed to operate only on private land, generally outside the jurisdiction of the Commission of Agriculture. As a courtesy, the Company intends to perform a limited biological and archeological review of the area to be disturbed. Special permits are needed to relocate specific plants that may be endangered by operations, if any are found. Although no items of significance have been noted to date, minor allocations may be made to conserving potential impact items. The cost of selected consultants should not exceed $20,000.

Cochise County Regulations

Cochise County Department of Health requires notification of pending sewerage and potable water facilities, however no specific building permits or zoning laws infringe upon mining claim development.

Federal Agencies

All operations at Commonwealth are anticipated to be conducted upon private land. If federal lands can be avoided, then no federal permitting requirements need be met. Any attempt to use federal lands may subject the entire operation to federal requirements. Once operations have commenced, the federal Mine Safety and Health Administration, the Occupational Safety

and Health Administration and other agencies may be involved in monitoring operational activities. Federal endangered species, water quality and other regulatory requirements may need to be met. Specific consultants will be retained to define and comply with any applicable federal requirements.

Conclusions

Development of the Commonwealth Mine will not be prohibitively delayed by cultural or permitting requirements. Local residents of Pearce and Sunsites predominately favor industrial development to expand a dwindling job base. The local school board supports development particularly if financial incentives are available for school use. The local Chamber of Commerce welcomes new business, particularly for high paying mining jobs. A recent ugly scar of an operating crushed rock and gravel quarry, excavated for the nearby power station, has not fazed local residents significantly, despite its nearby and prominent locale.

Innovative construction and mining techniques used by the operator should mitigate most potential citizen complaints. A valid effort to communicate with the citizens and then maintain a good follow through with promises is necessary. A determined effort to mine and reclaim the site in an ongoing and responsible fashion will yield good co-operation with local officials.

Scattered, unorganized opposition from local anti-development citizens and/or out-of-state landholders can be expected. Nationally-oriented environmental concerns have limited standing with an operation contained exclusively upon private lands, especially amongst the local, rural community. The immediate vicinity of Commonwealth contains no significant visual sites or endangered species worthy of national or even state-wide attention.

The State of Arizona has establish specific criteria for the development of mines and facilities without undue time or confusion. Guidelines have been created for the use of Best Available Control Technology, limiting discretionary public input and delay. Close co-operation with state officials would yield rapid permit acquisition at a minimum of cost.

Harvest personnel have already commenced the permitting process, easily streamlining future required activities. A nine month time frame for complete permit acquisition is a realistic expectation

1. The Director of the Department of Environmental Quality ("DEQ") will notify applicant in writing within 30 days if the application is complete, or if additional information is necessary.

2. The Director will notify applicant of the preliminary decision to issue or deny permit within 90 days of receipt of complete application. The Department will issue a draft of the proposed permit at its earliest opportunity.

3. The Director will cause publication of a "notice of preliminary decision to issue or deny permit" within 30 days after applicant is notified of the preliminary decision to issue or deny permit.

4. The DEQ will make a decision whether to conduct a public hearing within 45 days after publication of the public notice. If a hearing is to be held, the department will schedule a hearing on or before 75 days from the close of the public comment period. The hearing record shall close seven days after the hearing.

5. If a public hearing is not required, the Director shall notify the applicant within 30 days of the end of the public comment period of the final decision to issue or deny permit. If a public hearing is required, the Director shall notify applicant within 45 days after public hearing record is closed of the final decision to issue or deny permit. The Director may extend the final decision date to not more than 90 days following the closure of the public hearing record.

The maximum permissible period of application to issuance is approximately 322 days, but a minimum is probably 225 days. This assumes that all documents and data are complete at submission. Additional information requests may be made by the Director.

The application requires detailed information on the owner-operator, local topography and cultural development within 1/2 mile, geologic and hydrologic data, a proposed facility site plan, a monitoring plan, anticipated discharges, a description and discussion of BADCT implementation, a description of alert levels and final closure plans plus a statement of qualifications including proof of sufficient funds for closure.

Consultant fees to shepherd the application through the Office may approximate $25,000. Actual application fees are estimated at a minimum of $11,300, but have not yet been fully determined. A maximum permit fee could approach $25,600. Harvest has not yet submitted an initial Water Quality application, but has engaged in informal discussions. Total cost of permit estimated at $100,000 exclusive of Company personnel time and incidental expenses.

Office of Air Quality- MINOR PERMIT

The Air Emissions Permit issued by the Office of Air Quality will require at least 6 to 8 weeks to be issued following application. Harvest has commenced initial discussions with the

Sovereign Gold Company (Argentine) Ltd.

a Colorado corporation doing business in the Republic of Argentina

a wholly owned subsidiary of

HARVEST GOLD CORPORATION

Precious Metal Exploration Properties and Royalties

Contact:

John E. Watson, President R. A. Forrest, Vice President

Sovereign Gold Company (Argentine), Ltd.

1658 Cole Blvd., Suite 70

Golden, CO 80401

Sovereign Gold Company (Argentine) Ltd.

a Colorado corporation doing business in the
Republic of Argentina

Sovereign Argentine controls four gold, and or copper-gold properties, and approximately 35 royalty interests located in northwestern Argentina. The Company has also applied for the exclusive rights to explore and develop a Provincial mineral reserve area of north central Catamarca Province. Sovereign-Argentine's mineral properties are as follows:

LA BORITA CANTERA

Province of Catamarca

The La Borita Cantera Property contains a copper oxide deposit with potential for commercial development as an open-pit mine with copper extraction utilizing the SXEW process.

The property is in the Argentine portion of the Maricunga copper-gold porphyry district. It is located in northwestern Catamarca (26-19 S, 67-54 W), approximately eighty (80) kilometers southwest of the town of Antofagasta de la Sierra. The property encompasses twelve "Pertenencias" (mine development concessions issued by the Province of Catamarca) aggregating approximately 0.72 square kilometers located at an average elevation of 4,200 meters above sea level. Access is via unmaintained four wheel drive paths.

Western Catamarca is situated in the northwestern portion of Argentina in an area known for its high elevations and arid climate. Temperatures in the higher altitudes (+3000 meters)during the summer months (December through February) are quite pleasant and dry. Winter months (June through August) are frigid, little snow and a continuous wind blowing across vast expanses of open, treeless country. Plant life is restricted to sparse desert flora, with cottonwoods and grass around springs and streams.

From early 1970's through 1981, the Secretaria de Mineria (Argentine National Geological Survey) conducted an extensive geological investigation of the La Borita area. The Mineria program defined a linear fracture zone approximately 800 meters in length and 140 meters wide within the upper zone of a partially eroded symmetrical anticline protruded by an extinct volcanic neck. Located along this fracture system are extensive zones of soluble copper oxide mineralization, including malachite, azurite and atacamite, unfortunately sometimes contained within a matrix of travertine and caliche, intercalated with red sandstone. The central exposure of copper mineralization was explored in 1981 by shallow trenching to an average depth of four (4) feet using hand labor, which defined a 0.5 meter

thick zone, 400 meters in length and about 140 meters wide grading 1.0% Cu, 0.95% Pb, 0.17% Zn and 1.2% As.

Sovereign-Argentine conducted limited ground exploration of La Borita in 1993 and a 1994 follow-up program of geologic mapping, geochemical sampling and limited geophysical measurement. Anomalous arsenic, lead, zinc and silver in the form of oxides and carbonates were identified from various parts of the property together with low, but locally anomalous gold values.

The oxide copper deposit has been postulated to represent the oxidized surface exposure of a deeper, disseminated, copper rich, porphyry system. Testing beyond the near-surface environment has not been attempted. Oxide copper deposits located in an extremely dry environment, such as exist at La Borita, can persist to significant depths. It is not unreasonable to postulate that the La Borita oxide deposit extends to a depth of 100 meters or greater, thus increasing the potential resource several fold.

The La Borita oxide copper deposit potentially represents an opportunity for development of oxide copper by open-pit, SX-EW methods at a low initial capital expenditure. Geological conditions and parameters are conducive to the existence of a copper-rich disseminated porphyry at depth, below the existing copper oxide cap.

KING TUT (LA RIOJA CATEO)

Province of La Rioja

The King Tut Property is located within a structurally complex "Basin and Range" area of north central La Rioja Province of northwestern Argentina. The concessional area contains several zones of hydrothermal alteration, silicic replacement, and possible economic copper, precious metal, cobalt and nickel mineralization. Four abandoned mines on the concession are reported to have produced limited amounts of copper, lead and silver. Native gold, cobalt and nickel have also been identified on or adjacent to the property. Recently completed LANDSAT analysis has identified several new areas worthy of field evaluation.

The La Rioja Cateo is located in northwestern La Rioja Province (28-23 S, 67-54 W), approximately fifty (50) kilometers by road from the town of Vinchina. The exploration concession encompasses a sixty three square kilometer area at an average elevation of 3,500 meters above sea level. A small uncontrolled Cantera reserve lies on the old King Tut mine within the perimeter of the La Rioja Cateo.

The Province of La Rioja has a mixture of high desert and steep mountains all within a relatively arid climate. Precipitation is very low. Plant life is restricted to desert type flora, with cottonwood s near springs and streams. Elevations within the concession area range from 2,500 to 3,800 meters. Access is by means of four wheel drive vehicle following the provincial road leading northward from Vinchina. The road is seldom maintained.

The property area lies within Tertiary age "Basin and Range" type (horst and graben) faulting of Precambrian metasediments and intrusives, Lower to Middle Paleozoic siliceous and calcareous marine sediments and spilitic lavas, all modified by mid-Tertiary age acid to basic intrusions, extrusive activity and mineralizing sequences. LANDSAT structural interpretation has identified several linear fractures and possible zones of potential hydrothermal alteration.

Several significant areas of sulfide mineralization have been identified by government field activities. These areas consist primarily of disseminated copper and gold mineralization contained in, or adjacent to, suspected stockwork-type intrusions.

The uncontrolled King Tut Mine, located near the center of the exploration concession, consists of two adits ,thirty (30) meters apart vertically, into a 1.6 meter wide near vertical quartz vein and silicified breccia intruding between the contact of an upturned siltstone-marlstone sequence and a spilitic lava. The mine was initially prospected for nickel and cobalt, but gold and copper have been identified in the siliceous vein material. Drift assays reported by the former mine operator yield values of up to 5.25 grams of gold per ton and 0.89% cobalt.

Adjacent to the King Tut vein, argillic alteration has extended about 200 meters into the siltstone-marlstone sequence from the quartz vein-breccia. Random samples from this altered country rock show gold values of 0.25 grams per ton.

The Mineria identified an area of potentially significant mineralization, known as Mina Horagio northeast of the old King Tut Mine. Two separate zones of sulfide mineralization are known. The western zone, located in a fractured and silicified rhyolite, contains three quartz veins with lengths of 500 meters. Pyrite mineralization has been found in shallow excavations. The eastern zone of mineralization is contained within a porphyritic rhyolite where abundant disseminated sulfides, including chalcopyrite and gold, have been identified.

A second area, Quebrada Alumbrera, located south of the King Tut contains a large zone of sulfide mineralization within a sequence of marine siltstones and marlstones of Devonian Age. Quartz veins and intense silicification accompany sulfide mineralization in which anomalous amounts of gold, copper, lead, cobalt and nickel have been identified.

The La Rioja Cateo represents an area of locally intense Tertiary-age faulting, hydrothermal alteration, and mineralization of Paleozoic marine sediments. Gold, silver, copper, lead, cobalt and nickel have been identified in notable amounts. Several possible models of mineralization may occur on the property. Additional work is necessary.

LA HOYADA RESERVE PROPERTY (Applied for, not yet granted)

Province of Catamarca

The La Hoyada Property, first discovered by Jesuit monks in the 1700's, is located immediately east of the continental divide along the Cordillera De San Buenaventura in west central Catamarca.. Many of the large disseminated copper/gold deposits within the Chilean portion of the Maricunga District are located along this range to the west.

The reserve area is within a resurgent caldera approximately twenty-five kilometers in diameter. Five major areas of intense oxidation, some with associated vein structures, have been identified. Two of the zones are large and may contain disseminated copper/gold deposits.

The reserve property has been applied for by Sovereign-Argentine, but has not yet been awarded by the Provincial government. It is located in northwestern Catamarca Province (26-55 S, 67-50 W) approximately 90 kilometers southwest of the village of El Penon and 90 miles north of the village of Fiambala. The exploration concession contains approximately 90 square kilometers at an average elevation of 4,000 meters. Sovereign-Argentine personnel gained access via cross-country four wheel drive and motocross cycle.

The reserve area is at a high elevation and is in a very dry climate. Plant life is restricted to desert-type flora consisting primarily of sage brush and limited grass which is found near sources of water. At lower elevations, several streams flow south and eastward from La Hoyada providing a year-round source of water for limited agricultural and human consumption.

According to Mineria data, the La Hoyada caldera developed in Pliocene time, superimposed upon Precambrian schists and slates. Large quantities of andesite breccia and tuffs were extruded and now cover a significant part of the surrounding area. Following a temporary cessation of volcanic activity, cooling occurred and a caldera-type collapse dominated the topography. This, in turn was followed by a period of rejuvenation and magma invasion which created a resurgent dome. This dome, and the surrounding area, was subjected to attack by sulphur-rich fluids which altered large expanses of rock Numerous sulfide-bearing veins and at least two large areas of disseminated copper/gold mineralization were formed contemporaneous to this geologic event.

Four initial Mineral Reserve Areas had been created over known sulfide systems. These have now been consolidated into one larger reserve area as a result of work by the Secretaria de Mineria in the early 1970's and 1980's. These consolidated areas, known as Sectors Alumbrera, Cabaceras, Descubridora and Rosario are expected to be offered for acquisition in 1995 or 1996.

Sector Alumbrera contains an alteration zone six kilometers in length with an average width of eight-hundred meters displaying widespread limonitic staining superimposed upon argillic and quartz-sericite alteration. Anomalous copper, gold, lead and zinc have been identified in outcrop samples. Similar alteration and mineralization has been identified in the other three Reserve Areas although vein mineralization appears more prominent at Descubridora and Rosario.

A fifth area, known as Volcancitos, located in the southern portion of the consolidated Reserve, contains a significant area of alteration and silicification which has not been mapped or sampled. Numerous other areas of faulting, alteration and mineralization exist within the concessional area which are worthy of serious exploration effort.

ROCA BLANCA CATEO

Province of Catamarca

In early February, 1995 the Company applied for, but has not yet been granted, the Roca Blanca Cateo which is located in west central Catamarca Province approximately 100 kilometers north of Fiambala. The prospect straddles the Cordillera de San Buenaventura and lies northwest of the La Hoyada Mineral Reserve. The Cateo covers roughly 90 square kilometers with an average elevation of 4,500 meters. The property is accessible with difficulty via four wheel drive or motorcycle either from the La Hoyada area or from the north via Lago Purulla.

The climate is harsh with little vegetation nor rainfall. Wind and cold are the norm. The topography is rugged and difficult to traverse.

Brief reconnaissance exploration conducted by the Company has located a nine kilometer by four kilometer area of widespread hot springs alteration, including a large area with deposits of siliceous sinter containing anomalous arsenic and mercury situated atop the mountain divide. On the southern slope of Porto de San Buenaventura, secondary hot springs (Bog iron?) gossans also contain anomalous values. These anomalous metal occurrences are potentially indicative of the upper levels of a hot springs-type precious metal occurrence within Pliocene continental sediments and volcanic ash flows. Relatively recent basaltic flows and spatter cones locally cover mineralized bedrock.

The magnitude of the hydrothermally altered area suggests that mineralized intrusive activity maybe present on Roca Blanca. Insufficient exploration is available to define specific mineral activity other than intense hot springs.

RIO SAN BUENAVENTURA CATEO

Province of Catamarca

Also in early February, 1995 the Company applied for, but has not yet been granted, the Rio San Buenaventura Cateo which is located in west central Catamarca Province approximately 90 kilometers north of the village of Fiambala and just west of the La Hoyada Mineral Reserve Area. The Cateo covers roughly 72 square kilometers with an average elevation of 4,300 meters. The property is accessible with great difficulty via four wheel drive, motorcycle or burro either from the La Hoyada area or by traveling up south flowing streams from the Fiambala region toward San Francisco pass on the Chilean border.

Very brief reconnaissance exploration conducted by the Sovereign Argentine personnel has located a ten kilometer by two kilometer area of structural deformation and hydrothermal alteration. This area and other nearby altered zones indicate significant potential for structurally-hosted precious metal occurrences, but is in need of detailed geochemical sampling. The eastern portion of the Cateo covers the western extension of the La Hoyada Alumbrera Sector where a baja-like topographic expression suggests the presence of a porphyry hosted copper-gold system within volcanic ash flows.

Crown Resource Corporation Agreement

(Solitario Resources Corporation, assignee)

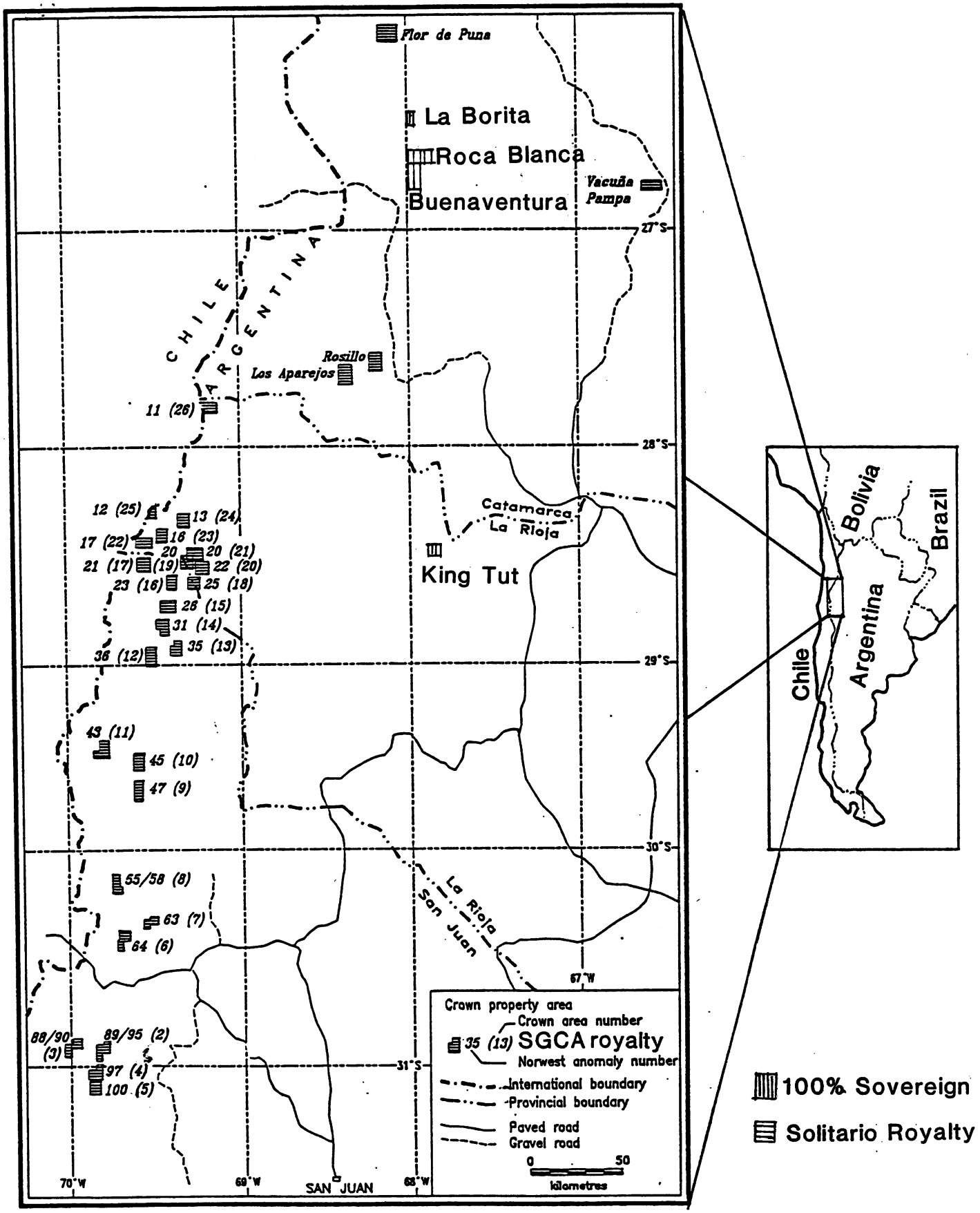
Provinces of Jujuy, Catamarca, La Rioja, San Luis and San Juan

On May 17, 1993, Sovereign Argentine and Crown Resources Corporation of Denver Colorado ("Crown") entered into a two-year exploration and acquisition "Agreement" covering Sovereign Argentine's assistance to Crown for the exploration and acquisition of mineral properties in the Republic of Argentina, South America. The area subject to the Agreement includes the Argentine Provinces of Jujuy, Catamarca and portions of La Rioja, San Luis and San Juan. All properties acquired by Crown on or prior to May 17, 1995, within these designated areas were subject to the Agreement. The Agreement required Crown to pay Sovereign Argentine, cash and stock for this assistance. On March 21, 1994 Crown assigned the Agreement to Solitario Resources Corporation a wholly-owned subsidiary of Crown.

Upon the acquisition by Crown of any property within the subject area and during the specified time period, Crown assigned an overriding, non-dilutible royalty interest equal to not less than one percent (1%) of the Net Smelter Return ("NSR") to Sovereign Argentine. Forty five-one hundredths percent (0.45%) of this NSR royalty has in turn been transferred to the initial shareholders of Sovereign Argentine, leaving the Sovereign Argentine corporation with a net 0.55% NSR royalty on all properties acquired by Crown. Any property to be dropped by Crown shall be first offered to Sovereign

Argentine free and clear of any Crown obligations. Currently, Crown retains approximately 35 Argentine properties which are subject to the Crown-Sovereign Argentine Agreement

Within sixty days of a "Bankable" Feasibility Study completed on any Crown acquired property, Crown shall be required to pay Sovereign Argentine a lump sum of $250,000 as an advanced royalty payment, such payment may be made in non-restricted shares of Crown common stock, at the election of Crown, and recoverable out of 50% of any future production royalty payments. Sovereign Argentine further granted to Crown the right to "buydown" up to one half of Sovereign Argentine's NSR royalty on a property by property basis at the rate of $400,000 per one fourth percent (0.25%) of NSR to a maximum of $800,000 per property.



Sovereign Gold Company (Argentine), Ltd.

Solitario Resources Corporation (Crown Resources Corporation)

PROPERTY ROYALTY INTERESTS

ARGENTINA

a COUNTRY IN TRANSITION

Argentina is a nation of 30 million people covering approximately 2.8 million square kilometers (1.08 million square miles). The nation has a well established infrastructure in the eastern two thirds of the country, although not so well developed in the Andean area. It also has an established economic base with a 1991 gross domestic product of US $3,800 per capita. Approximately 86% of the population live in an urban setting. Recent economic changes instituted by the current government have stabilized the currency and drastically reduced inflation, down from almost 5,000% in 1989 to the high single digits in the mid-90's

The exploration and mining potential of the country can best be characterized as large, but undeveloped. Argentina has approximately 3,400 kilometers (2,100 miles) of Andean mountains, much of which possess significant mineral potential. Unfortunately, the geology of the country has not been well evaluated from an economic standpoint. While the country has an established industrial mineral industry (aggregates, cement, building stone and borax), the current metal mining activity in Argentina can be described as almost non-existent. It consists only of small mines, mostly underground, producing from a few tons up to 200 tons per day of base metal ores. Large scale open pit or underground operations have not been developed, but geologic potential for such properties does exist.

While the current political atmosphere in Argentina is conducive to exploration and the development of a mineral industry, expectations of the local officials may significantly underestimate the time and the effort required, both the amount of work and dollar expenditures to successfully develop a viable mining industry in the country. Geologic conditions, coupled with a currently favorable political and improving economic climate, provide incentive for risk oriented companies to develop a favorable position in an emerging mining industry in Argentina. A great deal of basic geologic work must be done before the true geologic potential of the country can be appreciated, much less developed into a viable industry.

From the perspective of the development of its resources, Argentina's economy and structure must be divided into two geographic categories. First is the federal capitol of Buenos Aires, from which most commerce and one-third of the 30 million people population reside. Second is the interior of the country, particularly the Andean Cordillera, in which most of the metalliferous mineralization occurs.

Buenos Aires, is a very modern city with 10 million inhabitants, many modern shops, offices, a modern subway system, many buses and taxis, numerous theaters and museums, and most other amenities found in any American city. Basically, the city appears very orderly, neat and clean, has an adequate infrastructure and a low level of poverty and crime. The people appear to be very well educated and live a fairly

poverty and crime. The people appear to be very well educated and live a fairly sophisticated lifestyle. Most business activities, and certainly governmental activities, appear to be more bureaucratic than in the U.S.

The annual industrial wage is reported to be about $6,000 per annum. Comparing this with the general prices of goods, both in downtown Buenos Aires and a large urban shopping center, it is questionable how the economy can sustain itself. Prices of goods appear to be very similar to that in the U.S. with the exception of beef products which are about one-half the U.S. price. Electronic goods such as TVs and telephones are about two times the U.S. price for the same item. While the inflation rate has been reduced drastically from its previous levels to the 1 to 1½% per month range, the wage-cost ratio still appears out of proportion. While a shift from a governmental-based economy to a private basis will ultimately balance the wage to price ratio, the question arises of how long such a process will take and whether the general population, which currently favors such privatization, will support such a change for the time necessary to accomplish the task.

The economy of the interior of the country is significantly below that of Buenos Aires. A general characterization of the rural economy is that similar to the rural sector of the United States shortly after World War II. While the provincial cities visited (Catamarca, La Rioja, and San Juan) are reasonably modern, the degree of economic prosperity and sophistication seen in Buenos Aires is not evident. In the provinces, a feeling of bureaucratic involvement in every day life is very evident. Approximately 30% of the working population of Catamarca and La Rioja are employed by the provincial or federal government. The infrastructure for electric power, fuel, transportation, and supplies in the extreme interior, where the mineral wealth occurs, is little to non-existent. The cost for infrastructure in these remote areas, both for exploration and exploitation, will be above North American averages (except perhaps Alaska and Northern Canada).

Various federal and provincial officials gave the impression that their government will take whatever steps are necessary to develop the economic and legal climate necessary for mining investment. This was emphasized over and over again in each province and in Buenos Aires meetings. However, a concern exists among most North American's that Argentinos do not understand the length of the process required for exploration and development of the country's resources prior to their exploitation. It is apparent Argentina does not have necessary funds or the technical expertise to identify and develop such resources. External funds will be required.

At the present time, the general legal system regarding royalty, taxes and mining law is in a state of flux. Previously, the royalties assessed by the provinces vary from zero to six and one-fourth percent (0 to 6.25%). Recent federal legislation limits provincial royalties to a maximum of three percent (3%). Four provinces (La Rioja, San Juan, San Luis, and Mendoza) are currently study efforts to unify their mining and tax codes. Other provinces are, likewise, modifying their codes under the impetus of the federal government. Federal tax rates are approximately 30% of net profits and there is a provincial tax of approximately 1 to 1.5% of gross sales.

One very important aspect of infrastructure which must be addressed is direct commercial access and communications with Chile, including transportation links to the Pacific. Negotiations are in progress, or agreements are in place, to provide such communication and transportation access and much more freedom in commercial activity. Since the major metalliferous areas of Argentina are in the high Andes, such trading and transportation links to the Pacific, and access to power generated in Chile, would be of significant assistance in the development of such deposits.

Present day mining activity in Argentina can be characterized to that similar to the Western United States in the 1870's and 1880's. Almost all reported activities were on properties with small, vein type deposits with reserves less than 250,000 tons. Some contained high-grade gold-silver, some lead-zinc, and some copper. A few larger copper deposits 50 to 250 millions tons in size have been discovered, but these are generally low-grade (0.25 to 0.8%).

Noticeable differences may occur, or may be inferred, between possible mineral resources in Argentina and that known to occur in Chile. On the Chilean side, numerous alteration patterns and bodies of mineralization occur along the entire length of Chile, particularly the northern half. The nature of known mineral resources on the Argentine side of the Cordillera is much more scattered and, generally of a vein type. This difference, however, may only reflect the level of exploration/geologic mapping completed to date in Argentina.

Political Climate

Currently in Argentina, there exists two major political parties, the Radical Party (Union Civica Radical, UCR) and the Peronist Party (Justicialist Party, PJ). There is also a smaller right-wing party, the U.CE.DC., and several (seemingly ineffective) left-wing coalition groups. The current political base on the national level is a coalition of the Peronist Party and several of the smaller parties.

In 1989 Carlos Menem was elected the President of Argentina by popular vote. By legislative mandate opening the way for a second term, he was reelected in May of 1995. Menem immediately upon taking office, and contrary to the historic socialistic platform of the Peronist Party, began the current program of privatization and free-market reform in the country. This program has drastically reduced inflation and set in place an economic environment in which foreign companies may consider investment in Argentina. His program currently receives the strong support of the legislative branch of the government and also strong support of the provincial governments.

The current legislature consists of a 246 member House and a 48 member Senate. This body is currently working effectively with the executive branch to shape policies to achieve privatization.

The third sector of the government, the judiciary, is very weak, and the executive branch is encroaching on its constitutional powers.

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Investment Climate

The investment climate in Argentina has improved appreciably from that of several years ago when it was characterized by hyper inflation and a total lack of foreign liquidity. While the current climate is not ideal, there are signs of on-going improvement.

The government of Argentina has a five-point plan to improve the country's economy and to make it more productive for foreign investment. This plan includes:

- Focus on maintaining inflation rates at, or below, international rates of inflation.
- Maintaining a growth in the economy equal to four or five percent per year.
- Elimination of the government sector from the economic activity of the country.
- Maintaining and improving the rates of international exchange.
- Selling numerous assets currently held by the government to the private sector.

The revenues derived from the sale of national assets, such as the national airlines, telephone company, electric power industry, etc., will be used to provide funds to reduce the national debt, both on a foreign and internal basis. In addition some funds will be used to maintain and improve the current rate of exchange.

Rates of inflation have been greatly reduced from nearly 5,000% in 1989 to the high single digits in the mid-1990's. Likewise, gross national product per capita has increased from a -5.5% in 1989 to a +4.3% in 1991, and is expected to be upwards of 7% in the mid-90's. Argentine currency, though the efforts of finance minister Domingo Cavallo, the Argentine Peso was tied to the value of gold and the U.S. dollar by backing the currency with gold or stable foreign currency.

The government, at both the federal and provincial levels, is attempting to attract the foreign mining expertise and investment to Argentina. This is being done through analysis and modification of the Argentina Mining Law and tax codes to make them more attractive to international firms. In addition, a tax treaty with the U. S. is currently in effect.

While privatization of mineral areas is beginning and will continue, part of the focus of such privatization is obviously to raise money for the national treasury. The Argentines may be disappointed in this regard because most properties are under-explored to the point of making meaningful economic proposals impossible.

Taxation

The federal tax structure in Argentina consist of three basic elements:

The federal tax structure in Argentina consist of three basic elements:

- An income tax.
- An equity tax.
- A consumption (value added) tax.

There are no special federal statutes on mining tax. The basis for the Argentina income tax is a company's net profits on a world-wide income basis. Credits are given for taxes paid abroad by the company being taxed. The current tax rate for income tax is a 30% for both Argentine and foreign-held corporations. Dividends are currently not taxed.

The equity tax in Argentina consists of a 1% tax levied on the asset value. The tax base is for both domestic and foreign property, and credit is given for tax paid abroad. An equity tax is paid on the value of an orebody if the orebody is purchased. Orebodies which are developed by a company from exploration (not purchased from a individual or company) have no imputed value on which equity taxes would be paid.

The consumption or Value Added Tax (VAT) now set at 21% is paid on the sale of movable property, rents and services, and imports. Exports are exempt from the Value Added Tax and exporters are reimbursed for VAT paid on items consumed in the manufacture of items for export.

A two year tax holiday is granted on new construction and tax loss carry forwards are available. No taxes are levied for exploration and feasibility work, other than the VAT on goods and services used.

A 13% tariff is currently being levied on most items being imported into the country. This rate is subject to change and is not levied on certain goods, services and equipment brought in for mining development.

Most provinces in Argentina have a gross income tax of 1-1/2% of income for corporations and 2-1/2% of gross income for individuals.

At the present time, royalties are assessed by the provinces on minerals extracted from lands in which the province controls. These rates vary from no tax in some provinces such as Mendoza to an effective rate of 3% of the value received on the product sold in Jujuy, Catamarca, etc. Formal discussions between La Rioja, Mendoza, San Luis and San Juan are underway to establish uniform scale of royalties. In general the scale would be 1% of net sale value received for bullion or metal sold; or 2% of net value received for concentrates sold; or 3% of net value received for ores sold.

It is unclear what, if any, royalty would be paid to the provincial governments for minerals mined on private lands. Apparently no laws exist controlling royalties due to private owners of mineral properties.

Mining Law

Basically there are four important aspects of Argentine mining law:

- A free right on the part of any individual or company, whether domestic or foreign, to explore for minerals.
- A free right to repatriate profits derived from these activities.
- Freedom of foreign entities to own mineral rights within Argentina, and
- Non-discriminatory treatment of foreign investment.

Mineral rights in Argentina are owned and controlled by the various provinces under the federal constitution. Mineral rights are acquired by acquiring a "cateo", or right for exploration and development, from the provincial government in which the land is located. The mineral rights remain in the state's ownership until such a "cateo" is granted and perfected into a mining property in accordance with the regulations of the province. Cateos can be acquired for a period of up to three years, depending upon the size of the area. At the end of its term, the cateo must be converted into a mining property. Once a property right is granted, it remains with the owner as long as he fulfills the requirements of law.

Related to various commercial activities, Argentina has:

- no restrictions on importing capital or capital goods for raw materials needed in mining, no "buy local" requirements,
- reasonable tariff rates (discussed under taxes, below), or temporary importation rights without tariffs,
- no restrictions on exporting goods or products produced from mining, and
- non-interference by the federal government in commercial transactions.

Many of these commercial items have been enacted into the Argentina legal code since the mid-1980's.

Argentina does not currently have an environmental code in place. The issue is currently being studied and some form of environmental regulation will undoubtedly appear in the not too distant future. In this regard there is an opportunity to shape such regulations by working with Argentine nationals as these laws and regulations are formulated.

Labor Climate

The labor climate in Argentina has improved significantly in the past few years, and unions now have a markedly reduced role in the overall economy.

In the past, labor unions have played a major political and economic role in Argentina. Unionism developed along the concept of a nationwide union for each trade or industry. This gave individual unions a strong influence in each particular segment of the economy.

industry. This gave individual unions a strong influence in each particular segment of the economy.

In the past few years the government and industry have been successful in reducing the power of the unions in the overall economy. This has been done through the development of "locals", initially in the automobile industry and subsequently in the telephone and airline industries. 'Local' negotiations have been accomplished with some degree of success. Contracts have been negotiated providing for a no-work stoppage clause on the part of the union in exchange for a share of profits made by the company, generally 10%. While this has been strongly opposed by the unions in general, following privatization the telephone and airline industries have been successful in negotiating such contracts.

The Argentine national mining association, indicated the average industrial wage in the mining industry in 1992 ranged from $300 to $500 per month including benefits. Benefits average approximately 50% of wages, however wages are escalating rapidly.

Typically, there are six to seven paid holidays per year in the mining industry. Vacations are ten days per year initially, increased to 15 days after five years of service, and upwards to 30 days following several additional years of service. A five-day work week is typical except in isolated locations where it is normally a practice to work a 14 days on and 5 days off schedule. Some companies pay a transportation allowance, which may vary from one-half to the full cost of transportation to remote locations. This is sometimes done by furnishing vehicles to transport workers.

Termination of employment is possible in Argentina, but by law the company must pay a minimum of one month severance for each year of tenure. Typically, through the actions of unions, more than one month per year is paid.

Argentina law provides that a union representative (union steward) must be employed for each 50 to 80 employees on the job site. It is unclear if this was the situation in a non-union operation. Most projects in the country are unionized, however.

The Provinces

Sovereign Gold Company, Argentine, Ltd. has concentrated its exploration and acquisition activities generally to the northwest portion of Argentina. Focusing primarily on the provinces of Catamarca, La Rioja, San Juan and Jujuy. Recent activities have found that the south central province of Neuquen, covering part of the northern portion of Patagonia may be of exploration interest.

CATAMARCA

The province of Catamarca is located in northwestern Argentina between the latitudes of 25 to 30 degrees south. It is bordered on the north by the province of Salta, the east by Tucuman and Santiago del Estero, the south by La Rioja, and on the west by the country of Chile. The province has a population of about 265,000 with approximately 110,000 living in the capital City of San Fernando del v. de Catamarca. The city is located in the southeastern portion of the province and is served by a modern airport capable of

in the southeastern portion of the province and is served by a modern airport capable of "737" aircraft service. The economic basis of the province consist of agriculture, principally raising of cattle and sheep, and a fledgling mineral industry.

Industrial activity in Catamarca appears very limited, principally related to construction activities. The key cities of the province are served by paved or graded roads, electric power, and primary municipal services. The city of SF del v. de Catamarca has rail service connecting the area with Buenos Aires, about 1,200 kilometers distant. A light industrial complex, manufacturing building materials and other items, is located on the southern outskirts of the city.

Unemployment in Catamarca is reported to be high, but no numbers were given. Government service reportedly employs about 32,000 of the working population. Economic activity in the city of Catamarca appeared reasonably prosperous, being mainly focused on activities related to everyday life. Most homes and businesses were served by water, sewer, and electric power.

The mineral sector of Catamarca consists of a few small base metal or silver mines, producing 50 to 100 tons per day. One rhodochrosite mine produces significant quantities of that semi-precious mineral for jewelry and other purposes.

LA RIOJA

The province of La Rioja is located to the south of Catamarca between latitudes of 28 to 32 degrees south and is bordered on the south by the provinces of San Luis and San Juan, and on the west by the Chilean border. The province has a population of about 170,000 people with approximately one-third living in the capital city of La Rioja. The city is located in the northeastern part of the province, about 180 kilometers by paved highway from the city of Catamarca. It is served by a commercial airport suitable for "737" type aircraft flown by Aero Argentina.

The city of La Rioja appears significantly more prosperous than Catamarca with several light industrial firms engaged in food processing, electrical manufacturing, and building industry activities located within the city. All areas of activity seemed to be increased, commensurate with the size of the city, and were more prosperous than observed in Catamarca. The economic basis of the area was reported to be based on agricultural products, principally cattle, sheep, fruit and vegetables, and light manufacturing. Like in Catamarca, the mineral industry in La Rioja was in a very initial state.

The status of the mineral industry of La Rioja is similar to that of Catamarca, consisting of several small mining operations working vein type base metal properties with some precious metal value. A building stone industry has been developed in the eastern portion of the province. One mineral company, YAMIRI, explores for, and possibly develops, mineral reserve areas in which the province has an interest. YAMIRI is 51% owned by the province with the balance being closely held by several Argentine and foreign individuals. YAMIRI also conducts mineral exploration on other areas of mineral interest in the Province. The University of La Rioja conducts undergraduate studies

in geology and mining. Geologic and mineral enrollment was reported at 350, with 17 graduates this year.

SAN JUAN

The province of San Juan is located in west central Argentina between the latitudes of 28 to 32 degrees south. It is bordered on the north and east by La Rioja, the south by Mendoza, and on the west by the Chilean border. The population of the province is reported to be 500,000, of which one-half live in the capital city of San Juan.

Economic development in San Juan is much more well developed and balanced than other northwestern provinces. The province has a broader agriculture basis than Catamarca and La Rioja having a developed wine industry, vegetable and fruit industry in addition to cattle and sheep. In the eastern portion of the province, a building stone and cement industry has been developed.

The province has a well organized Sub-secretaria de Minera charged with development and promotion of mineral aspects of the province.

JUJUY

The province of Jujuy is located in the extreme northwestern part of the country between the latitude of 22 to 24 degrees south. It is bordered on the east and south by the province of Salta,on the north by Bolivia, and on the west by Chile. The population of the province is reported to be 530,000, of which 170,000 live in the capital city of San Salvador de Jujuy. SS de Jujuy is served by a modern airport located 32 kilometers north of the city. The city of Palpal, population 50,000, is an industrial city with a modern steel mill located about 14 kilometers north of SS de Jujuy. The reported basis of the Jujuy economy is agriculture, principally sugar, tobacco and various types of fruit.

The mining industry of the province is small, consisting primarily of small (50-100 ton per day) lead-silver mines located in the northwestern part of the province.

General Geologic Environment

Argentina has a very large, mostly un-evaluated, geologic potential. The country has a developed industrial minerals industry consisting primarily of a building stone, aggregate, and cement industry supplemented with minor coal and borate production. Development of a metal mining industry has barely begun with the largest metal mine currently operating being a 400 ton per day lead-zinc mine located in the southern portion of the country.

There is a distinct lack of economic, mineral oriented, geologic data in the country. Most geologic work done to date within Argentina has been centered on work of an academic nature. This work consist of wide scale geologic mapping, general stratigraphic work and rock type description. Economic, or mining geology, studies are extremely limited. (Certain mine operations and/or deposits are an exception to this rule.) Both the federal government and the provinces maintain geologic groups focusing on geologic work in some cases actual exploration activity.

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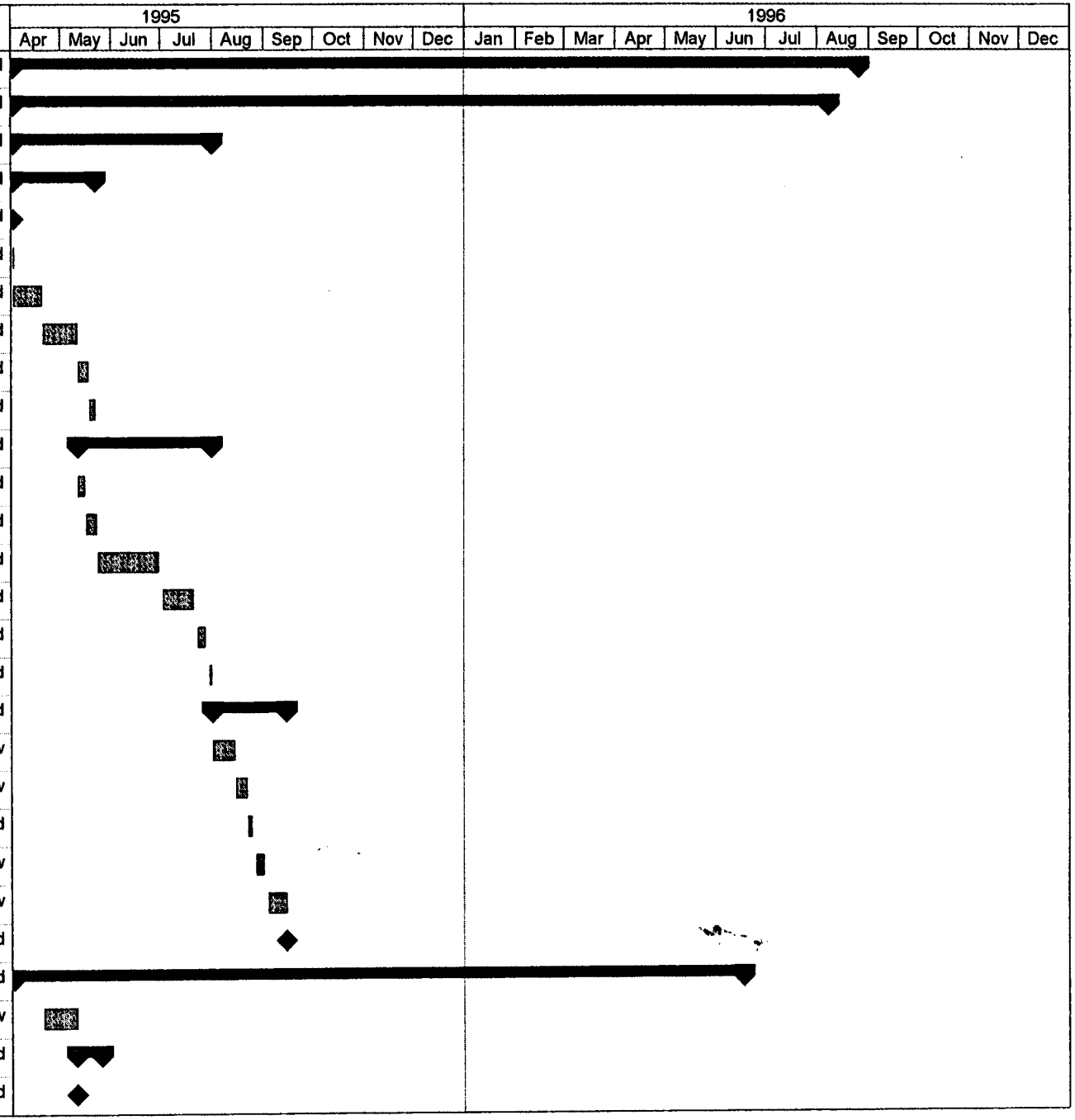
Published reports are, unfortunately, scattered in numerous public and private libraries throughout the country. Geologic data which is available is not collected in any particular location in a provincial or federal office. This lack of a good geologic database will retard exploration efforts in the country.

Geologic mapping has been conducted on a 1:200,000 scale basis for about one-third of the Andean Cordillera. A national geologic map, at the scale of 1:2,500,000, was published by the Sub-secretary of Mineria in 1982. Some local geologic work has also been conducted by consultants for provincial and private companies operating in the country. Some of this work is available to the public.

Topographic maps at 1:500,000 and 1:200,000 are currently available covering most of the country with some 1:100,000 and 1:50,000 maps also available. Some provinces have property, ownership, and metalliferous maps, and in certain cases geologic maps, for portions, or all of their province.

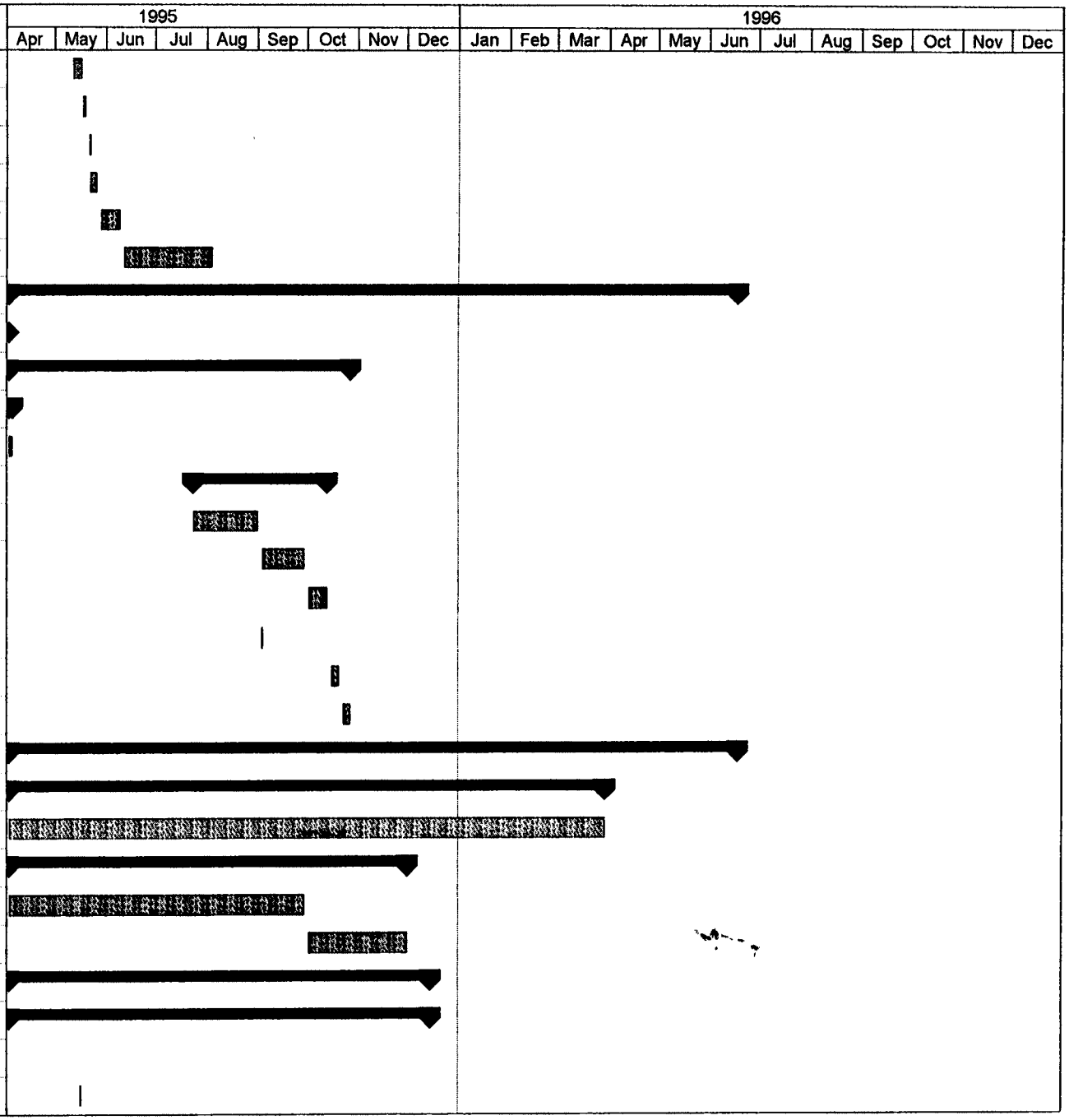
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
1	Commonwealth Operation	366d
2	Commonwealth Rock Products (Mining Co.)	354d
3	Ore Reserve Delineation	87d
4	Phase 1 drill program	36d
5	Locate Holes	0d
6	Site Prep	1d
7	Drilling	14d
8	Assays	15d
9	Global reserve estimation	5d
10	Ore Reserve definition	2d
11	Phase 2 drill program	58d
12	Locate Holes	3d
13	Site Prep	5d
14	Drilling	28d
15	Assays	15d
16	Global reserve estimation	5d
17	Final Ore Reserve definition	2d
18	Feasibility	33d
19	Mine Design	2w
20	Capital cost estimate	1w
21	Project Schedule	3d
22	Operating Cost Estimate	1w
23	Final feasibility report	2w
24	PRODUCTION DECISION	0d
25	Permitting	317d
26	Legal Review	3w
27	Title review	11d
28	Retain Landman	0d



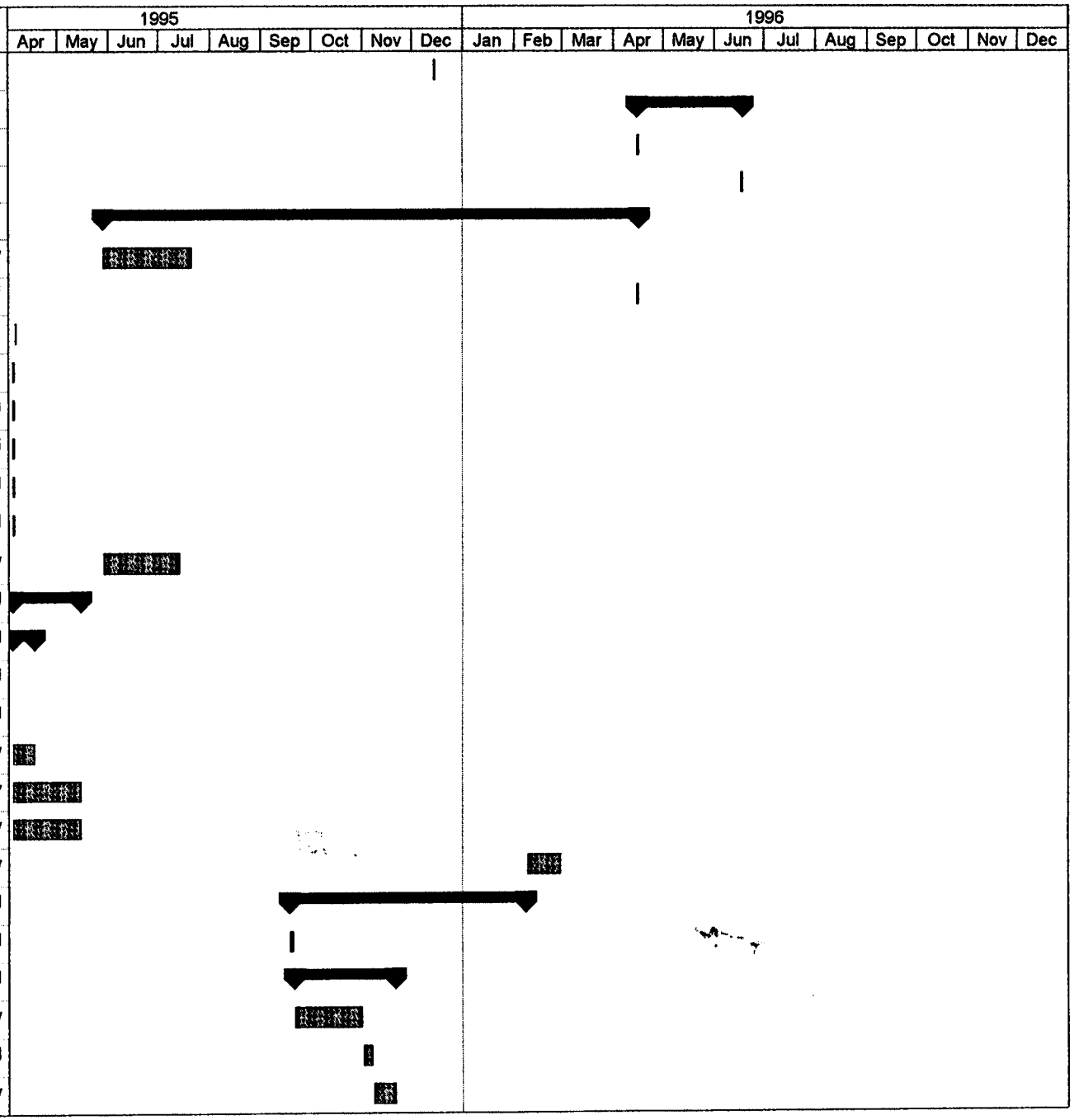
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
29	Corford Property	4d
30	Galyen Property	2d
31	Other Property	1d
32	Pearce townsite	5d
33	Title Report	2w
34	Clear Tittle Items	8w
35	Permitting requirements	317d
36	Retain Permit consultant	0d
37	Federal Requirements	150d
38	MSHA	3d
39	Notice of Intent to O	3d
40	USBLM (if required)	60d
41	Enviromental Asses	6w
42	Plan of Operations	4w
43	Record of Decision	2w
44	OSHA	1d
45	EPA	5d
46	CIRCLA	5d
47	State Requirements	317d
48	AZ Dept. of Enviromental	260d
49	Office of Water Qua	52w
50	Office of Air Qualtiy	175d
51	Baseline monit	26w
52	Air Qualtiy Per	9w
53	AZ Dept of Water Resour	184.5d
54	Notice of Intent to dr	184.5d
55	Exploration Ph	0.5d
56	Exploration Ph	0.5d



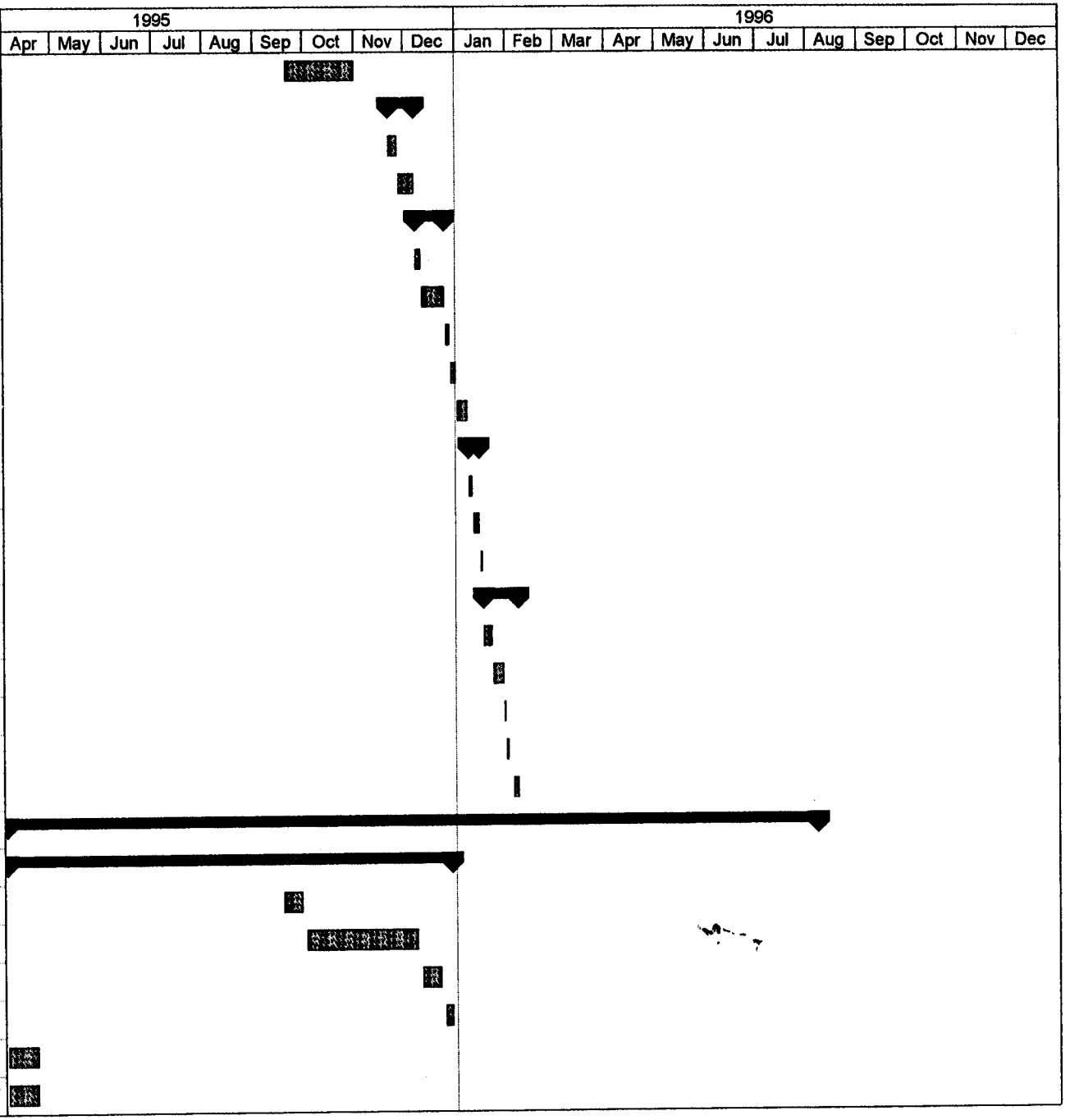
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
57	Water Wells	0.5d
58	AZ State Mine Inspector	47d
59	Notice of Intent to O	2d
60	Cyanide Training ce	2d
61	AZ Com. of Agriculture &	232d
62	Biological Survey	8w
63	Notice of Intent to O	2d
64	AZ Corporation Commiss	0.5d
65	AZ Industrial commission	2d
66	AZ Tax Commission	2d
67	AZ Dept of Labor, Wage	2d
68	AZ Dept of Mines & Mine	2d
69	AZ Dept of Wildlife	2d
70	Curtural Resources Revi	7w
71	Cochise County Requirements	30d
72	Dept of Health	10d
73	Water permit	0.5d
74	Septic Permit	0.5d
75	Solid Waste Dispos	2w
76	Building Permits	6w
77	Road & Utility easements	6w
78	Reclamation Plan	3w
79	Engineering Delineation	104d
80	Site Access	3d
81	Rock Mechanics	44d
82	Blasting requirements (RQD s	6w
83	Loading requirements	4d
84	Slope Stability	2w



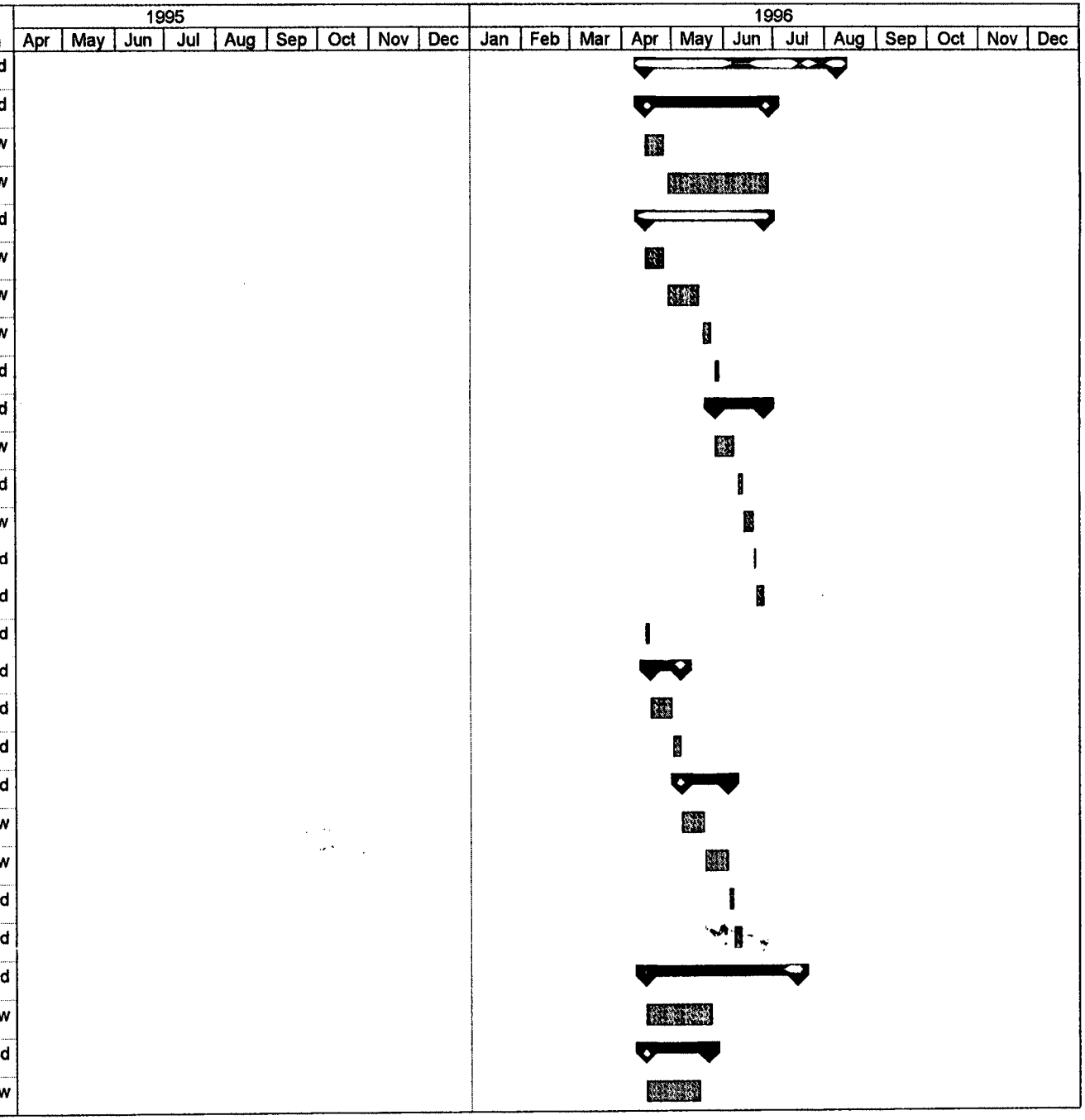
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
85	Townsite monitoring	6w
86	Haulage requirements	12d
87	Ore	4d
88	Waste	8d
89	Dumping requirements	12d
90	Ore	2d
91	Waste	2w
92	Crusher requirements	3d
93	Agglomeration requirements	2d
94	Crushed Ore handling	1w
95	Maintenance Requirements	5d
96	Equipment	3d
97	Buildings	2d
98	Utility requirements	2d
99	Site Plan	16d
100	Pit	4d
101	Waste dumps	5d
102	Roads	1d
103	Ore storage	2d
104	Crushing & Agglomeration	4d
105	Construction Phase	354d
106	Construction Contractor	195d
107	Prepare Construction bids	2w
108	Solicit Construction bids	10w
109	Review bids	2w
110	Select Contractor	1w
111	Contractor Mobilization	3w
112	Purchase Equipment	3w



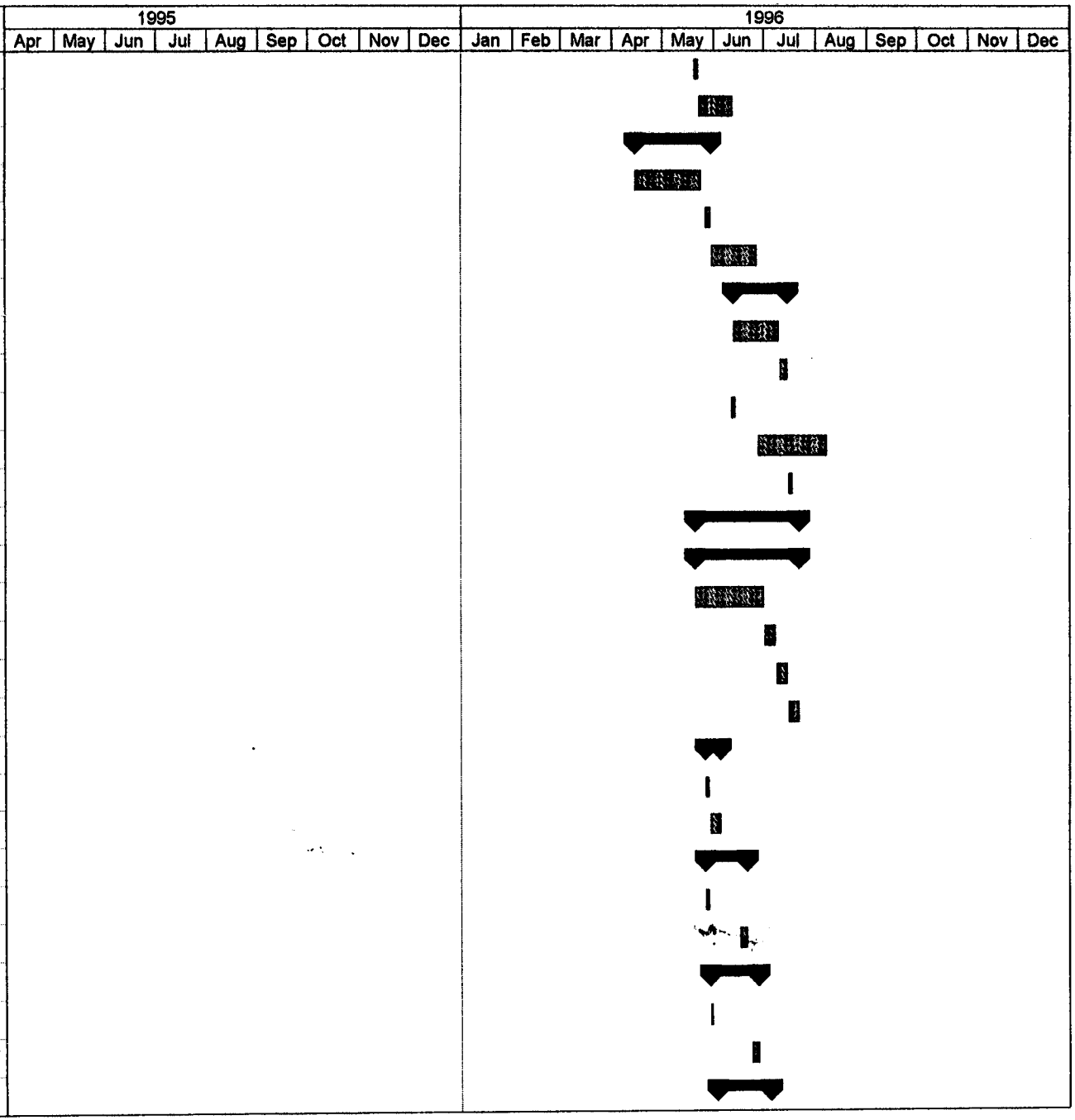
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
113	Construction	84d
114	Mine	55d
115	Soil Stockpile	2w
116	Pre-ore stripping	9w
117	Crushing Circuit	52d
118	mobilization	2w
119	Coarse Crushing	3w
120	Fine Crushing	1w
121	Dust surpression	3d
122	Agglomeration Circuit	22d
123	Agglomerator	2w
124	Cement Facility	3d
125	Water & Cyande pip	1w
126	Weightometer	1d
127	Exit Conveyor and st	3d
128	Ore Storage Site	3d
129	Dump Areas	13d
130	Waste	10d
131	Marginal Waste	3d
132	Roads	20d
133	Access	2w
134	Haulage	2w
135	Diversion ditches	3d
136	Townsite shielding	3d
137	Buildings	66d
138	Main office	6w
139	Engineering & Geology	28d
140	Building	5w



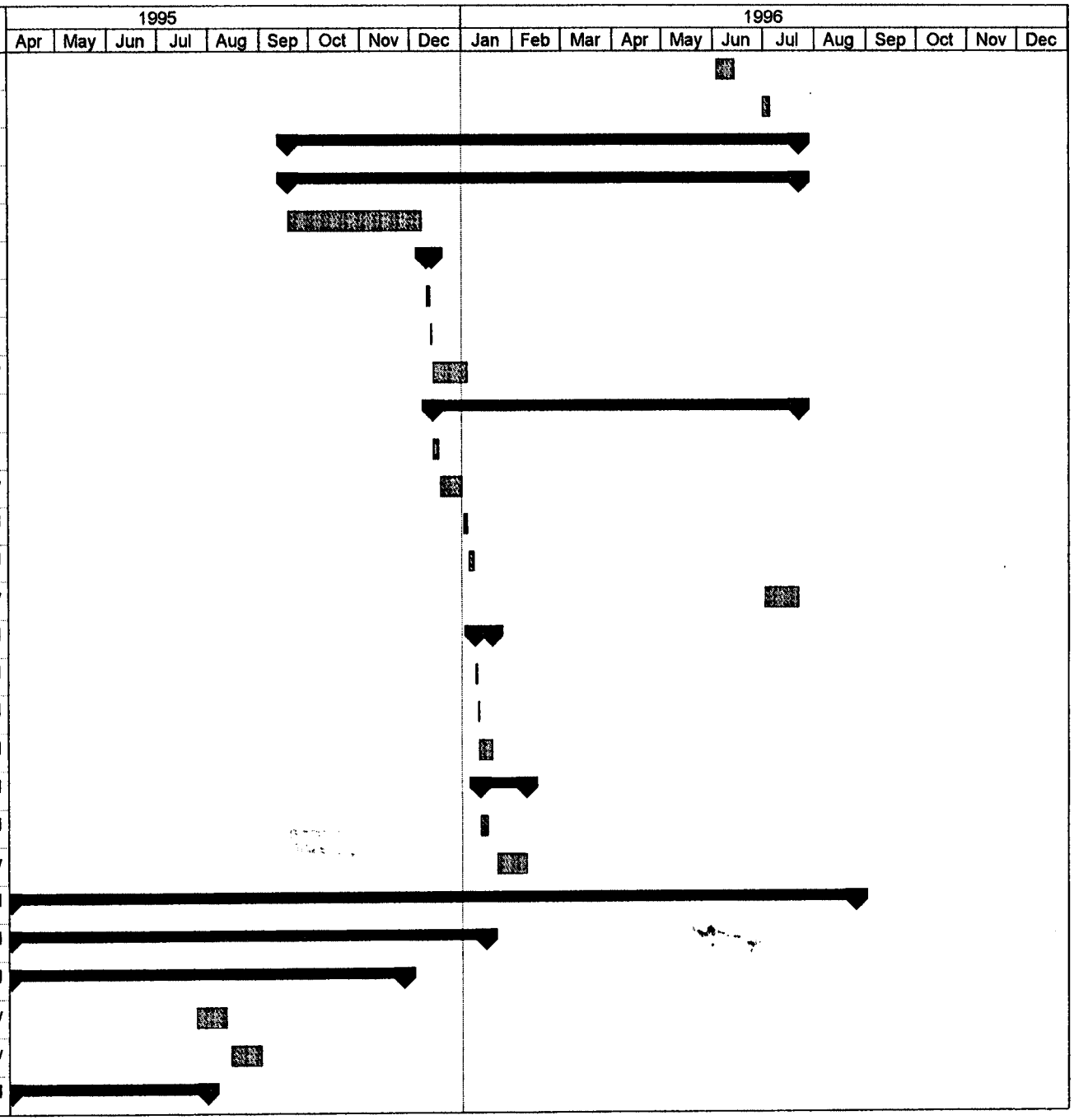
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
141	Septic system	3d
142	Sample Prep	3w
143	Assay	34d
144	Building	6w
145	Toxic waste disposa	4d
146	Maintenance Barn	4w
147	Warehouse	23d
148	Building	4w
149	Septic system	3d
150	Solid Waste Facility	3d
151	Site fencing	6w
152	Signage	3d
153	Utility construction	45d
154	Electric	45d
155	Mainline	6w
156	220 Volt distribution	1w
157	110 Volt distribution	1w
158	Backup Generators	1w
159	Propane	8d
160	Tanks	3d
161	Lines	1w
162	Gas	20d
163	Tanks	3d
164	refueling facility	1w
165	Diesel	22d
166	Tanks	2d
167	refueling facility	1w
168	Domestic Water	25d



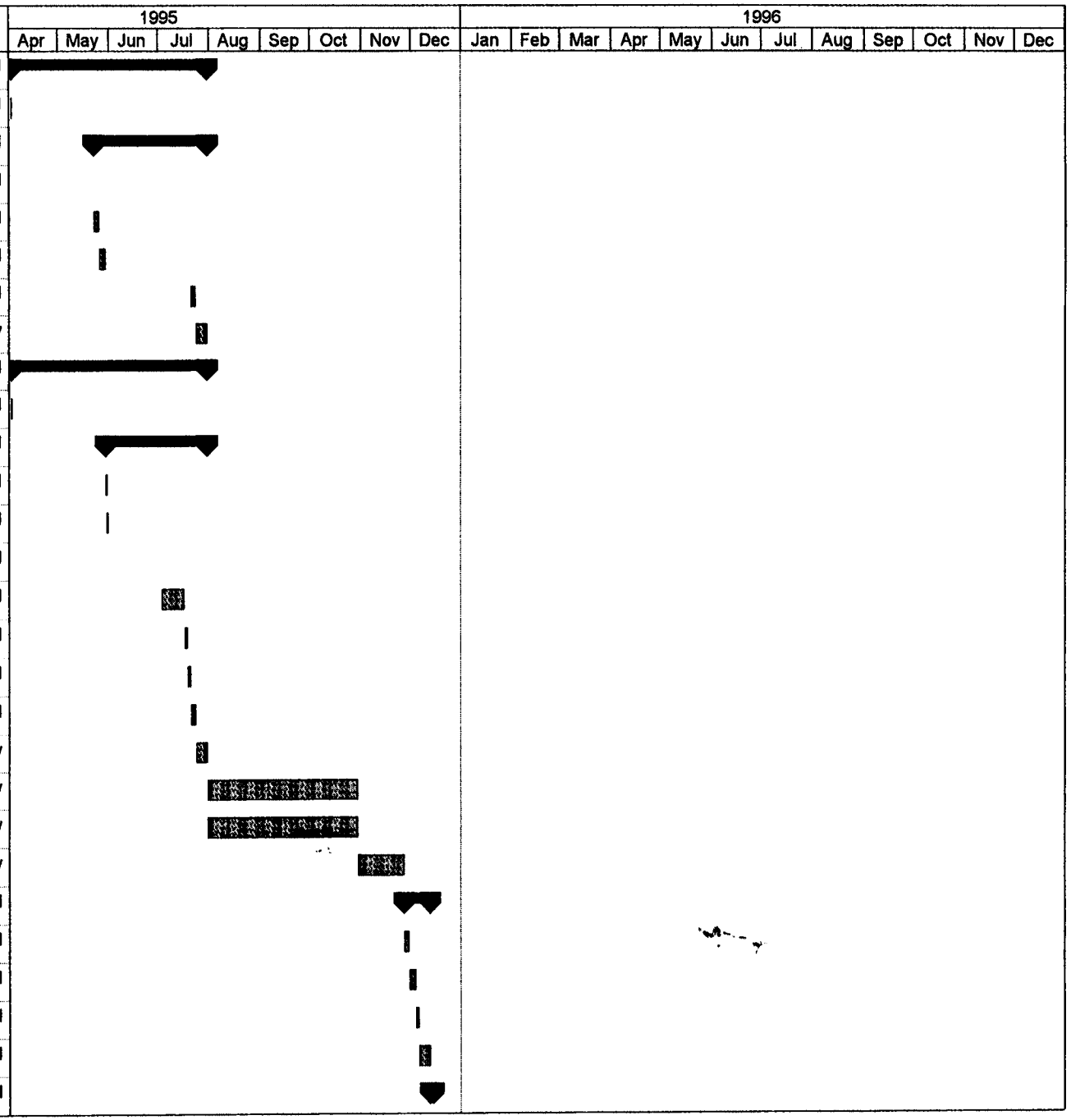
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
169	Tanks	2w
170	Piping	5d
171	Water Well Program	221d
172	Water rights	221d
173	Research Water Rights	60d
174	Retain Hydrologist	4d
175	Site Review	3d
176	Locate Potential Wellsite	1d
177	Acquire water permit	3w
178	Water Acquisition	157d
179	Pump Test Kleckar Well	2d
180	Drill Wells	2w
181	Pump test	3d
182	Set Casing and pump	2d
183	Hookup electricity	3w
184	Water Delivery	9d
185	Survey pipeline	2d
186	Locate Reserve Tank	1d
187	Pump stations	7d
188	Water implementation	21d
189	Install reserve tank	3d
190	Install pipeline	3w
191	Dragoon Metals, Inc. (Milling Company)	366d
192	Final Feasibility	206d
193	Definitive Metallurgical Testing	170.5d
194	DH cyande leaches	3w
195	DH bottle Rolls	3w
196	Sample Collection	85.5d



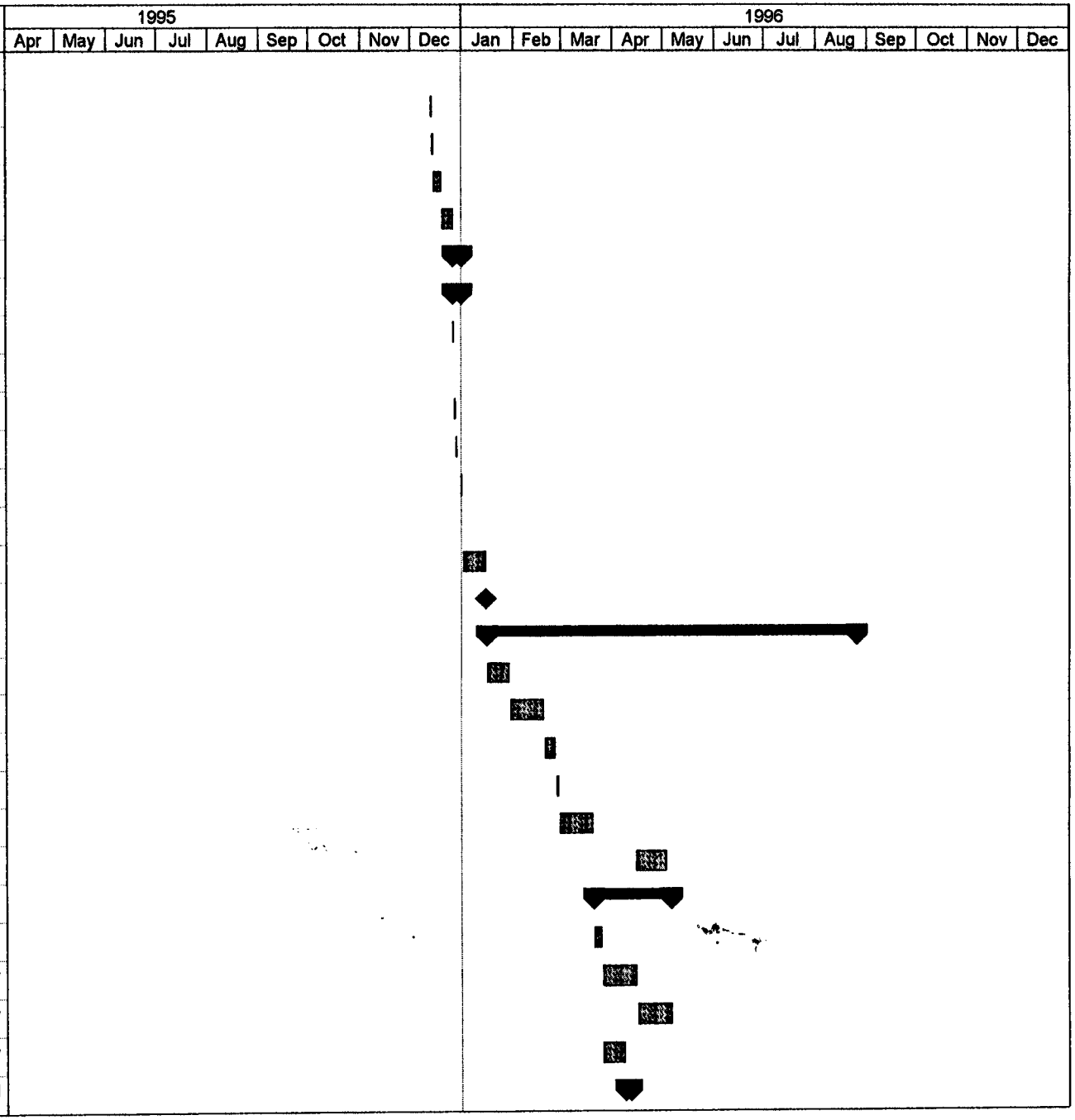
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
197	Underground	85.5d
198	Identify Samples	1d
199	Collect Samples	49.5d
200	Mark	0.5d
201	Chip	3d
202	Transport up	2d
203	pack	1d
204	ship	1w
205	Surface	85.5d
206	Identify Samples	1d
207	Collect Samples	44d
208	Mark	1d
209	dozer	0.5d
210	Drill	0.5d
211	Assay	10d
212	Blast	2d
213	Muck	2d
214	pack	1d
215	ship	1w
216	Laboratory Work UG	13w
217	Laboratory Work Surface	13w
218	Flow Sheet Design	4w
219	Site layout and design	12d
220	Pad design	3d
221	Collection & storage	2d
222	Pond design	2d
223	Piping and Instrumentation	5d
224	Utility requirements	2d



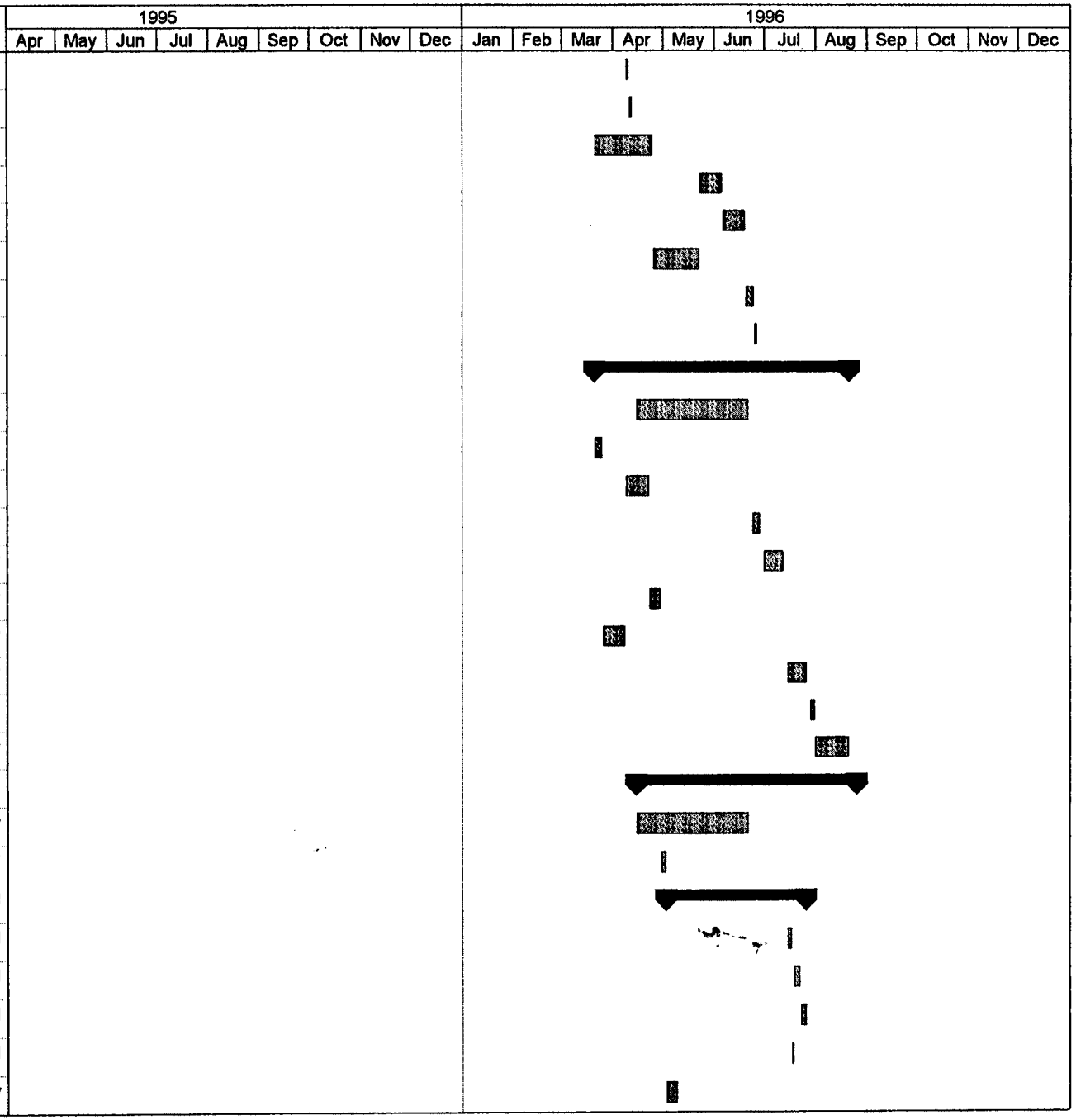
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
225	Capital Cost Estimate	0.5d
226	Project Schedule	0.5d
227	Operating Cost Estimate	1d
228	Labor requirements	3d
229	Capital requirements	1w
230	Schedule	3.5d
231	Define requirements	3.5d
232	Electricity	0.5d
233	Water	0.5d
234	Propane gas	0.5d
235	Diesel	1d
236	Oil	0.5d
237	Gas	0.5d
238	Final Feasibility Report	2w
239	PRODUCTION DECISION	0d
240	Construction	160d
241	Prepare Construction bids	2w
242	Solicit Construction bids	3w
243	Review bids	1w
244	Select Contractor	2d
245	Contractor mobilization	3w
246	Temporary Trailer offices	3w
247	Mill	33d
248	Site Prep	3d
249	Precip Plant	3w
250	Refinery	3w
251	Roads	2w
252	Ore Storage	4d



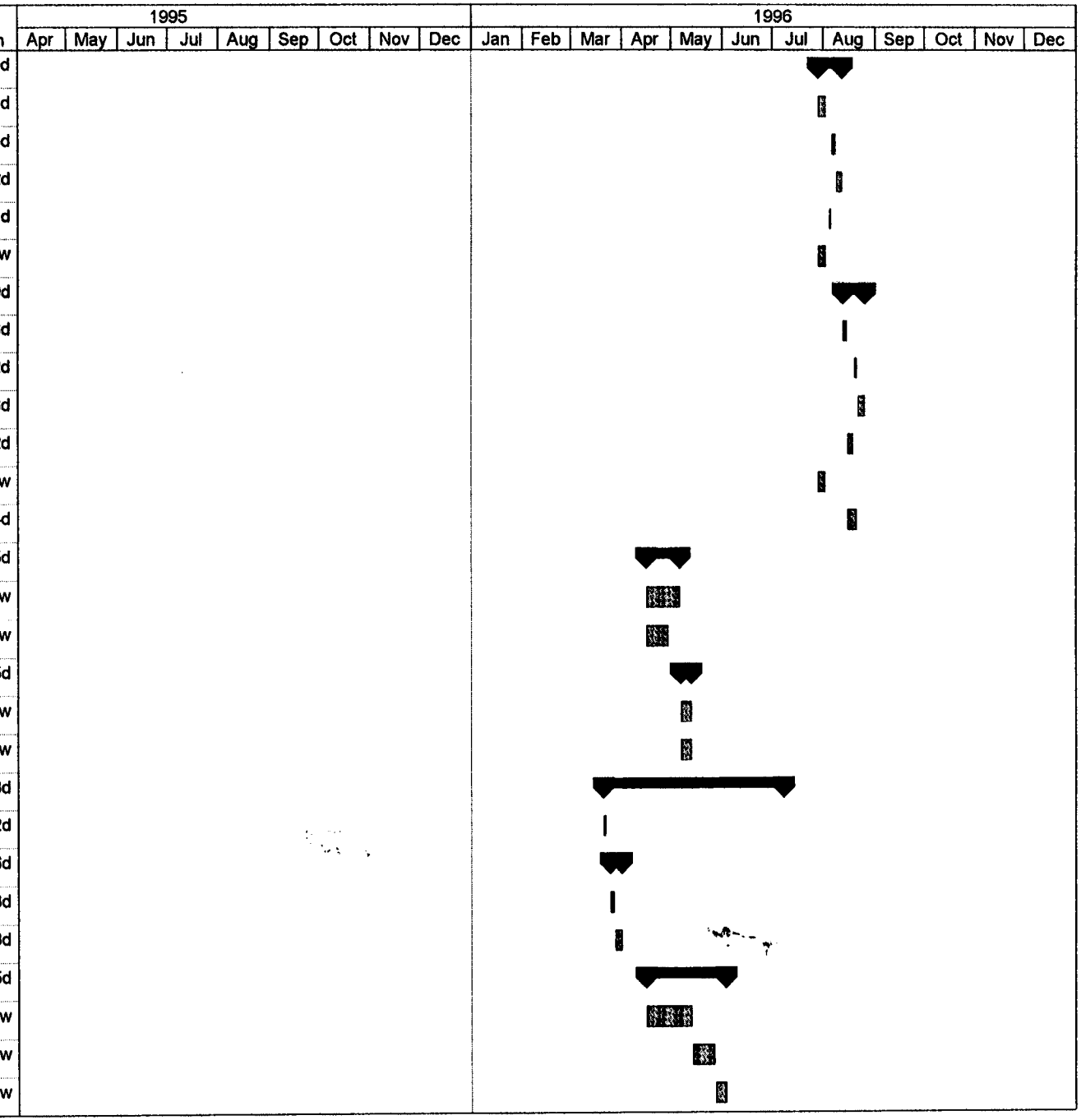
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
253	Site Prep	2d
254	Ore Pads	2d
255	Assay office	5w
256	Engineering office	2w
257	Geology Office	2w
258	Manager	4w
259	Purchasing	3d
260	Safety	2d
261	Pads	110d
262	Order Pad Material	10w
263	Site Prep	3d
264	Pad Base	2w
265	Pad sub-liner	1w
266	Pad liner	2w
267	Drain system	1w
268	Monitor wells	2w
269	Collection ditches	2w
270	diversion ditches	3d
271	Load Initial Pad Area	3w
272	Ponds	96d
273	Order Pond Material	10w
274	Site Prep	3d
275	Preg pond	61d
276	Pond base	3d
277	Pond sub-liner	2d
278	Pond liner	4d
279	Test drain	1d
280	Monitor Well	1w



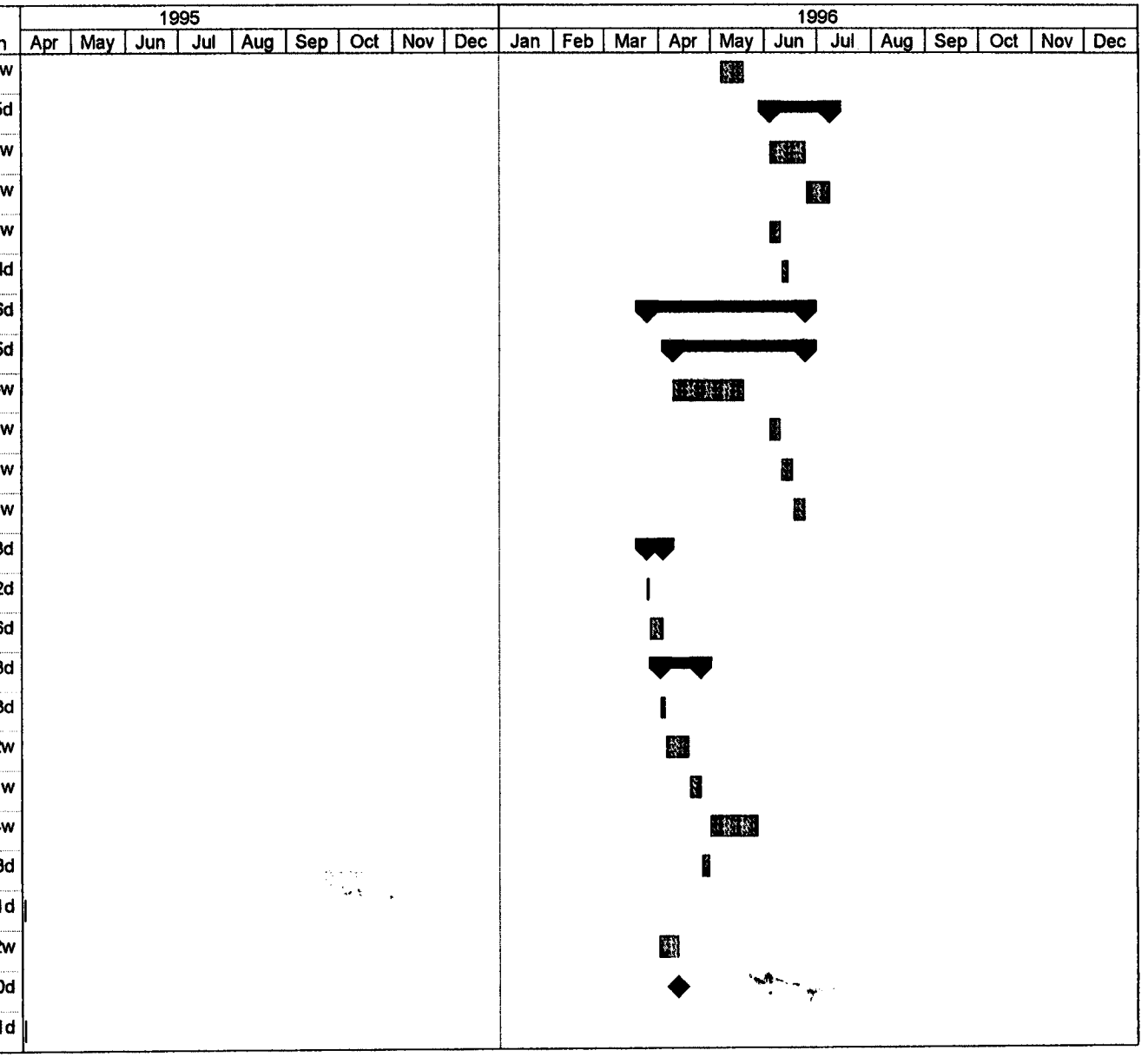
Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
281	Barren pond	11d
282	Pond base	5d
283	Pond sub-liner	3d
284	Pond liner	2d
285	Test drain	1d
286	Monitor Well	1w
287	Safety pond	10d
288	Pond base	3d
289	Pond sub-liner	2d
290	Pond liner	3d
291	Test drain	2d
292	Troughts	1w
293	Diversion ditches	4d
294	Preg circuit	15d
295	Pumps	3w
296	Distribution circuit	2w
297	Barren circuit	5d
298	Pumps	1w
299	Piping	1w
300	Buildings	78d
301	Site Prep	2d
302	Office and Lab	6d
303	Toxic waste disposal	3d
304	Septic system	3d
305	Merril Crowe Facility	35d
306	zinc circuit	4w
307	filter circuit	2w
308	Truss Building	1w



Harvest Gold Corporation - COMMONWEALTH SCHEDULE

ID	Name	Duration
309	Smelting & Refinery Unit	2w
310	Security Facility	25d
311	Security consultant	3w
312	Closed circuit TV	2w
313	Dry Chemical Storage	1w
314	Cyanide Handing facility	4d
315	Utility construction	66d
316	Electric	55d
317	440 Volt main line	6w
318	220 Volt distribution	1w
319	110 Volt distribution	1w
320	Backup Generators	1w
321	Propane	8d
322	Tanks	2d
323	Lines	6d
324	Domestic Water	18d
325	Tanks	3d
326	Piping	2w
327	Hot & Cold	1w
328	Site fencing	4w
329	Signage	3d
330		1d
331	FINAL PRODUCTION REVIEW	2w
332	"GO" DECISION	0d
333		1d



Harvest Gold Corporation - Commonwealth Project Budget			
ID	Name	Fixed Cost	Total Cost
1	Commonwealth Operation	$0.00	$6,908,849.27
2	Commonwealth Rock Products (Mining Co.)	$0.00	$3,067,178.77
3	Ore Reserve Delineation	$0.00	$342,552.00
4	Phase 1 drill program	$154,078.00	$154,078.00
5	Site Prep	$0.00	$0.00
6	Drilling	$0.00	$0.00
7	Assays	$0.00	$0.00
8	Global reserve estimation	$0.00	$6,000.00
9	Phase 2 drill program	$118,586.00	$127,930.00
10	Locate Holes	$0.00	$0.00
11	Site Prep	$0.00	$0.00
12	Drilling	$0.00	$0.00
13	Assays	$0.00	$0.00
14	Global reserve estimation	$1,500.00	$13,500.00
15	Final Ore Reserve definition	$1,500.00	$8,668.00
16	Mining Feasibility	$6,000.00	$45,168.80
17	Mine Design	$0.00	$0.00
18	Capital cost estimate	$0.00	$0.00
19	Project Schedule	$0.00	$0.00
20	Operating Cost Estimate	$0.00	$0.00
21	Final feasibility report	$3,500.00	$27,500.00
22	MINING PRODUCTION DECISION	$0.00	$0.00
23	Permitting	$0.00	$412,880.12
24	Legal Review	$2,200.00	$13,000.00
25	Title review	$1,250.00	$3,051.80
26	Cor-ford Property	$0.00	$0.00
27	Galyen Property	$0.00	$0.00
28	Other Property	$0.00	$0.00
29	Pearce townsite	$0.00	$0.00
30	Title Report	$1,250.00	$5,288.00
31	Clear Title Items	$3,500.00	$17,576.00
32	Permitting requirements	$0.00	$373,964.32
33	Federal Requirements	$5,500.00	$85,131.30
34	MSHA	$0.00	$0.00
35	Notice of Intent to Operate	$0.00	$0.00
36	USBLM (if required)	$0.00	$3,600.00
37	Enviromental Assessment	$0.00	$0.00
38	Plan of Operations	$0.00	$3,600.00
39	Record of Decision	$0.00	$0.00
40	OSHA	$0.00	$120.00
41	EPA	$0.00	$12,000.00
42	CIRCLA	$0.00	$9,000.00
43	State Requirements	$12,500.00	$267,365.10
44	AZ Dept. of Enviromental Quality	$0.00	$110,440.00
45	Office of Water Quality	$0.00	$82,680.00
46	Office of Air Qualtiy	$0.00	$27,760.00
47	Baseline monitoring	$12,500.00	$12,500.00
48	Air Qualtiy Permit Class C	$0.00	$0.00
49	AZ Dept of Water Resources	$0.00	$0.00
50	Notice of Intent to drill	$0.00	$0.00
51	Exploration Phase I	$0.00	$0.00
52	Exploration Phase II	$0.00	$0.00
53	Water Wells	$0.00	$0.00
54	AZ State Mine Inspector	$0.00	$0.00
55	Notice of Intent to Operate	$0.00	$0.00
56	Cyanide Training certification	$0.00	$0.00
57	AZ Com. of Agriculture & Horticulture	$0.00	$16,000.00
58	Biological Survey	$0.00	$16,000.00
59	Notice of Intent to Operate	$0.00	$0.00
60	AZ Corporation Commission	$0.00	$60.00
61	AZ Industrial commission	$0.00	$480.00
62	AZ Tax Commission	$0.00	$0.00
63	AZ Dept of Labor, Wage and Hour division	$0.00	$0.00
64	AZ Dept of Mines & Mineral Resources	$0.00	$0.00
65	AZ Dept of Wildlife	$0.00	$0.00
66	Curtural Resources Review	$0.00	$19,600.00
67	Cochise County Requirements	$0.00	$3,886.32
68	Dept of Health	$0.00	$1,200.00
69	Water permit	$0.00	$0.00
70	Septic Permit	$0.00	$0.00
71	Solid Waste Disposal	$0.00	$1,200.00
72	Building Permits	$0.00	$0.00
73	Road & Utility easements	$0.00	$1,965.60

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Harvest Gold Corporation - Commonwealth Project Budget

ID	Name	Fixed Cost	Total Cost
74	Reclamation Plan	$3,500.00	$15,616.00
75	Engineering Design	$1,250.00	$77,711.76
76	Site Access	$0.00	$72.64
77	Rock Mechanics	$1,500.00	$15,847.20
78	Blasting requirements (RQD study)	$0.00	$0.00
79	Loading requirements	$0.00	$0.00
80	Slope Stability	$0.00	$0.00
81	Townsite monitoring	$0.00	$4,000.00
82	Haulage requirements	$0.00	$560.64
83	Ore	$0.00	$0.00
84	Waste	$0.00	$0.00
85	Dumping requirements	$0.00	$1,401.60
86	Ore	$0.00	$0.00
87	Waste	$0.00	$0.00
88	Crusher requirements	$250.00	$970.00
89	Agglomeration requirements	$500.00	$1,700.00
90	Crushed Ore handling	$500.00	$1,700.00
91	Maintenance Requirements	$0.00	$1,800.00
92	Equipment	$0.00	$0.00
93	Buildings	$0.00	$0.00
94	Utility requirements	$250.00	$970.00
95	Site Plan	$1,250.00	$12,054.48
96	Pit	$0.00	$0.00
97	Waste dumps	$0.00	$0.00
98	Roads	$0.00	$0.00
99	Ore storage	$0.00	$0.00
100	Crushing & Agglomeration	$0.00	$0.00
101	Construction Solicitation	$0.00	$11,490.80
102	Prepare Construction bids	$500.00	$2,780.00
103	Solicit Construction bids	$0.00	$0.00
104	Review bids	$500.00	$1,700.00
105	Select Contractor	$500.00	$1,700.00
106	Mine Construction Phase	$0.00	$2,046,949.12
107	Contractor Mobilization	$112,500.00	$112,500.00
108	Purchase Equipment	$0.00	$0.00
109	Construction	$0.00	$1,755,696.00
110	Mine	$0.00	$380,100.00
111	Soil Stockpile	$0.00	$78,300.00
112	Pre-ore Dozing	$0.00	$116,550.00
113	Pre-ore stripping	$0.00	$185,250.00
114	Crushing Circuit	$345,000.00	$1,140,500.00
115	mobilization	$65,000.00	$65,000.00
116	Coarse Crushing	$167,000.00	$167,000.00
117	Fine Crushing	$307,000.00	$307,000.00
118	Dust surpression	$2,500.00	$2,500.00
119	Agglomeration Circuit	$85,000.00	$254,000.00
120	Agglomerator	$0.00	$0.00
121	Cement Facility	$0.00	$0.00
122	Water & Cyande piping	$0.00	$0.00
123	Weightometer	$0.00	$0.00
124	Exit Conveyor and stacker	$169,000.00	$169,000.00
125	Ore Storage Site	$0.00	$1,905.00
126	Dump Areas	$0.00	$8,255.00
127	Waste	$0.00	$0.00
128	Marginal Waste	$0.00	$0.00
129	Roads	$0.00	$83,900.00
130	Access	$0.00	$0.00
131	Haulage	$0.00	$0.00
132	Diversion ditches	$0.00	$12,700.00
133	Townsite shielding	$0.00	$10,160.00
134	Relocate County Road	$0.00	$11,196.00
135	Buildings	$0.00	$100,000.00
136	Main office	$100,000.00	$100,000.00
137	Engineering & Geology	$0.00	$0.00
138	Building	$0.00	$0.00
139	Septic system	$0.00	$0.00
140	Maintenance Barn	$0.00	$0.00
141	Warehouse	$0.00	$0.00
142	Building	$0.00	$0.00
143	Septic system	$0.00	$0.00
144	Solid Waste Facility	$0.00	$0.00
145	Site fencing	$0.00	$4,000.00
146	Signage	$2,500.00	$2,980.00

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Harvest Gold Corporation - Commonwealth Project Budget

ID	Name	Fixed Cost	Total Cost
147	Water Well Program	$0.00	$130,426.17
148	Water rights	$0.00	$4,949.40
149	Research Water Rights	$0.00	$1,038.00
150	Retain Hydrologist	$0.00	$3,600.00
151	Site Review	$0.00	$0.00
152	Locate Potential Wellsites	$0.00	$0.00
153	Acquire water permit	$0.00	$311.40
154	Water Acquisition	$0.00	$50,620.00
155	Pump Test Kleckar Well	$0.00	$4,400.00
156	Drill Wells	$0.00	$22,000.00
157	Pump test	$0.00	$6,600.00
158	Set Casing and pump	$12,500.00	$16,900.00
159	Hookup electricity	$0.00	$720.00
160	Water Delivery	$0.00	$17,746.40
161	Survey pipelines	$0.00	$1,246.40
162	Locate Reserve Tank	$12,500.00	$12,500.00
163	Pump stations	$4,000.00	$4,000.00
164	Water implementation	$0.00	$53,095.50
165	Install reserve tank	$0.00	$9,495.50
166	Install pipeline	$28,000.00	$43,600.00
167	Dragoon Metals, Inc. (Milling Company)	$0.00	$3,554,030.56
168	Final Metallurgical Feasibility	$0.00	$178,925.48
169	Definitive Metallurgical Testing	$0.00	$112,708.04
170	DH cyande leaches	$2,200.00	$2,200.00
171	DH bottle Rolls	$4,500.00	$4,500.00
172	Sample Collection	$0.00	$31,008.04
173	Underground	$0.00	$12,252.50
174	Identify Samples	$0.00	$0.00
175	Collect Samples	$0.00	$12,252.50
176	Chip	$0.00	$0.00
177	Transport up	$0.00	$0.00
178	pack	$0.00	$0.00
179	ship	$0.00	$0.00
180	Surface	$0.00	$14,097.50
181	Identify Samples	$0.00	$0.00
182	Collect Samples	$0.00	$14,097.50
183	dozer	$0.00	$700.00
184	Drill	$0.00	$1,000.00
185	Assay	$0.00	$0.00
186	Blast	$0.00	$0.00
187	Muck	$0.00	$0.00
188	pack	$0.00	$0.00
189	ship	$0.00	$0.00
190	Laboratory Work UG	$0.00	$32,500.00
191	Laboratory Work Surface	$0.00	$32,500.00
192	Flow Sheet Design	$0.00	$10,000.00
193	Site layout and design	$0.00	$14,960.64
194	Pad design	$0.00	$0.00
195	Collection & storage	$0.00	$0.00
196	Pond design	$0.00	$0.00
197	Piping and Instrumentation	$0.00	$0.00
198	Utility requirements	$0.00	$2,493.44
199	Capital Cost Estimate	$0.00	$0.00
200	Project Schedule	$0.00	$0.00
201	Operating Cost Estimate	$0.00	$0.00
202	Labor requirements	$0.00	$3,600.00
203	Capital requirements	$0.00	$6,000.00
204	Schedule	$0.00	$2,007.04
205	Define requirements	$0.00	$0.00
206	Electricity	$0.00	$0.00
207	Water	$0.00	$0.00
208	Propane gas	$0.00	$0.00
209	Diesel	$0.00	$0.00
210	Oil	$0.00	$0.00
211	Gas	$0.00	$0.00
212	Final Feasibility Report	$0.00	$37,156.32
213	MILL PRODUCTION DECISION	$0.00	$0.00
214	Construction Solicitation	$0.00	$10,739.84
215	Prepare Construction bids	$0.00	$1,800.00
216	Solicit Construction bids	$0.00	$0.00
217	Review bids	$0.00	$0.00
218	Select Contractor	$0.00	$0.00
219	Mill Construction Phase	$0.00	$3,364,365.24

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Harvest Gold Corporation - Commonwealth Project Budget

ID	Name	Fixed Cost	Total Cost
220	Contractor mobilization	$112,500.00	$112,500.00
221	Insurance	$32,000.00	$32,000.00
222	Temporary Trailer offices	$24,000.00	$27,930.00
223	Mill	$0.00	$295,986.00
224	Site Prep	$0.00	$3,486.00
225	Precip Plant	$225,000.00	$225,000.00
226	Refinery	$45,000.00	$45,000.00
227	Cyanide Makeup	$22,500.00	$22,500.00
228	Roads	$0.00	$22,916.00
229	Pads	$1,560,000.00	$1,560,000.00
230	Order Pad Material	$0.00	$0.00
231	Site Prep	$0.00	$0.00
232	Pad Base	$0.00	$0.00
233	Pad sub-liner	$0.00	$0.00
234	Pad liner	$0.00	$0.00
235	Drain system	$0.00	$0.00
236	Monitor wells	$0.00	$0.00
237	Collection ditches	$0.00	$0.00
238	diversion ditches	$0.00	$0.00
239	Load initial Pad Area	$0.00	$0.00
240	Ponds	$595,300.00	$595,300.00
241	Order Pond Material	$0.00	$0.00
242	Site Prep	$0.00	$0.00
243	Preg pond	$0.00	$0.00
244	Pond base	$0.00	$0.00
245	Pond sub-liner	$0.00	$0.00
246	Pond liner	$0.00	$0.00
247	Test drain	$0.00	$0.00
248	Monitor Well	$0.00	$0.00
249	Barren pond	$0.00	$0.00
250	Pond base	$0.00	$0.00
251	Pond sub-liner	$0.00	$0.00
252	Pond liner	$0.00	$0.00
253	Test drain	$0.00	$0.00
254	Monitor Well	$0.00	$0.00
255	Safety pond	$0.00	$0.00
256	Pond base	$0.00	$0.00
257	Pond sub-liner	$0.00	$0.00
258	Pond liner	$0.00	$0.00
259	Test drain	$0.00	$0.00
260	Troughts	$0.00	$0.00
261	Diversion ditches	$0.00	$0.00
262	Preg circuit	$0.00	$10,220.00
263	Pumps	$7,500.00	$7,500.00
264	Distribution circuit	$2,000.00	$2,000.00
265	Barren circuit	$0.00	$9,780.00
266	Pumps	$7,500.00	$7,500.00
267	Piping	$2,000.00	$2,000.00
268	Buildings	$0.00	$417,348.00
269	Site Prep	$0.00	$1,606.00
270	Office, Assay and Lab	$0.00	$223,500.00
271	Building (contracted)	$95,000.00	$95,000.00
272	Toxic waste disposal	$2,000.00	$2,000.00
273	Septic system	$4,500.00	$4,500.00
274	Equipment	$122,000.00	$122,000.00
275	Mill Building (contracted)	$105,000.00	$105,000.00
276	Security Facility	$73,000.00	$78,380.00
277	Security consultant	$0.00	$2,400.00
278	Closed circuit TV	$2,500.00	$2,980.00
279	Dry Chemical Storage	$1,250.00	$2,050.00
280	Cyanide Handing facility	$5,500.00	$6,812.00
281	Utility construction	$0.00	$175,435.00
282	Electric	$0.00	$164,195.00
283	440 Volt main line	$52,185.00	$52,185.00
284	220 Volt distribution	$23,000.00	$23,000.00
285	110 Volt distribution	$1,250.00	$2,450.00
286	Backup Generators	$86,000.00	$86,560.00
287	Propane	$0.00	$6,040.00
288	Tanks	$2,500.00	$3,140.00
289	Lines	$500.00	$2,900.00
290	Domestic Water	$0.00	$5,200.00
291	Tanks	$1,200.00	$2,400.00
292	Hot & Cold Piping	$400.00	$2,800.00

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Harvest Gold Corporation - Commonwealth Project Budget

ID	Name	Fixed Cost	Total Cost
293	Site fencing	$3,000.00	$6,200.00
294	Signage	$3,200.00	$3,680.00
295			
296	FINAL FEASIBILITY REVIEW	$0.00	$38,872.20
297	"GO" DECISION	$0.00	$0.00

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COMMONWEALTH PROPERTY

GLOBAL RESERVES by ROCK TYPE

Recoverable Gold Equivalent Grade

0.011 ounce eq. gold per ton

Rocktype Code #	Rocktype	Blocks at 666 tons	Total Tons	Percent of Reserve	Gold Equiv.	Gold oz/ton	Silver Ag/ton	Gold Eq. ounces	Percent of Gold Eq.	Total Au ounces	Percent of Gold	Total Ag ounces	Percent of Silver
1	Alluvium	151	100,566	**0.93%**	0.0278	0.0262	1.36	2,800	**0.80%**	2,634	**0.90%**	137,082	**0.69%**
2	Rhyolite	3,792	2,525,472	**23.39%**	0.0329	0.0202	2.55	83,038	**23.66%**	51,090	**17.38%**	6,429,852	**32.53%**
3	L. Andesite	4,187	2,788,542	**25.83%**	0.0304	0.0261	1.74	84,772	**24.15%**	72,820	**24.78%**	4,846,207	**24.52%**
4	Bisbee	4,082	2,718,612	**25.18%**	0.0291	0.0308	1.00	79,193	**22.56%**	83,782	**28.51%**	2,730,846	**13.81%**
5	U. Andesite	714	475,524	**4.40%**	0.0198	0.0108	1.86	9,396	**2.68%**	5,128	**1.74%**	883,381	**4.47%**
6	Voids	45	29,970	**0.28%**	0.0300	0.0132	2.83	898	**0.26%**	396	**0.13%**	84,671	**0.43%**
7	Vein	2,182	1,453,212	**13.46%**	0.0434	0.0357	2.34	63,055	**17.96%**	51,810	**17.63%**	3,400,661	**17.20%**
unclassified		1,058	704,628	**6.53%**	0.039516	0.037212	1.78	27,844	**7.93%**	26,221	**8.92%**	1,254,660	**6.35%**
Total	All Rocks	16,211	10,796,526	**100.00%**	0.0325	0.0272	1.83	350,995	**100.00%**	293,881	**100.00%**	19,767,359	**100.00%**

COMMONWEALTH PROPERTY

MINABLE RESERVES by ROCK TYPE

WITH Recoverable Gold Equivalent CUTOFF Grade 0.011 ounce eq. gold per ton

Pit designed with 55 degree slopes

Rocktype Code #	Rocktype	Total Tons	Percent of Mined	Percent of Global	Gold Equiv.	Gold oz/ton	Silver Ag/ton	Gold Eq. ounces	Percent of Gold Eq	Total Au ounces	Percent of Gold	Total Ag ounces	Percent of Silver
1	Alluvium	100,566	**1.03%**	**100.00%**	0.0278	0.0262	1.36	2,800	**0.88%**	2,634	**0.99%**	137,062	**0.76%**
2	Rhyolite	2,380,950	**24.31%**	**94.28%**	0.0350	0.0229	2.58	83,333	**26.17%**	54,524	**20.45%**	6,142,851	**34.25%**
3	L. Andesite	2,758,572	**28.16%**	**98.93%**	0.0310	0.0262	1.75	85,516	**26.85%**	72,275	**27.11%**	4,827,501	**26.92%**
4	Bisbee	2,120,544	**21.65%**	**78.00%**	0.0320	0.0327	1.18	67,857	**21.31%**	69,342	**26.01%**	2,502,242	**13.95%**
5	U. Andesite	320,346	**3.27%**	**67.37%**	0.0200	0.0123	1.75	6,407	**2.01%**	3,940	**1.48%**	560,606	**3.13%**
6	Voids	29,970	**0.31%**	**100.00%**	0.0300	0.0132	2.83	898	**0.28%**	396	**0.15%**	84,671	**0.47%**
7	Vein	1,409,922	**14.39%**	**97.02%**	0.0434	0.0357	2.34	61,177	**19.21%**	50,267	**18.85%**	3,299,358	**18.40%**
unclassified		674,658	**6.89%**	**95.75%**	0.015512	0.01965	0.56	10,465	**3.29%**	13,257	**4.97%**	380,322	**2.12%**
Total	All Rocks	9,795,528	**100.00%**	**90.73%**	0.0325	0.0272	1.83	318,453	**100.00%**	266,634	**100.00%**	17,934,632	**100.00%**

COMMONWEALTH PROPERTY

GLOBAL RESERVES by ROCK TYPE

Rocktype: **ALLUVIUM** (rockcode #1)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	2,069	1,377,954	0.0049	0.0050	0.26	6,780	6,949	360,473
0.009	198	131,868	0.0236	0.0219	1.24	3,105	2,886	164,031
0.011	151	100,566	0.0278	0.0262	1.36	2,800	2,634	137,082
0.013	125	83,250	0.0310	0.0276	1.55	2,583	2,301	128,879
0.015	112	74,592	0.0330	0.0304	1.66	2,464	2,264	124,009
0.020	97	64,602	0.0355	0.0325	1.77	2,293	2,101	114,203

Rocktype: **RHYOLITE** (rockcode #2)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	14,250	9,490,500	0.0118	0.0085	0.92	112,273	80,669	8,692,349
0.009	4,460	2,970,360	0.0306	0.0202	2.26	90,863	59,903	6,785,490
0.011	3,792	2,525,472	0.0342	0.0222	2.52	86,422	56,149	6,353,330
0.013	3,287	2,189,142	0.0376	0.0241	2.73	82,399	52,846	5,980,736
0.015	2,977	1,982,682	0.0401	0.0258	2.88	79,506	51,054	5,711,512
0.020	2,369	1,577,754	0.0459	0.0289	3.23	72,403	45,613	5,089,992

Rocktype: **LOWER ANDESITE** (rockcode #3)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	10,300	6,859,800	0.0149	0.0133	0.85	101,937	91,489	5,806,821
0.009	4,710	3,136,860	0.0281	0.0244	1.62	88,271	76,436	5,067,284
0.011	4,167	2,786,542	0.0304	0.0261	1.74	84,772	72,820	4,846,207
0.013	3,761	2,504,826	0.0325	0.0278	1.84	81,407	69,552	4,603,369
0.015	3,431	2,285,046	0.0343	0.0292	1.92	78,354	66,698	4,388,431
0.020	2,647	1,762,902	0.0393	0.0332	2.13	69,229	58,606	3,751,808

Rocktype:**BISBEE FORMATION** (rockcode #4)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	30,123	20,061,918	0.0064	0.0071	0.23	128,998	141,557	4,602,204
0.009	5,033	3,351,978	0.0255	0.0272	0.88	91,207	91,207	2,935,998
0.011	4,082	2,718,612	0.0291	0.0308	1.00	79,193	83,762	2,730,846
0.013	3,408	2,269,728	0.0325	0.0342	1.12	73,857	77,670	2,536,194
0.015	2,926	1,948,716	0.0356	0.0373	1.21	69,413	72,664	2,365,351
0.020	2,073	1,380,618	0.0431	0.0449	1.42	59,560	62,015	1,966,690

Rocktype: **UPPER ANDESITE** (rockcode #5)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	12,020	8,005,320	0.0039	0.0029	0.43	30,820	22,967	3,409,466
0.009	965	642,690	0.0172	0.0096	1.67	11,048	6,176	1,076,120
0.011	714	475,524	0.0198	0.0108	1.86	9,396	5,128	883,361
0.013	505	336,330	0.0230	0.0116	2.18	7,746	3,905	732,325
0.015	355	236,430	0.0269	0.0132	2.46	6,351	3,113	582,138
0.020	184	122,544	0.0363	0.0178	3.07	4,447	2,178	376,112

Rocktype: **VOIDS** (rockcode #6)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	91	60,606	0.0169	0.0078	1.7005	1,025	471	103,061
0.009	50	33,300	0.0280	0.0123	2.6932	931	408	89,684
0.011	45	29,970	0.0300	0.0132	2.8252	898	396	84,671
0.013	43	28,638	0.0308	0.0136	2.8825	882	390	82,549
0.015	42	27,972	0.0312	0.0138	2.9109	873	386	81,424
0.020	30	19,980	0.0364	0.0160	3.2882	727	319	68,698

Rocktype: **VEIN MATERIAL** (rockcode #7)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	2,799	1,864,134	0.0350	0.0288	1.938	65,207	53,756	3,612,692
0.009	2,251	1,499,166	0.0424	0.0348	2.2951	63,505	52,207	3,440,736
0.011	2,182	1,453,212	0.0434	0.0357	2.3401	63,055	51,810	3,400,661
0.013	2,075	1,381,950	0.0450	0.0369	2.4165	62,215	51,040	3,339,482
0.015	1,975	1,315,350	0.0466	0.0382	2.4838	61,269	50,231	3,267,066
0.020	1,741	1,159,506	0.0505	0.0413	2.6529	58,567	47,882	3,076,053

Rocktype: **ALL MATERIAL** (rockcodes #1TO # 7) as Kriged

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	73,814	49,160,124	0.0097	0.0086	0.58	474,395	421,745	28,271,987
0.009	18,818	12,532,788	0.0294	0.0248	1.67	368,339	310,901	20,957,328
0.011	16,211	10,796,526	0.0325	0.0272	1.83	350,995	293,681	19,767,359
0.013	14,185	9,447,210	0.0355	0.0295	1.98	334,904	278,504	18,677,134
0.015	12,730	8,478,180	0.0379	0.0314	2.09	321,408	266,206	17,742,287
0.020	9,842	6,554,772	0.0439	0.0361	2.36	287,886	236,896	15,469,262

Rocktype: **Unclassified** (rockcodes #1TO # 7)

Recovery Cutoff Grade	Blocks at 666 tons	Total Tons	Gold Equiv.	Recovery Gold oz/ton	Actual Silver Ag/ton	Gold Eq. ounces	Recovery Total Au ounces	Actual Total Ag ounces
0.000	2,162	1,439,892	0.0190	0.0166	1.17	27,355	23,886	1,684,923
0.009	1,151	766,566	0.0253	0.0283	1.82	19,407	21,676	1,397,986
0.011	1,058	704,628	0.0347	0.0300	1.89	24,460	21,162	1,331,182
0.013	981	653,346	0.0364	0.0318	1.95	23,814	20,800	1,273,599
0.015	912	607,392	0.0382	0.0326	2.01	23,178	19,797	1,222,356
0.020	701	466,866	0.0443	0.0389	2.20	20,660	18,183	1,028,704

COMMONWEALTH PROJECT
Cochise County, Arizona USA

Property Description: The Commonwealth Gold Project, controlled by Harvest Gold Corporation of Evergreen, Colorado consists of 1020 acres of **patented** land located in Cochise County, Arizona near the old town of Pearce. Historic production was from underground vein mines which produced an estimated 122,000 ounces of gold and 13 million ounces of silver. Currently, an estimated 258,000 gold ounce equivalent open-pitable reserve has been defined by drilling and underground sampling.

Ownership: The Commonwealth property consists of 320 acres of patented claims under lease and option, plus 700 acres of fee land under option. ***All expected operational facilities are on private lands***, although BLM ground nearby may be needed for a waste dump. The property is covered by several agreements, however the major contract requires a 3.52% NSR royalty, decreasing to 1.76% after $2.5 million as been paid, further reducing to 0.88% royalty once a total of $3.25 million has been paid. In addition, Harvest is required to pay a 5% net profits interest, escalating to a 10% NPI after recovery of two times the invested cost. This is payable to the property vendor. Harvest is currently negotiating to remove the vendor obligations.

Ore Reserves: Reserve information consists of 156 drill holes from ten separate drilling programs between 1975 and 1995, aggregating some 52,000 feet of rotary and core drilling, yielding approximately 9,300 gold and silver assays. Drillhole data is combined with over 8,500 linear feet of underground sampling which yielded over 1,600 additional gold and silver assays. Harvest with Atlas Corporation has combined all this information and has used MEDSYSTEM & TECHBASE software to develop a reserve model and pit plan. The total data base has a 1996 dollar value of approximately $2.5 million.

Harvest and Atlas have calculated a global mineral reserve of approximately 9.1 million tons at a grade of 0.027 oz per ton *recoverable* gold equivalent at a $5.21 cutoff. Actual conservative **mineable reserves are estimated at 9.1 million tons at a grade of 0.024 oz per ton gold and 1.6 ounce per ton silver** (218,400 ounces of gold and 14.6 million ounces of silver in place). Reserves are available at a 2.7 to 1 strip ratio, however an undrilled internal portion of the reserve zone may significantly increase ore and decrease waste.

Gold recovery using heap leach is estimated at 82% with a silver recovery at 33%. The resulting average *mineable recoverable gold equivalent is estimated at 0.027 ounce per ton* yielding a total of 258,000 gold equivalent ounces (or $103 million at $400 gold). A 91% gold and 82% silver recovery can be obtained from conventional CCD cyanide milling yielding *a recoverable gold equivalent of 0.052* (or over 400,000 ounces of recoverable gold equivalent valued at $160 million).

Harvest estimates that an additional 13 million tons of similar grade ore is likely to be developed within and adjacent to the known reserve with additional drilling. Significant nearby, but as yet uncontrolled properties, have potential that when combined with Commonwealth exceeds 1.4 million gold equivalent ounces, some of which have already been partially drilled out.

Geology: The Commonwealth is a low sulfur, epithermal, bonanza-type precious metal occurrence, modified and enriched by secondary weathering processes. Silver and gold occur in a series of quartz veins, massive and sheeted, localized along and between two major faults with "dry" gold-bearing limonite seams interspersed with the veins. All veins exhibit classic epithermal features. Gangue includes quartz, calcite, adularia and sercite. Iron oxides are abundant, however the original sulfide content was low, and is now thoroughly oxidized. Minor copper oxides are found on dumps, but is rare.

Metallurgy: Extensive tests on drill cuttings and bulk samples have aggregated over 150 bottle rolls and 28 column leach tests, yielding an average of 82% gold recovery and 33% silver recovery. Although, three different rock types are present, approximately 74% of the reserve is excellent heap leach ore which will likely yield over 84% of its contained gold by 1/2" crushing without agglomeration. The remainder must be crushed to 1/8 inch for similar recoveries. No cyanicides are present. Cyanide consumption will be less than 0.5 lb. per ton, while lime should not exceed 1.5 lb. per ton.

Infrastructure: The warm climate of southeastern Arizona is ideal for year-round mining and leaching operations. The proposed minesite is located about 4500 feet above sea level in a high desert environment. Site access is via one half mile of paved road off US Highway 191. Sufficient power and water are located on site. Local town facilities are only 3 miles north on Highway 191.

Permitting: Harvest commenced mine permitting activities in late 1994, but Atlas suspended that activity in 1995. Recently, Harvest has re-commenced those activities using the newly developed Atlas data. An additional 6 to 8 months will be required to obtain a state aquifer protection permit. To date, consultants has researched the regional water situation, toured the site and has prepared a map and water data summary for a three mile radius around the Commonwealth Mine. Water consultants stated that no problems should be encountered. An archeological study and an environmental site review have been compiled by noted consultants. No federal EIS requirements are needed. All other remaining permit requirements are minimal.

Recommended Program: A final feasibility stage of development is envisioned. This program would involve final permitting activities, final metallurgical refinement, some infill drilling to eliminate ore reserve gaps, a final heap leach design analysis and thence final mine and plant design. Approximately $1,000,000 and approximately 8 to 10 months will result in a decision to proceed to production with permits in hand. A 3300 TPD heap leach mine construction budget is estimated to cost approximately $6 million and 5 months duration to implement.

HARVEST GOLD CORPORATION

METALLURGICAL TESTING

at the

COMMONWEALTH PROPERTY

Cochise County, Arizona, USA

May 9, 1995
Revised September 30, 1996

compiled by: R.A. Forrest

Contact:

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METALLURGICAL TESTING

at the

COMMONWEALTH PROPERTY

Cochise County, Arizona

Conclusions

To date, hundreds of cyanide leach assays, some 204 cyanide bottle rolls and 34 cyanide column leach tests, some to 180 days, have been performed upon various Commonwealth ores. Results have consistently showed leaching characteristics indicative of potentially heap leachable material. Recoveries varying from less than 50% to over 90% of the contained gold depending upon rock type and sizing. Silver recoveries have generally been low, only occasionally exceeding 40% and averaging approximately 30%. Testing to date has generally not focused on optimizing silver recovery.

With continued testing and refinement of the leach process system, Harvest Gold management believes that an **average of 82% of the gold and at least 32% of the silver** in the Commonwealth reserve can be recovered through heap leaching. Leaching will be conducted on predominately 1/2" non-agglomerated material, with selected portions (<30A%), as defined by rock type and blasthole assay leaches, fine crushed to minus 8 mesh, agglomerated with two to four pounds of Portland cement, cured and remixed with the coarser ore. ***Chemical consumption will be low, at less than 0.5 pound of cyanide and less than 1.5 pounds of lime per ton of ore.***

Old Mine Operations

The first milling operation at Commonwealth was established in 1898 by John Brockman, D.M. Barringer and R.A.F. Penrose of the Commonwealth Mining and Milling Company. Little information is available, however, the first operation was reported to be a 30 ton-per-day pan amalgamation mill, later increased to a 200 ton-per-day stamp and roll mill configuration. Recovery was reported at **83% of the contained precious metals including both gold and silver.** The amalgamation tailings were later retreated with cyanide or shipped off to a smelter.

In June of 1900, this early mill burned and was replaced with a new 80 stamp, 240 ton-per-day mill in January 1901 which operated continuously until mid-1905. From 1905 on to 1910, a 250 ton-per-day cyanide plant was in operation on the old amalgamation

tailings, and in 1906 this included mine-run ore. No information has been located on the details of this plant.

In 1910, the Montana Tonopah Mining Company constructed a new cyanide plant which operated into 1917 on -35 mesh ground ore. From 1917 until 1927 some 115,000 tons of ore was shipped directly to the Douglas copper smelter as a high silica smelter flux. No significant production, other than intermittent lessors was done after 1927.

Total mine production is difficult to estimate, however credible reports suggest that some 122,641 ounces of gold and 12,887,096 ounces of silver were recovered by milling operations between 1895 and 1929. This recovery was from approximately 940,000 tons of ore. An average mill head grade was, therefore, 0.131 ounce of gold and 13.71 ounces of silver per ton.

Previous Metallurgical Testing

Several generations of metallurgical testing have been conducted at Commonwealth. In December of 1969, Basic Metals, Inc. investigated the Commonwealth mill tailings and defined about 808,000 tons grading 0.012 ounce gold and 2.48 ounce silver per ton. Applying this sampled tail grade against the estimated mill head, defined above, yields **a postulated old mill recovery of 90.8% of the gold and 81.9% of the silver.** A screen analysis showed that 95% of this tail material was minus 35 mesh with a relatively uniform distribution of values amongst the various screen fractions. Froth flotation of the tails was unsuccessful, as was gravity concentration. Two large cyanide bottle rolls of the **tailings yielded 47% and 60% of the remaining gold and 25% and 40% of the silver.**

In mid-1975 Platoro Mines, Inc. conducted 36 laboratory tests for gold and silver recovery from four underground composite samples and one old tailing sample. On the tailings, grinding to -200 mesh with flotation yielded 50% or the gold and 25% of the silver, while cyanidation gave better than 50% of the gold and 30% to 35% of the silver. On ore samples, finer grinds **(<200 mesh) always yielded +92 % of the gold and generally 63% to 71% of the silver**. They believed that approximately one ounce of silver per ton was locked into the ore and difficult to extract.

In late 1983, Santa Fe Mining, Inc. contracted with Mountain States Research and Development to conduct cyanide and flotation tests. Santa Fe delivered some 630 pounds of -4 inch run of mine, near surface material grading 0.013 ounce of gold per ton and 9.8 ounces of silver per ton. The ore values evenly distributed among the various sample size fractions. Four thousand gram bottle rolls on -2 inch, -1 inch, - 1/2 inch and -1/4 inch, and 10% +100 mesh material showed widely varying results. In 72 hours, **finer material yielded 85% of the gold but only 22% of the silver**, while the -1/4 inch material gave 62% of the gold and only 13% of the silver. Coarser size recovery was very poor (<20%). Flotation test results were also poor.

In early 1989, Westland Exploration contracted with KD Engineering of Tucson for a series of six preliminary bottle roll leach tests on drill cuttings from Westland's initial phase of drilling on the western gold-rich zone. Here **the gold and silver recoveries averaged 78% and 34%** respectively with *average cyanide consumption of 0.5 pounds per ton and average lime consumption of 2.8 pounds per ton.* Westland also shipped numerous drill samples to Barringer Laboratories, Inc. of Sparks, Nevada for gold and silver bottle leaches to determine the ratio of extractable gold and silver to total gold and silver. The initial batch showed an 79% gold and an 81% silver ratio. While two later batches yielded an 85% and 82% ratio for gold and silver.

In mid-1989, Westland had additional composites tested by METCON Research, Inc. of Tucson, Arizona. Six drillhole composites from the western portion of the deposit, each ground to -10 mesh in 500 gram bottle rolls for 72 hours, yielded gold recoveries from 38% to 95% and 2% to 70% recovery of the silver. The composite **recovery average was 78% and 38% for the gold and silver.** *Cyanide and lime consumption were 0.81 and 4.1 respectively.*

In early 1990, Placer Dome submitted four drill hole composite samples for testing at the Golden Sunlight Mines, Inc. lab in Whitehall, Montana. The samples ranged from 6 five-foot intervals composited, to 10 five-foot drill cutting samples composited, with composite values ranging from 0.016 to 0.161 ounce gold per ton and from 0.46 to 3.05 ounce silver per ton. Cyanide bottle roll tests with 2 pounds of cyanide per ton and an 11.0 pH done on coarser **material (25%+100 mesh) yielded from 85 to 94% gold recovery and 84% to 92% silver recovery in 48 hours** with approximately *1.2 pounds of cyanide and 5 pounds of lime consumed.* Finer grinding to 200 mesh improved recovery slightly, but generally 0.003 ounce gold per ton and 0.15 ounce of silver per ton always remained unrecoverable.

In early 1991, ASARCO investigated Commonwealth. Three drill hole composites were sent to METCON. All samples were crushed to -10 mesh and 500 grams were bottle roll leached for 72 hours. Recoveries ranged from 58% to 99% of the gold and 12% to 39 % of the silver. The average recovery **was 77% of the gold and 30% of the silver.** *Cyanide consumption was 1.3 pounds and lime was 2.7 pounds per ton* with an 11 pH. Lower grade head samples generally yielded the poorer recoveries. They also noted that high grade gold values leach out very quickly. A second batch of composites leached for 120 hours gave **84% gold extraction and 52% silver recovery** albeit with cyanide consumption at *0.9 pound and lime at 2.9 pounds per ton* with a 10.8 pH.

In mid-1991, Chemgold, Inc., a subsidiary of Glamis Gold, Inc. performed bottle rolls on each of three ore bearing rocks at Commonwealth: the Bisbee Sandstone, the Upper Andesite and the Rhyolite Breccia. Approximately 450 pounds of material was collected, predominately from the western portion of the deposit. Each rock type was subjected to three bottle rolls at +4 mesh, -4 +10 mesh and -10 mesh. **The Bisbee samples leached well for gold after 72 hours yielding 72%, 89% and 88% respectively all from a head grade of 0.037 ounce gold per ton.** Silver showed no leach at all. The Upper Andesite was low grade with an average assay head of 0.006 but a calculated head of 0.021 ounce per ton gold

and approximately 1.42 ounce per ton silver. **Gold leached 37% to 54% with about 24% of the silver**. Lastly, **the Rhyolite leached poorly, yielding an average of only 21% of the gold and 13% of the silver**, the best recovery by far at -10 mesh. Two 12-inch, 10-foot columns were then loaded and leached at -1.5 inch material and 1.5 to 2 inch material. Unfortunately, only four days of leaching data is available however it was noted that substantial gold leaching occurred very quickly.

In late 1991, Western States Minerals Corporation did extensive drill and metallurgical testing at Commonwealth. METCON Research was retained by Western States to conduct a large program of bottle rolls on drill hole composites. On some 18 tests with values ranging from 0.016 to 0.17 ounce gold per ton, gold recoveries ranged from 38% to 96% with **an average recovery of 77% of the gold with silver recovery from 24% to 58% (average 37%)** with a low *0.9 pound cyanide and 2.9 pound lime* consumption. The material was both 1/4 inch and -10 mesh for a 1000 gram charge. The best recoveries were from higher grades crushed to -10 mesh. Lower grade samples generally had lower recoveries with about 0.003 ounce gold per ton the minimum tail value. Further, they determined that coarse free gold is not an important constituent of the ore and cyanide solubility is approximately 88% of the fire assay on average.

In mid-1992, Westland had METCON conduct two 96 hour bottle rolls on -3/4 inch material, one of andesite and one of Bisbee. Recoveries were **38% of the gold and 43% of the silver in the andesite, verses 88% of the gold and 20% of the silver in the Bisbee.** *Cyanide consumption averaged 0.45 pound and lime was 4.5 pounds per ton.*

In late 1992, Consolidated Nevada Goldfields, Inc. shipped four small sample composites (3 from surface exposures and 1 from underground) to McClelland Laboratories, Inc., of Reno, Nevada and to CNG's Barite Hill operation in South Carolina. Two additional, large scale underground bulk samples were also sent to McClelland Laboratories, Inc. All these samples were to be used to determine precious metal recovery, recovery rates, reagent requirements and sensitivity to feed size. The samples sent to Barite Hill were subjected to various 96 hour bottle rolls at -5/8 inch -3/8, -1/4 inch, and -10 mesh. **Gold recoveries were 25% to 56% at -5/8, 35% to 39% at -3/8, 36% to 69% at -1/4 inch and 55% to 63% at -10 mesh.** Column leaches of approximately 70 pounds **-5/8 material yielded from 26% to 56%** of the gold depending upon rock type and average grade. *Cyanide and lime consumption was 0.3 pound and 5 pounds respectively.*

At McClelland, two feed sizes were tested 80% -5/8 inch and 100% - 10 mesh. Bottle rolls on 5/8 inch surface samples yielded only **25% gold and 24% silver** recovery in 120 hours suggesting that a surface oxidation product retards precious metal recovery. The underground samples gave **44% to 60% gold recovery and 7% to 29% silver recovery in 120 hours at the 5/8 inch size**. All the 10 mesh samples, including surface samples, yielded **60% to 87% of the gold and 22% to 50% of the silver** in 120 hours. The majority of metal recovery was rapid, however data indicated that a longer leaching cycle would yield better recovery. *Cyanide consumption was low at from 0.1 to 0.4 pound cyanide per ton with moderate lime consumption at from 3 to 11 pounds per ton.* Column tests on the two

underground bulk samples, sized at 80% -5/8 inch and grading 0.021 to 0.070 gold and 0.69 to 3.56 silver per ton, gave recoveries 20% higher than the bottle rolls. These tests using 6 inch diameter, 8-foot columns each with about 115 pound of material, **gave 68% and 71% gold recovery and 19% and 36% silver recovery** after 30 days, but were still increasing slowly at premature termination. *Cyanide consumption was approximately 2 pounds per ton, with lime consumption at 4 pounds per ton* to hold a +10.3 pH value. In both tests lower recovery was prominent on the +10 mesh fractions of the samples. McClelland final conclusion was that the Commonwealth ore was amenable to heap leaching at coarser sizes.

Harvest Gold Metallurgical Testing

Harvest commenced metallurgical tests in September 1994. Kappes, Cassiday and Associates, Inc. of Sparks, Nevada were retained to provide testing services. Initially two near surface and four deeper underground samples were collected from crosscuts in the old mine workings. Three samples were derived from the eastern end of the 3rd mine level and one from the eastern end of the 6th level. All head grades were intentionally low, running from 0.015 to 0.042 gold and 1.45 to 3.08 silver per ton. This approximates the average expected minable grade of the deposit as a whole, or 0.026 ounce gold and 2.29 ounce silver per ton, equaling about an 0.035 recoverable gold equivalent grade. Large 5000 gram bottle rolls were performed on all samples at -5/8 mesh material. The two near-surface samples were not expected to leach well due to near-surface oxidation problems. Only about **34% of the gold** was recovered in 96 hours. Two of the underground samples to the far west of D shaft on the 3rd and 6th level gave an average **of 95% gold recovery** while the two lying to the east side of the deposit in siliceous rocks near the D shaft on the 3rd level gave an **average 43% gold recovery**. **Silver recoveries were low from 11% to 25%.** *Cyanide consumption was low at about 0.6 pounds per ton with lime at approximately 1.3 pound per ton* at 10.3 pH.

In mid-October 1994, the two near-surface samples were combined into a single 5-foot, 3-inch diameter column for leaching at 100% -10 mesh. The two low-leaching, east side 3rd level samples were also combined into a 5-foot, 3-inch column test at 100% minus 10 mesh. Ten mesh is regarded as the smallest range suitable for commercial heap leaching. Kappes, Cassiday economic studies have shown that operating costs are increased to approximately $2.30 per ton by the necessary finer crushing and the attendant cement agglomeration cost. Agglomeration tests indicated that 4 pounds per ton of Portland type II cement was adequate for proper binding of the ten mesh material. After 30 days of leaching, **68% and 78% of the gold had been recovered while only 15% to 19% of the silver was recovered.** Kappes estimated *field cyanide consumption at only 0.3 pound per ton, with 0.4 pounds of lime per ton of ore due to the usage of cement.*

The two good bottle leaching samples from the western 3rd level and the 6th level were each placed in separate -5/8" columns 6 inches in diameter and 5 feet high. The 5/8" material showed **84% and 93% gold recovery** after 42 days of leach time. **Silver**

recoveries ranged from 20% to 24%. *Cyanide consumption was again estimated at a very low 0.33 pound per ton with approximately 1.2 pounds of lime.*

In March 1995, an additional three underground bulk samples aggregating approximately 1000 pounds was delivered to Kappes, Cassiday for treatment under identical laboratory conditions with an eventual goal of maximizing silver recovery. Two of the three were oxidized samples collected from shallow underground workings to better define the nature of surficial oxidation and local silica encapsulation on a minority portion of the ore reserve. Initial bottle rolls for gold recovery were completed on all three samples at 5/8", minus 10 mesh and minus 100 mesh. A near-surface siliceous area grading only 0.011 gold and 1.64 silver yielded 45.5% of the gold and 12.6% of the silver at 5/8", but yielded **81.8% of the gold and 24.7% of the silver at - 10 mesh.**

Two samples of average grade were collected approximately 50 feet and 120 feet below surface in the vicinity of C Shaft. On the 50-foot sample, the 5/8" leach gave only 33.3% of the gold and 11% of the silver in 48 hours. The 10 mesh yielded 55.6% and 14.8% respectively, similar results to the near-surface samples, while the minus 100 mesh yielded 93.1% and 38.7%. The deeper, less oxidized sample showed excellent leach characteristics. A 48-hour 5/8" leach gave **82% of the gold and 35% of the silver.** In all cases, *cyanide consumption was very low with equally low lime usage.*

Atlas Precious Metals Metallurgical testing

In late 1995, Atlas Corporation, through its subsidiary Atlas Precious Metals, Inc. began detailed evaluation of the Commonwealth Property. Twelve (12) bulk samples were taken from surface and underground workings and two (2) large diameter composite core samples were submitted to Kappas, Cassiday & Associates, Inc. ("KCA") of Reno, Nevada. KCA was selected by Atlas due to their previous Commonwealth involvement through Harvest Gold and their international expertise on gold and silver heap leaching.

The aggregate bulk sample weight equaled some 5,275 pounds, and together with 310 pounds of core yielded approximately 5,585 pounds (2.79 tons) of deposit representative sample material. Four sample sites in rhyolite, including two from the surface, gave 1964 pounds of refractory rhyolite. Five sites, one from core and 4 from underground provided 1795 pounds of the favorable leaching Lower Andesite. Bisbee was represented by 878 pounds from two underground sites, while vein material was gathered from one site on each of the Main and North Veins for some 777 pounds. Lastly, 174 pounds of Upper Andesite was gathered from core.

Bulk material was composited into eight separate samples. Three rhyolite composites were made of low (.006 Au) medium (.017 Au) and higher grade gold (.030 Au), each with about 3 ounces of silver per ton. The Lower Andesite was combined into two composites each of middling gold grade (+/- 0.024 Au) with moderate Ag grade (2.3 and 1.5 Ag). Vein

and Bisbee samples were each composited into their respective samples. Vein was above average in both gold and silver (.065 Au, 4.1 Ag), while the Bisbee composite was high gold (.049 Au) but low silver (0.52 Ag). Upper Andesite was limited in quantity with very low gold (0.004 Au) and high silver (3.76 Ag). All samples were crushed to 1/2 inch prior to sampling, however different prep procedures were used upon the varying rock types.

Sixteen weighted screen assays, and 18 regular head assays were completed on 34 versions of the composited samples. Remarkably, both gold and silver are relatively evenly distributed throughout the size scale with some preference for 3/8" to 1/4" material and -65 mesh for gold only. Assays were always one assay-ton fire assays which were sent out to two independent commercial laboratories.

Portions of Rhyolite, Lower Andesite and Bisbee were sent out for petrographic study, as reported below. Similar portions were also sent out for acid-base accounting. Sulfur contents in all samples was almost nil. No acid generation potential was found while some acid neutralization properties were present. The pH of pulverized pastes ranged from 7.99 to 8.60. Bisbee showed the neutralization equivalent of 158 $CaCO_3$ tons per 1000 tons of rock, while Rhyolite and Lower andesite were but 10 and 16 tons respectively while vein was at 17. No acid problems will be encountered.

Equal 20 kilogram portions of composited and 1/2" crushed Rhyolite, Upper Andesite and Bisbee were sent to Pittsburgh Mineral & Environmental Technology, Inc. lab for petrographic examination. PMET conducted x-ray diffraction, SEM_EDX scans, gravity separations, SEM microscopy and photomicrography. As could be expected, Rhyolite showed a predominance of primary and secondary silica as quartz with moderate amounts of K-feldspar and trace quantities of calcite, sericite, vermiculite, secondary copper sulfides, secondary silver sulfides and occasional pyrite and galena. Iron oxides (pseudomorphs after pyrite) mostly as hematite with lesser goethite and limonite together with moderate amounts of manganese oxides are present. FE-MN particle size ranged from <1 to a maximum of 150 microns with a 3 to 20 micron average. Porosity was from 20% to 25% but exhibited some silica encapsulation.

The Andesite possessed much higher porosity and more iron oxides, with goethite and limonite greater than hematite. Amorphous jarosite and abundant manganese oxides were also present. Rock matrix was similar to the Rhyolite with less silica. FE-MN particle size ranged from <1 to a maximum of 500 microns with a 10 to 30 micron average. Porosity was higher than Rhyolite without significant silica encapsulation.

Bisbee Sandstone contained abundant iron-bearing clay with a tuffaceous-calcareous matrix. Visible organic matter was found widely scattered. Minor K-feldspar, mica, and other clays were present although manganese and iron were noticeably less than the previous samples. Calcite was locally abundant. FE-MN particle size ranged from <1 to a maximum of 400 microns with a 5 to 15 micron average. Porosity was much higher than the Rhyolite.

Gold was not easily found in the Rhyolite which had a head grade of 0.006 oz Au/ton and 3.03 oz Ag/ton. Andesite and Bisbee (head grades 0.028 oz Au/ton & 2.32 oz Ag/ton and 0.049 oz Au/ton & 0.52 oz Ag/ton) where more useful for gold analysis. All samples contained some coarse gold ranging from 65 to 150 mesh (1700 to 3900 microns). These particles are large enough to cause sampling problems and will require long cyanide leach exposure. Finer gold (<30 microns) was found in direct association with iron oxides suggesting that gold-bearing pyrite may have been the source mineral. Only minor silver (<10%) was found within the gold matrix as electrum. An iron oxide coating within a dense silica matrix may retard cyanide dissolution for part of the gold ores. High pressure roll grinding may assist in gold and silver exposure by micro fracturing the dense matrix.

Acanthite (low temperature silver sulfide) was identified in all samples, as was silver-bearing manganese oxides. Silver sulfides account for about 65% to 75% of the contained silver at an average particle size of 20 to 65 microns (~50% of the sulfides) and a similar portion (~50% of the silver sulfides) at much less than 20 microns. Silver minerals are in intimately intergrowth with iron and manganese oxides, as well as the siliceous gangue. The ultrafine silver particle size complexly intergrown with iron oxide encapsulation could retard cyanidation effectiveness. Little silver was found with gold, lead or copper except when accompanied by manganese oxides which are unfortunately refractory to cyanide.

Gravity separation techniques were not successful in concentrating the precious metals, with the majority of gold reporting to the -400 mesh slimes. Upwards of 40% of the silver was in the slimes confirming the ultrafine particle size. Conclusively, PMET pointed out that although up to three quarters of the silver was in leachable silver sulfide form, encapsulation by iron oxides and silica will hinder high recovery, while that silver associated with manganese oxides will remain refractory. Most of the gold will be accessible to solution upon finer, high pressure crushing.

Selected Rhyolite samples, visually estimated as being the most difficult rocks to crush, were sent out for Bond Abrasion and Bond Impact tests. Fifteen (15) rocks were used for impact testing by MacPherson Consultants of Golden, Colorado. The impact results gave 10.08 kWh/st and ranged from 3.3 to 23 foot-pounds per inch (average 9.38 Ft-Lb/in). The abrasion testing indicated a fairly abrasive rock with an index of 0.3949. Other rock types, with the possible exception of vein material, will be more amenable to crushing than the Rhyolite.

A few selected larger rocks were kept back for specific gravity determinations. Twelve larger Rhyolite rocks yielded an average 2.475 gr/cc (12.94 cu ft/ton). Sixteen Lower Andesite rocks equaled 2.468 gr/cc (12.98 cu ft/ton), while 15 smaller core samples averaged 2.334 gr/cc (13.72 cu ft /ton). Ten Bisbee's showed 2.365 gr/cc (13.55 cu ft/ton). Twelve Vein rocks gave 2.445 gr/cc (13.10 cu ft /ton). Seventeen Upper andesite cores yielded 2.357 gr/cc (13.59 cu ft / ton). Upper Andesite should have been heavier than Bisbee, similar to the Lower Andesite. Assuming that smaller cores are less reliable than larger rocks, using the

Lower Andesite as a guide, then the Upper Andesite may equal about 2.49 gr/cc or about 12.85 cu ft /ton.

Multi-element analysis of several (14) ore samples yielded no surprises.

Element	High	Low	Average (in PPM or %)
Cu	152	13	59
Pb	414	15	133
Zn	612	91	284
Cd	4.2	0.6	1.8
Bi	<5	<5	<5
As	242	<10	88
Sb	50	<5	<5
Hg	1.044	0.162	0.571
Fe%	4.6	0.93	1.95
S%	<.02	<0.02	<0.02

Three bottle rolls were performed on each composite at -100 mesh (500 gram samples), and at -8 mesh and -1/2 inch crushes (10,000 gram samples). Coarse samples were rolled only intermittently to prevent attrition. Roll duration was 4 days. Three Rhyolite bottles at 100 mesh gave an **average of 87% extraction of gold and 50% extraction of silver** *with a 0.26 pound cyanide and a 3.3 pound lime consumption.* One Lower Andesite 100 mesh bottle yielded **93% of the gold and 52% of the silver** *with a 0.91 pound cyanide and 3.2 pound lime consumption.* The one 100 mesh Bisbee bottle gave up **95% of the gold and 25% of the silver** *with a 6.9 pound cyanide and 5.6 pound lime consumption, while the* one 100 mesh vein sample leached out **97% of the gold and 70% of the silver** *with a 0.7 and 4.0 cyanide and lime consumption respectively.*

At 8 mesh, the Rhyolite gave an **average of 69% of the gold and 29% of the silver** *with a 0.33 pound cyanide and 2.1 lime consumption,* while two Lower Andesite bottles at 8 mesh gave an average of **81.5% of the gold and 32.5% of the silver** *with a low consumption of cyanide and lime at 0.38 pound and 2.4 pounds respectively.* The Upper Andesite bottle (with a low 0.004 gold head) yielded **40% of the gold and 36% of the silver** *with a 0.36 pound and 2.4 pounds, cyanide and lime rate.* Vein at 8 mesh gave ***75% and 38% of its gold and silver*** *with a 0.46 pound and 2.4 pound cyanide and lime consumption.* Lastly, Bisbee had **91% gold and 18% silver extraction** *with 0.36 cyanide and 3.8 lime usage,* although the silver head grade was only 0.52 ounce Ag per ton..

Testing at 1/2" was not successful with Rhyolite yielding an average recovery of 37% of the gold and 13% of the silver with very low consumption rates. Lower Andesite was favorable with an average of **66% of the gold and 22% of the silver** *with 0.56 cyanide and 1.5 lime.* Upper Andesite gold-silver recovery was 40% and 32% respectively with 1.6 and 2.6 pounds cyanide and lime respectively, but the gold head grade was low. The Vein at 1/2" yielded only 51% Au and 16% Ag with low consumption rates, while Bisbee gave 84% and 13% with 0.36 and 3.2 pounds of consumption.

Tail screen analysis of the bottle rolls showed that both gold and silver leach from various size fractions relatively equally. Both head and tail screen assay comparisons show somewhat similar precious metal range distribution, suggesting almost uniform metal dissolution regardless of particle size.

Agglomeration tests were run on two-kilogram samples for each of the crushed sizes using type II Portland cement. After a 24 hour cure, samples were placed in 3-inch columns for 72 hours of simulated leaching. Ore height, agglomeration stability and percolation characteristics were recorded. None of the rock types at 1/2" required agglomeration, always preserving stack height and good percolation (from 2.2 GPM /Ft^2 to 5.8 GPM /Ft^2). At 8 mesh with Rhyolite, stack height remained constant, but percolation rates were generally less than 1.0 GPM /Ft^2 but were increased four-fold with 5 pounds of cement per ton. Greater cement use increased percolation only marginally. Bisbee at 8 mesh leached very poorly without agglomeration, but increased 10-fold with 5 pounds of cement. Similar although less dramatic results were found with 8 mesh Lower Andesite and Vein. No significant pellet breakdown was noted on any agglomeration test.

Lastly, 22 columns were set up on the 34 Commonwealth composites. For the first 90 days all columns were continuously drained drip leach tests. Flow rate was calibrated at from 0.004 to 0.006 gallons per minute per square foot of column surface, similar to a production heap. Leach solution and "barren" solution was monitored for pH, NaCN, Au and Ag with an occasional Cu test. Activated carbon was used to extract gold and silver from solution. Additional sodium cyanide was added to maintain solution at target levels.

Five columns each of Rhyolite at 1/2" and -8 mesh were assembled from three Rhyolite composites. Three columns each of Lower Andesite at 1/2" and -8 mesh were assembled from two composites. One 1/2" and one 8 mesh column was assembled for each of the Vein, Bisbee and Upper Andesite rock types. All 8 mesh columns were agglomerated with 4 pounds of cement and cured for 72 hours prior to solution exposure. All but 6 columns were terminated at 91 days. One was terminated at 128 days. The remaining columns were subjected to weekly leaching and draining to mimic actual heap operation from day 92 to day 183. Results are best reviewed in table form below. Tables 1 & 2 portray Gold at 8 mesh and 1/2" crush, while Tables 3 & 4 present Silver at 8 mesh and 1/2" crush. Note that days of leaching are defined and average rock type recovery is summarized in the final column.

Column leach results have consistently shown rapid gold recovery in the first 5 days, ranging from about 50% to 75% of the total contained gold and 15% to 25% of the silver. By the 25th day virtually 4/5 of the recoverable gold and silver has been dissolved and is recoverable. Significantly, long term leaching (i.e. more than 30 days) provides a further 10% to 20% of additional recovery at the rate of a few percent per month. Such extra recovery can be fully expected under sustained heap leach operations whereby ore heaps and liners are reused with additional ore lifts.

Most columns were terminated at 91 days, however, regardless of crushed size, both those terminated early and those still remaining at 183 days show continuing metal recovery, albeit generally at very slow rates of 0.5% to 1% per month. This suggests that earlier columns by other workers, particularly those terminated after just 30 days may not have give the full picture of possible recovery on the Commonwealth ores.

Column leaches almost uniformly exceeded the expected recovery by size, as indicated by the bottle roll tests, in some cases by a significant margin. Bottle roll tests seem to under estimate recovery due to their shortness of duration regardless of the agitation aggressiveness. Correspondingly, their results must be adjusted upward to achieve a satisfactory prediction of long term column results.

Occasional bursts of gold recovery suggest that encapsulated or isolated gold may be liberated after extensive leach exposure. Several columns which had shown virtually no additional metal recovery for a period of several days or even weeks, sprang to life with 2% to 5% additional recovery of gold in but a few extra days. Columns left running after 91 days were subjected to weekly intermittent leaching and draining with no other changes in variables or conditions. One can only assume that a small percentage of initial solution contact is still being established even after months of leaching has been completed.

Lastly, residual metal content is not a significant factor in gold recovery. Low grade ores leach almost as well as their higher grade counterparts. Similarly fast recoveries on 0.00X gold values mimic 0.0X curves. Perhaps a small unrecoverable gold value, probably not much in excess of 0.001 oz Au/ton and certainly not exceeding 0.005 oz Au/ton will remain in the rock.

Silver residual values are more problematic and are a significant factor varying from 30% to perhaps 60% of the total silver value. This converts to 0.5 to almost 2.0 ounce of silver per ton which is unavailable to heap leaching over the time frame studied. Manganese oxides lockup up perhaps 30% of the contained silver. Only fine grinding perhaps down to 100 mesh will liberate over 60% of the silver value to cyanidation. Correspondingly, gold recovery well exceeds 90% under such similar conditions.

The use of finer grinding in conjunction with a full scale carbon-in-pulp cyanidation plant should be considered in the final analysis of Commonwealth's best processing method. Recoveries exceeding 92% of the gold and perhaps over 70% of the silver are readily achievable in this fashion.

Table 1

as of 9/5/96

Column Leach tests for Gold at -8 Mesh Agglomerated

91 - 183 Leach days results - Kappas-Cassiday, Reno, NV

Rocktype	Rock ID	inch size	oz/t Gold	5	14	20	22	28	43	57	79	91	128	183	Last Increase	Average	
Bisbee	11,12	0.125	0.049		100%	100%				100%		100%	done		0%	100%	
L. And.	7,8,9	0.125	0.028							87%	86%	87%	done		0%	And Ave	
L. And.	7,8,9	0.125	0.028	75%	81%	82%	82%	83%	84%	85%	86%	86%	86%	88%	1%	87%	
L. And.	5&6	0.125	0.020	75%		80%		82%		85%		85%	done		0%		
Rhyolite	1	0.125	0.030				71%	70%	73%	73%	73%		74%	done	1%		
Rhyolite	1	0.125	0.030	62%	68%	70%	71%	70%	73%	73%	73%	74%	75%	75%	0%	Rhy ave	
Rhyolite	4	0.125	0.014				75%	79%	79%	79%	79%	80%	done		1%	83%	
Rhyolite	2,3	0.125	0.006				81%	83%	83%	86%	86%	87%	done		1%		Low head assay
Rhyolite	2,3	0.125	0.006				85%	83%	83%	89%	89%	91%	93%	98%	5%		Low head assay
Vein	14,15	0.125	0.065				85%	85%	85%	85%	86%	86%	done		0%	86%	
U. And	13	0.125	0.006		50%			87%		67%		100%	done		33%	100%	Low head assay

Table 2

as of 9/5/96

Column Leach tests for Gold at 1/2 Inch crush

91 - 183 Leach days results - Kappas-Cassiday, Reno, NV

Rocktype	Rock ID	inch size	oz/t Gold	5	14	20	22	28	43	57	79	91	128	183	Last Increase	Average	
Bisbee	11,12	0.5	0.049		100%	100%				100%		100%	done		0%	100%	How much ore in Bisbee & L. And.?
L. And	5&6	0.5	0.020	65%		80%		83%		85%		87%	done		2%		
L. And.	7,8,9	0.5	0.028							78%	80%	80%	done		0%	And Ave	
L. And.	7,8,9	0.5	0.028	56%	66%	69%	69%	70%	72%	73%	74%	75%	75%	77%	2%	81%	
Rhyolite	1	0.5	0.030				49%	50%	53%	54%	57%	56%	done		-1%		
Rhyolite	1	0.5	0.030				51%	53%	57%	58%	59%	59%	60%	63%	3%	Rhy ave	
Rhyolite	4	0.5	0.014				51%	50%	57%	58%	57%	61%	done		4%	59%	
Rhyolite	2,3	0.5	0.006				48%	50%	50%	53%	50%	54%	done		4%		Low head assay
Rhyolite	2,3	0.5	0.006				52%	50%	50%	56%	57%	58%	60%	60%	0%		Low head assay
Vein	14,15	0.5	0.065				65%	66%	68%	69%	71%	70%	done		-1%	71%	
U. And	13	0.5	0.006		33%			55%		33%		50%	done		22%	50%	Low head assay

Table 3

as of 9/5/96

Column leach tests for Silver at -8 Mesh Agglomerated

91 - 128 Leach days, results for Silver - Kappas, Cassiday, Reno, Nv

Rocktyp	Rock ID	inch size	oz/t Silver	5	14	20	22	28	43	57	79	91	128	183	Last Increase	Average	
Bisbee	11,12	0.125	0.52		22%		23%	21%		23%	23%	23%	done		0%	**23%**	Low head assay
L. And.	7,8,9	0.125	2.37				39%	40%	41%	42%	42%	43%	done		1%		
L. And.	7,8,9	0.125	2.37	33%	37%	38%	37%	38%	39%	41%	41%	42%	42%	43%	1%	And. Ave	
L. And.	5&6	0.125	1.47	25%		31%				35%		37%	done		2%	**41%**	
Rhyolite	1	0.125	3.49				31%	32%	35%	36%	37%		39%	done	2%		
Rhyolite	1	0.125	3.49				32%	32%	35%	36%	38%	38%	39%	40%	1%	Rhy. Ave	
Rhyolite	4	0.125	3.43				27%	27%	29%	30%	31%	32%	done		1%	**35%**	
Rhyolite	2,3	0.125	3.03				27%	27%	29%	30%	31%	31%	done		0%		
Rhyolite	2,3	0.125	3.03				27%	27%	28%	30%	31%	31%	32%	33%	1%		
Vein	14,15	0.125	4.09				40%	42%	45%	47%	49%	50%	done		1%	**50%**	
U. And	13	0.125	3.53		41%			42%		45%		47%	done		2%	**47%**	

Table 4

as of 9/5/96

Column leach tests for Silver at 1/2 Inch crush

91 - 128 Leach days, results for Silver - Kappas, Cassiday, Reno, Nv

Rocktyp	Rock ID	inch size	oz/t Silver	5	14	20	22	28	43	57	79	91	128	183	Last Increase	Average	
Bisbee	11,12	**0.5**	0.52		19%		23%	21%		22%	23%	23%	done		0%	**23%**	Low head assay
L. And	5&6	**0.5**	1.47	17%		22%		22%		27%		29%	done		2%		
L. And.	7,8,9	**0.5**	2.37				29%	30%	31%	32%	33%	34%	done		1%	And. Ave.	
L. And.	7,8,9	**0.5**	2.37	24%	27%	29%	28%	29%	30%	31%	32%	33%	34%	35%	1%	**33%**	
Rhyolite	1	**0.5**	3.49				13%	14%	15%	16%	18%	18%	done		0%		
Rhyolite	1	**0.5**	3.49				14%	15%	16%	17%	19%	19%	20%	21%	1%	Rhy. Ave.	
Rhyolite	4	**0.5**	3.43				12%	13%	14%	15%	16%	16%	done		0%	**18%**	
Rhyolite	2,3	**0.5**	3.03				11%	12%	13%	13%	14%	15%	done		1%		
Rhyolite	2,3	**0.5**	3.03				12%	12%	13%	14%	15%	15%	16%	17%	1%		
Vein	14,15	**0.5**	4.09				19%	19%	21%	22%	24%	24%	done		0%	**24%**	
U. And	13	**0.5**	3.35		32%			33%		34%		35%	done		1%	**35%**	

Rock-type influence

Three basic rock types have been identified at Commonwealth, each possessing distinctive leaching characteristics. These units, Bisbee Formation, Andesite and Rhyolite are readily identified in hand specimen and can be easily sorted out during the mining process. Vein material and Upper Andesite provide additional, lesser tonnage ore sub-types which seem to mimic Rhyolite and Lower Andesite respectively, with the exception that Upper Andesite contains significant silver values at the eastern end of the deposit, perhaps indicative of rock type position, as opposed to rock-type composition. Table 5 presents probable rock type recoveries as defined by the 1996 Atlas column tests.

TABLE 5

Expected Recoveries as indicated from 90 to 183 days of leach time
Weighted Metal Recoveries by Ore Types
Recoveries represent minimums as expected from results
Recovery Ore grades & Rocktype tonnages as per Atlas

			expected leach recovery 8 mesh			
Rock Type	Est % of Ore Tons	Adjusted Tons	Au	Ag		
Rhyolite	22%	23%	83%	35%	0.1879	0.0792
L. Andesit	34%	35%	87%	41%	0.3054	0.1439
Bisbee	25%	26%	90%	39%	0.2327	0.1008
Vein	6%	6%	86%	50%	0.0491	0.0286
U. Andesit	10%	11%	85%	47%	0.0909	0.0503
	96%	100%		8 Mesh	Average weighted Au Recov 87%	Ag Recovery 40%

			expected leach recovery 1/2" crush			
Rock Type	Est % of Ore Tons	Adjusted Tons	Au	Ag		
Rhyolite	22%	23%	59%	18%	0.1336	0.0407
L. Andesit	34%	35%	81%	33%	0.2843	0.1158
Bisbee	25%	26%	80%	23%	0.2069	0.0595
Vein	6%	6%	71%	24%	0.0406	0.0137
U. Andesit	10%	11%	78%	35%	0.0834	0.0374
	96%	100%		1/2 "	Average weighted Au Recov 75%	Ag Recovery 27%

The Bisbee Formation is generally a clean, fine to medium-grained sandstone with abundant silicification, fracturing and iron staining, best described as a quartz arenite. Some silica recrystallization is apparently present near quartz vein structures. Locally, pebble conglomerates, interbedded red mudstones, siltstones and sandy, calcareous mudstones may be present. Calcareous horizons are sometimes excellent ore hosts. Gold values generally leach well even at coarser sizes, averaging over 70%. Silver has behaved erratically, ranging from just a few percent to over 35%. No cyanicides are present. Atlas ran one column on Bisbee ore yielding over 90% of the contained gold but only 23% of the silver. Free gold and a very low silver head assay suggests that this sample was probably not representative of the whole of the Bisbee Formation. Upwards of 25% of the total mineral reserve, or more, if logical extensions are found, is contained in Bisbee rock. Much of the deposit's immediate

exploration potential also lies in Bisbee. Local mudstone and high clay areas may create permeability problems and may require agglomeration or mixing with some less fine-grained ores, but are a minor part of the stratgraphic section. Table 6 shows the effects of crushing cost and recovery optimization on all rock types.

TABLE 6

Crushed Rock Value and Optimum crush size for Commonwealth						
At $400 gold and $5.13 silver:			Average deposit grade:		0.028	oz Au
					2.01	oz Ag per ton
For all rock types, revenue differences between 1/2" and 8 Mesh recoveries is:						
	$1.30	in gold	$1.40	in silver	$2.70	in total revenue increase
For Rhyolite, revenue differences between 1/2" and 8 Mesh recoveries is:						
	$2.59	in gold	$2.27	in silver	$4.86	in total revenue increase
For L. Andesite, revenue differences between 1/2" and 8 Mesh recoveries is:						
	$0.62	in gold	$0.66	in silver	$1.28	in total revenue increase
For Bisbee, revenue differences between 1/2" and 8 Mesh recoveries is:						
	$1.20	in gold	$0.74	in silver	$1.94	in total revenue increase
For Vein, revenue differences between 1/2" and 8 Mesh recoveries is:						
	$1.68	in gold	$3.13	in silver	$4.81	in total revenue increase
For U. Andesite, revenue differences between 1/2" and 8 Mesh recoveries is:						
	$0.64	in gold	$1.25	in silver	$1.89	in total revenue increase
Weighted Recovery by Optimal Crush size						
If 8 mesh crushing costs an additional $2.20 per ton ($4.10 vs $1.90) then:						
8 Mesh			metal recovery			
Rhyolite	22%	23%	83%	35%	0.1879	0.0792
Vein	6%	6%	86%	50%	0.0491	0.0286
		28%				
1/2"						
L. Andesite	34%	35%	81%	33%	0.2843	0.1158
Bisbee	25%	26%	80%	23%	0.2069	0.0595
U. Andesite	10%	11%	78%	35%	0.0834	0.0374
		72%				
					Average weighted	
					Au Recovery	**Ag Recovery**
					81%	**32%**

The Andesite, found as several distinctive andesite horizons within the volcanic sequence, and is the most favorable ore host. Lower Andesite is known for its local concentrations of high grade gold values, while Upper Andesite seems to show lower gold values and high silver. This phenomena may be more related to the rock-type location rather than a compositional functional. Brittle fracturing and well dispersed quartz-carbonate vein fillings make for excellent non-agglomerated heap leach rock with higher than average grades. This is verified by coarse leaching characteristics that can easily exceed 85% of the contained gold of which more than half can be extracted in the first few days. No cyanicides

are present. Fortunately, a significant portion of the current Commonwealth reserve (~44%) is located within andesitic units.

The Rhyolite and its Vein rock sub-type is the most difficult and unpredictable rock for heap leach purposes. These highly siliceous rocks make up about 28% of the total reserve. Although it fractures well, gold grades are generally lower perhaps due to its non-reactive nature. Silver values are generally higher and sometimes quite refractory. No cyanicides are present, but locally, silica re-mobilization, manganese oxides, intense quartz veining and the attendant silica encapsulation problems may be encountered. Generally only a 55% to 65% gold recovery can be achieved at coarser leach sizes (+1/4 inch), however, local high-silica areas can be leached at -8 mesh with a 75% to 90% success rate, albeit at a higher cost per ton. Silver recoveries are poor at coarse sizes, rarely exceeding 20%. Like the gold however, an 8 mesh crush can yield from 33% to 40% of the contained silver. Sorting of poor leaching siliceous ore via visual determination or a quick cyanide bottle test of blastholes may be necessary during the mining process. This material, once sorted out and stockpiled separately, may then be batch roll crushed down to -8 mesh, agglomerated and remixed with coarser ore (andesite) for optimal leaching.

Most ores at Commonwealth leach well. Fully on the order of 72% of the total Commonwealth reserve should be leachable at 5/8" or 1/2" with little or no agglomeration. Through selective crushing and judicious mixing of divergent ores, an acceptable recovery rate can be expected. Pit observation can effectively segregate potentially poor leaching Rhyolite, Vein and perhaps high clay Bisbee without problem. Separate ore stockpiles will need to be maintained so as to provide a constant product to the leach pad. The final estimated recovery based upon weighted tonnage and grade is a minimum **of 81% of the contained gold and 32% of the silver** at an average crushing cost of about $2.52 per ton.

Alteration Influence

Primary and secondary alteration have significantly affected portions of the Commonwealth deposit. Local silica flooding is found both adjacent to Rhyolite host rocks and in the near surface environment. Such excessive silica in the Rhyolite is probably derived from the Rhyolite unit itself or, more unlikely, the Rhyolite was turned into a high silica rock by the influx of hydrothermal silica from an unknown source. Under either scenario, locally intense quartz veining and remobilized silica have partially encapsulated portions of the contained precious metals, yielding poor leach recovery. Finer grinding to minus 8 mesh has successfully liberated the available gold, albeit at an anticipated higher production cost. PMET has suggested the use of a high pressure roll crusher as the final crushing stage to intensely fracture the rock fracturing mineral grains to allow cyanide influx.

Fortunately, high silica, or poor leaching ores are generally found near-surface and at the eastern extreme of the developed deposit. These areas are also usually, but not always, high silver, low gold areas. Perhaps 15% to 20% of the total reserve will be affected by high silica flooding and will require finer crushing for successful leaching. Examples of this type ore are found just east of the C shaft at the surface and at depth on the 3rd level near the D

shaft. Sorting via quick cyanide-leach testing of blastholes would reveal problem ore allowing for segregation and separate processing before remixing on the leach pads.

Supergene processes have been active on the Commonwealth ores. Previous workers have cited variable evidence that supergene leaching and enrichment of both gold and silver can be found at Commonwealth. Horizontally oriented, high gold and/or high silver areas had been delineated during high grade underground mining operations of years past. The possible presence of such supergene ores would be predominately beneficial from a heap leaching standpoint. A previously remobilized precious metal molecule that has been redeposited in a fracture system by supergene processes is likely to be readily available for re-solution into a cyanide solution with a minimum of effort. Further, the blanket nature of supergene deposition localizes the metals across broad areas of fractured ground facilitating large tonnage, open pit extraction and providing greater ranges of predictability for reserve determination.

Unfortunately, at Commonwealth not all supergene ores are premium leach ores. As mentioned above, supergene silica remobilization is locally present, sometimes partially encapsulating metal occurrences. Additionally, upwards of 10% of the total ore occurrence may be influenced by refractory, near-surface, secondary supergene conditions unrelated to silica flooding. As indicated by recent bottle roll tests, supergene refractory oxidation extends below 50 feet but is apparently fully disipated prior to 120 feet below surface.

In the near-surface environment, say generally less than 100 feet below surface, some very unusual supergene minerals are present. Silver chlorides, bromides and other halides and native silver are not uncommon nor is secondary silica and carbonate. From the ubiquitous presence of poor leaching gold ore at the surface, perhaps a partial coating of gold by supergene minerals is common. Mineralogical studies have not yet attempted to define this near-surface phenomena, although test leaches, both bottles and columns, at minus 10 mesh have seemingly liberated the captive gold so as to make it available to the cyanide solution, albeit at increased costs. Continued metallurgical review will likely provide a solution to the near surface refractory problem.

HARVEST GOLD CORPORATION

COMMONWEALTH PROJECT

Cochise County, Arizona USA

A GOLD -SILVER HEAP LEACH PROPERTY

PRE-FEASIBILITY REPORT

November 8, 1994
revised April 11, 1995

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1.0 EXECUTIVE SUMMARY

In January of 1994, Harvest Gold Corporation, a Colorado corporation, acquired the Commonwealth Mine Property located in Cochise County, Arizona approximately seventy air-miles east of Tucson, Arizona. A warm climate is ideal for year-round mining operations and site access is by paved county road. Power and water are both available on site.

Harvest currently controls approximately 1020 acres of privately owned land, comprised partially of patented and unpatented mining claims (320 acres) and fee land (700 acres), held under five separate agreements. Harvest has an ongoing discussion with an adjacent property owner to add additional acreage to the project area.

The Commonwealth has been termed a low-sulfur, epithermal, Bonanza-type precious metal occurrence, modified and enriched by secondary weathering processes. Previous production from the old Commonwealth Mine totaled approximately 122,000 ounces of gold and 13 million ounces of silver. The majority of production was from high grade, bonanza-type epithermal gold-silver veins which occur in highly-fractured and faulted Tertiary volcanic rocks.

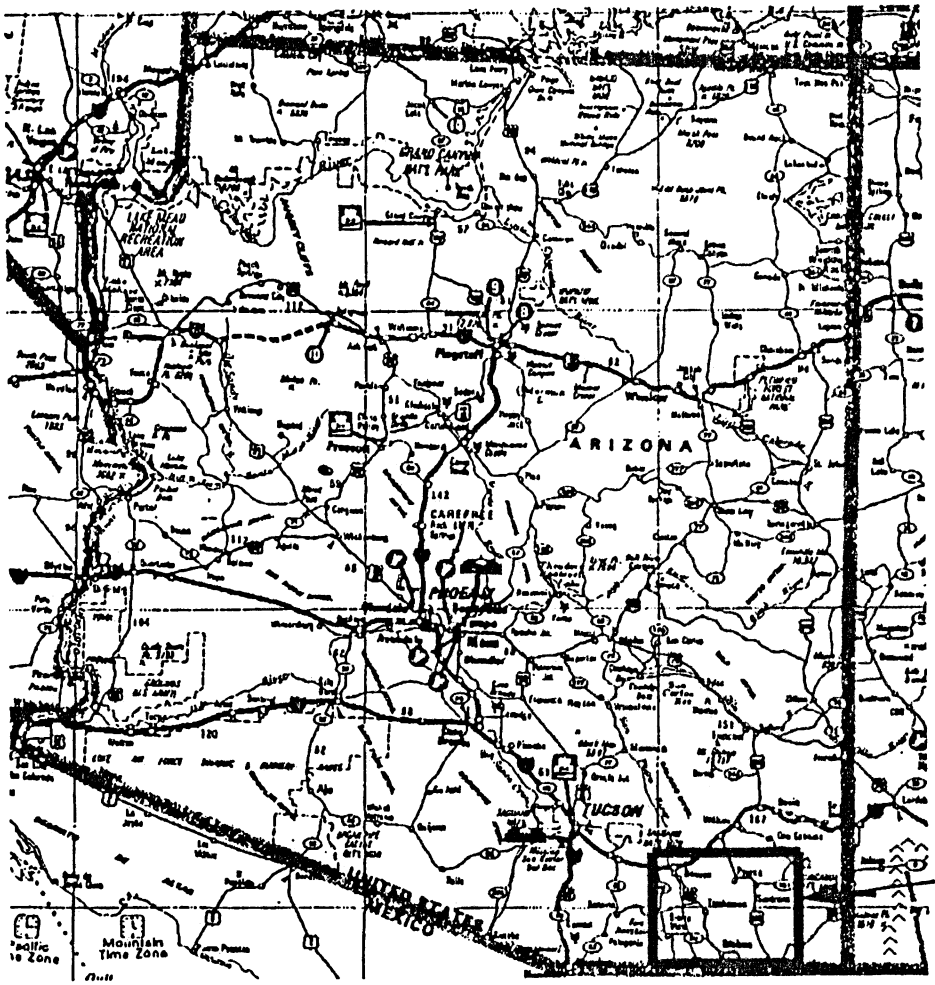
Harvest acquired the Commonwealth Property after several generations of exploration drilling. This drilling was concentrated on the western and eastern portions of the property. Harvest has calculated global mineral reserves of approximately 8.83 million tons grading 0.035 ounce gold equivalent per ton (including significant silver credits) with a 0.013 gold equivalent cutoff. Minable ore reserves approximate 7.7 million tons at a grade of .030 ounce gold and 2.08 ounce per ton silver (0.036 oz gold equiv.) using a 0.013 ounce gold equivalent cutoff. These reserves occur in an open pitable configuration with a 3.37 waste to ore ratio. Several independent reserve reports show higher grade albeit lesser tonnage's.

A fully operational Commonwealth Project is expected to yield an additional 5 million minable tons while other nearby prospects could yield additional significant reserves.

Extensive metallurgical tests on drill cuttings consisting of a long series of bottle roll tests yielded average gold and silver recoveries of about 78 and 36 percent respectively with low average cyanide consumption of <1.0 pound per ton and average lime consumption of <3.0 pounds per ton. These are favorable results for an anticipated heap leach project.

Required fill in exploration, metallurgical testing, permitting and design work necessary for final feasibility on a 7.7 million ton minable deposit (i.e. close to 280,000 equivalent ounces of gold) is expected to be completed within nine months of commencement. Funding requirements for completion of this feasibility analysis is estimated at $750,000. Upon completion of this final feasibility, production financing approaching $6.0 million will be capable of ore production at the rate of +1,100,000 tons per year to begin within fifteen months of constructive commencement of the program.

HARVEST GOLD CORP.
COMMONWEALTH PROJECT
ARIZONA



INSET AREA

2.0 PROJECT DESCRIPTION

2.1 *Location*

The Commonwealth Property is in central Cochise County (T.18 S., R.25 E., Sections 4, 5 and 8), about twenty-five (28) miles south of Willcox and eighty-seven (87) miles east of downtown Tucson. The old mine workings are located on Pearce Hill, one of several low hills which rise abruptly above the Sulphur Springs Valley. Collapsed stopes and old mill foundations on the north flank of Pearce Hill are readily discernible from a long distance. The property is less than a half mile south and west of curving US Highway 191 (formerly US Highway 666) about two (2) miles south of the community of Sunsites, now known as Pearce. Douglas, Arizona and Agua Prieta, Sonora, Mexico are approximately 45 to 50 miles south on Highway 191.

Map coverage is excellent. The US Geological Survey 7.5 minute quadrangle (1:24,000), **Pearce, Arizona** covers the entire property area. Additionally, the US Bureau of Land Management, Surface and Management Status Map, **Chiricahua, AZ-NM**, covers the area at a scale of 1:100,000.

2.2 *Geography and Weather*

Elevations vary from 4,320 feet above sea level on the valley floor at Sunsites, to over 4710 feet on the top of Pearce Hill. The base of Pearce Hill, at approximately the alluvial-bedrock contact, ranges from 4375 to 4410 feet above sea level. Pearce Hill is one of several local extensional fault blocks, exposed as erosional remnants isolated by widespread pediment surfaces common along the northern end of the nearby Swisshelm Mountains to the southeast. Individual hills generally have a northwesterly alignment, parallel with regional Basin and Range topography. Steep faces on southwesterly slopes suggests block fault tilting to the northeast. The 7000-foot Dragoon Mountains lie 7 to 9 miles west and south of Pearce, and are the source area for all local intermittent streams and occasional summer floods.

The climate is dry and temperate, virtually ideal for a year-round, heap leach mining operation. According to 30-year records kept at Pearce, annual precipitation averages about eleven and one half (11.5) inches annually, more than half as monsoon thunderstorms in July and August. Winter brings light rains and occasional light snows. The average annual snow fall is only 1.2 inches. Temperatures are generally mild in winter and hot in summer. Average summer highs approach 95 degrees F, with summer lows in the mid-60's. The late summer monsoon season raises the humidity to noticeable levels. Mid-Winter highs reach the low 60's while daily average minimums drop to about 29 degrees F in December and January. Fall and Spring are ideal shirt sleeve weather.

Vegetation is sparse. On hillsides only grasses and occasionally cactus or yucca are present. This yields moderately good rock exposures. Flat areas can be virtually barren to well vegetated with Palo Verde and other hardy bushes.

2.3 *Access*

Access to the minesite area is easy. The main access is via paved county road splitting off US Highway 191, about one mile south of Sunsites (now Pearce) Arizona. One mile directly south, the paved road intersects with a gravel county road, trending west up and over MiddleMarch Pass to Tombstone, Arizona about 32 miles distant. Continuing south the paved county road crosses the northwest corner of the claim block, turns west and terminates at the Pearce Elementary School. Heading south, instead of turning west with the pavement, places one on the county gravel road to the Courtland-Gleason mining district, lying about 12 miles south. This road provides easily access to the western portion of the Commonwealth claim block and the majority of the Galyen property lying south and east of Pearce Hill. Several dirt roads and tracks provide four-wheel drive access throughout the property.

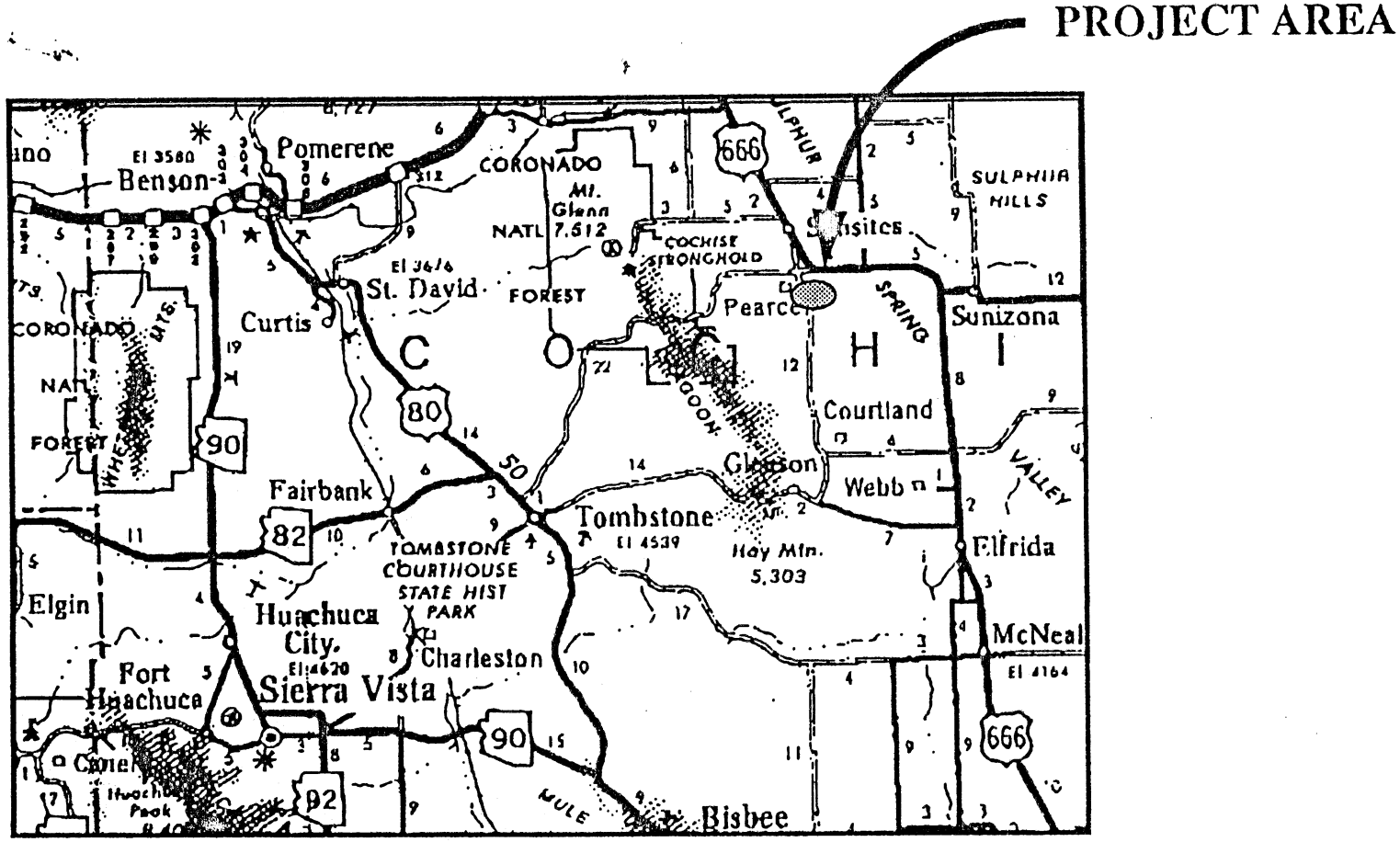
A Southern Pacific rail spur is available at the town of Cochise, about 14 miles north of the Property. An additional spur is available at the Arizona Electric power plant about 12 miles north, but this may not be available for private use. Formerly, the mine was directly served by a branch line of the Arizona and Colorado Railroad south down from Cochise toward Douglas, right across the property with a siding at the old mill site. This spur line was abandoned in 1932.

The Mine itself was originally developed via five shafts, the #1, A, B, C and D. Only the approximately 65 degree C and D Shafts are currently accessible, both on the eastern end of the old developed mine. The B Shaft is accessable below the 6th mine level. The non-production Brockman shaft allows access to the far west end of mineralization. All three surface shafts were partially rehabilitated by Westland Exploration in the early 1990's. Eight levels were originally excavated with some 24 miles of underground workings. The first and second levels are now only locally accessible from the shafts and are badly damaged by caving stopes. The 3rd level is well accessible via the C and D, as is the 5th and 6th. Supposedly, the 7th and 8th are accessible via the D shaft. Harvest personnel have not yet attempted to access the deeper levels of the C Shaft. The D Shaft 7th level has been explored by Company personnel, but is accessible with difficulty as the station has collapsed making the 8th level totally inaccessible. No surface facilities other than foundations remain.

Square set and shrinkage stopes used during operations were apparently unstable, even during actual mining. Most old stope areas are now inaccessible. Although vein areas are difficult to access underground, many crosscut workings, some cutting the primary vein structures are available for sampling.

2.4 *Power and Water*

Abundant electric power is available from the Apache Generating Station of Arizona Electric Power Cooperative, Inc., located approximately 12 miles north of the Commonwealth Mine. Sulphur Springs Valley Electric Cooperative ("SVEC"), an REA power distributor, has a 7200 volt transmission line through Sunsites and south across the Commonwealth Property. Service hookups of approximately 300 amps are installed at a wellhead and at the old Thetford



LOCATION MAP - COMMONWEALTH MINE

millsite. The line continues to the Pearce Elementary School with a stub branch up and over the east flank of Pearce Hill, ending at an old unused mill site area.

SVEC will construct new 7200 volt line at the rate of $35,600 per mile (the first 400 feet being free and additional line at $7.31 per foot). A monthly minimum charge of $221 per month will apply to all new industrial service, which with volume usage would approach approximately $0.067 per kilowatt hour.

Water is available from an old production well (the Thetford well) located on the northern portion of the property served by 3-phase power lines. A 408-foot 12-inch cased well holds both 15 and 3 horsepower pumps (the 15HP currently unusable) with the water level at 290 feet. Production capability is unknown. The underlying owner has the right to draw up to 3,000 gallons per day of domestic water from the system, but has not availed himself of that privilege for many years. A holding tank of approximately 3,000 gallons is on site with piping hookup of unknown condition from the Thetford well. The holding tank rests upon indicated mineral reserves and would likely be removed. Since the lowermost (8th level) Commonwealth Mine workings were reported in years past to be flooded, additional water sources could likely be developed at reasonable depths of 300 to 400 feet.

A second, 500-foot domestic well on the Galyen Property is served by a two horsepower pump at 400 feet on single phase power. Production characteristics for this well are also unknown. An old windmill well, located on the southerly portions of the Galyen Property in dense underbrush growth, suggests that a shallower water table is possible, fed directly from the nearby Dragoon Mountains to the west.

In October of 1994, Harvest retained Errol L. Montgomery & Associates, Inc., well known Tucson hydrologists, to evaluate the Commonwealth area for water development and environmental permitting requirements. Their report completed in January 1995 indicates that 24 wells have been drilled in the 9.75 square mile area surrounding the proposed minesite. Several of these wells were for mineral exploration purposes. All wells have been tabulated with results.

2.5 *Old Pearce Townsite*

Old Pearce was once home to some 2,500 residents in the early 1900's. It is now occupied by less than 25 people in about a dozen inhabitable structures just north of the mine site. Numerous old out buildings and abandoned facilities attest to its better years. The active Pearce Elementary School, consists of one old, and one newer brick structure, several temporary buildings and a large cinder block gymnasium. The school, originally founded in the early 1900's, has been in continual operation since. Its mascot name is "The Pearce Miners". The school had approximately 170 students in 1992 and serves all of Sunsites and the surrounding area. It partially occupies land donated by the ancestors of the current underlying claim owners, lying only about 700 to 800 feet north and west of a possible openpit boundary.

The old Commonwealth Mine and the majority of potential reserves are located immediately south and east of the village on the north and west flank of Pearce Hill. An old

store and the old post office lie at the Tombstone road junction about 1100 feet north of potential development. Two occupied residences are within 500 feet of potential open pit operations.

2.6 *Sunsites Townsite*

Sunsites, founded in the early 1960's, is a self-supporting, non-incorporated retirement community two miles north of Commonwealth. The Pearce Post Office moved to Sunsites as old Pearce was virtually abandoned. Sunsites has languished somewhat as a retirement community with only local agricultural development for employment. The town and surrounding rural area has some 1300 residents, and boasts of a monthly newspaper, a Bank One Branch, two auto part stores, an ACE hardware, three gas stations, several apartments, trailer parks, churches, miscellaneous businesses and cafes, plus a fine 18 hole championship golf course.

Natural gas pipelines from Southwestern Gas Company and propane from Ameri-Gas service the town. Telephone service is via the Valley Telephone Co-op. A concrete redi-mix plant is located about 11 miles north of the Commonwealth Property. Local tax assessments in 1990 were approximately $15.00 per $100 of assessed value. An 800-acre industrial park has no established businesses. Discussion meetings with local school board members and other "city fathers" have not given negative feedback as to potential mining activities.

3.0 LAND STATUS

Harvest currently controls approximately 1020 acres of land composed of patented and unpatented mining claims, and fee land at the old Commonwealth Mine and adjacent terrain. The Property is held under several agreements referred to as the Commonwealth and Galyen Agreements. Harvest has also held discussions with the property owner of the Blue Jeep and San Ignacio prospects that may have potentially commercial mineralization nearby. These discussions are ongoing. An agreement with this property owner would add approximately 1440 acres of claims to Harvest's property position at Commonwealth.

3.1 Columbia Resources, Inc. Agreement

On January 10, 1994, the Company acquired the rights from Columbia Resources, Inc. of Denver, Colorado, USA, to take an assignment of three agreements, including an option agreement to lease the Commonwealth Mine in Cochise County, Arizona, USA from three independent parties. On January 27, 1994, the Company exercised its option to acquire the Commonwealth leasehold interests and obtained assignments of three separate agreements covering the Property. In exchange for the agreement assignments, Columbia Resources, Inc. received: 1) $7,000 cash, 2) a guarantee by the Company that the underlying property holder payments would be made, or the properties returned, 3) an escalating payment schedule of cash payments commencing July 25, 1994 for $500,000 due over a 5 year period, 4) a 5% net profits royalty escalating to a 10% net profits royalty upon the Company's recovery of two times its invested cost, 5) a contract for $20,000 of senior level consulting activities to be provided by

Columbia management at the rate of $400 per day, and 6) the right to appoint one Board member of the Company for a two year period.

On April 5, 1994, Columbia appointed and the Company accepted Mr. Rudi Fronk, President of Columbia as a director of the Company. Also on April 5, 1994, Columbia and the Company agreed to exchange the first two cash payments owed to Columbia, aggregating $50,000 due under provision 3) above, for $20,000 cash paid to Columbia by the Company and 17,500 shares of the Company's Common stock, which has been delivered.

3.2 Commonwealth Agreements

Harvest's current ore reserves lie on patented ground leased from three individual parties. The leased ground includes:

1. Seven patented claims - 142.3 acres composed of the Sulphur Springs Valley, Ocean Wave, Silver Wave, North Bell, One and All, Commonwealth, Silver Crown claims.

2. One Patented millsite - 5 acres on the One and All Millsite.

3. One Unpatented millsite - 5 acres known as the Ocean Wave Millsite.

4. Seventeen Unpatented Lode Claims

   Lyle 1 thru 6 - BLM Nos. 50140 thru 50145
   Pan 8 thru 15 - BLM Nos. 50146 thru 50153
   Mamie V thru VII Nos. 128288 thru 128290

5. Four Unpatented Placer Claims

   Mamie I thru IV - BLM Nos. 50126 thru 50139.

The Property is leased under three separate agreements.

Corford Agreement Also known as the the Thetford agreement, stipulates that an eighty eight percent (88%) undivided interest is leased under a January 31, 1994 agreement for a 21-year period in exchange for escalating minimum advanced royalties of $37,500 each six months commencing January 31, 1994, progressively escalating to $125,000 each 6 months at the 84th month of the contract, until $2.5 million has been paid, plus a 3.52% gross royalty (a 4.0% gross royalty times an 88% undivided interest). The January 31, 1995 payment has been made. Once a total of $2.5 million has been paid, the property has been purchased and the royalty shall be reduced to a 1.76% gross royalty (a 2.0% gross royalty times 88%), which shall be further reduced to a 0.88% gross royalty (a 1.0 % gross royalty times 88%) once a total of $3.25 million has been paid. The COR-FORD property is subject to the following advance royalty schedule (of which $125,000 has been paid to date), which will be applied against future production royalty payments:

Due Date	Amounts	Cumulative
paid to date		$125,000
7/31/95	$50,000	$175,000
1/31/96	$62,500	$237,500
7/31/96	$62,500	$300,000
1/31/97	$75,000	$375,000
7/31/97	$75,000	$450,000
1/31/98	$87,500	$537,500
7/31/98	$87,500	$625,000
1/31/99	$100,000	$725,000
7/31/99	$100,000	$825,000
1/31/00	$112,500	$937,500
7/31/00	$112,500	$1,050,000
1/31/01	$125,000	$1,175,000
7/31/01	$125,000	$1,300,000
each 6 months thereafter	$125,000	

Breitner Agreement An eleven percent (11%) undivided interest in the Commonwealth Property is held by the Company via a 5-year Option to Purchase dated January 31, 1994, calling for semi-annual payments of $5,000. The January 31, 1995, payment has been paid. The Option to Purchase gives the Company the exclusive right to purchase the 11% interest (less a reserved 1% royalty in the interest conveyed, (equal to a minor royalty, 0.011%,on the whole property) for a total purchase price of $150,000 exclusive of the option payments.

Jessup Agreement Lastly, a one percent (1%) undivided interest is held via a 5-year, exclusive Option to Purchase dated September 17, 1993, calling for $500 semi-annual option payments non-creditable against a $10,000 purchase price. The May 17, 1995 payment has been made.

3.3 Galyen Agreements

Harvest also holds strategic land adjacent to the Commonwealth patented claims through a Lease and Option Agreement with L.A., & Francis Galyen and Seven Enterprises, Inc. all of Anderson, Missouri. The Galyen Agreement includes the following described real property situated in Sections 4, 5, 16 in the Turquoise Mining District, Township 18 South, Range 25 East, G&SRM, Cochise County, Arizona:

1. Patented Lode Mining Claims - 100% interest in four patented lode mining claims: the Arthur, Rainbow, Hornspoon and Silver Thread.

2. Fee land totaling approximately 700 acres:

Sec 4,	SE/4 of the NE/4	E1/2 of the SE/4
	SW/4 of the SE/4	SE/4 of the SW/4
	SW/4 of the NE/4	NW/4 of the SE/4
Sec 9,	NE/4 of the NE/4	W/2 of the SW/4
	NW/4	W/2 of the NE/4
Sec 16	NW/4 of the NW/4	

3. Unpatented Lode Mining Claims:

Pan 1, 2, 3, 24, 26, 29, 31, 36, 68 and 72

Ayn Rand Nos. 1 & 2

The Galyen property is not subject to any production royalties, but is subject to the following payment schedule:

Due Date	Amount	Cumulative
paid to date		$20,000
8/16/95	$20,000	$40,000
8/16/96	$30,000	$70,000
8/16/97	$40,000	$110,000
8/16/98	$40,000	$150,000
8/16/99	$40,000	$190,000
8/16/00	$40,000	$230,000
8/16/01	$60,000	$290,000
8/16/02	$60,000	$350,000
8/16/03	$60,000	$410,000
8/16/04	$90,000	$500,000

Harvest has the option to purchase the Galyen Property for $250,000 any time prior to August 16, 1995. The purchase price shall be $500,000 thereafter.

The Galyen Property will allow the Company additional reserve exploration ground along the southeast extension of the Commonwealth vein structure, as well as relatively flat, but well-drained privately owned fee lands, nicely suited for the Company's anticipated mining and leaching operations.

4.0 HISTORY OF MINING AND EXPLORATION

4.1 Discovery and Mining

John Pearce discovered the Commonwealth Mine in 1895 while driving cattle over Pearce Hill. When picking up a rock to throw at a recalcitrant animal, he noted an extraordinarily heavy weight from bland looking quartz. He broke it open, found free gold with silver chlorides, and the rest is history. Total production was over 122,000 ounces of gold and almost thirteen (13) million ounces of silver. At current metal prices (October 1994) of $385/oz gold and $5.50/oz silver, the historical production of the Commonwealth Mine has a present day value in excess of 118 million dollars.

During the period 1895 to 1927, extensive underground development totaling about twenty (20) miles of workings on eight (8) levels was done at the Commonwealth Mine. Approximately two (2) miles of workings on only four (4) levels, mostly between C and D shafts are easily accessible today. The mine extended down to the eighth level at an elevation of about 4150 feet, approximately 500 feet below the surface.

After 1927, the mine was apparently worked sporadically in the upper levels by lessors. Significant tonnage's of low grade ore averaging $3-$4/ton across widths of 30 to 60 feet were noted in 1939. At 1939 prices of $35/oz gold and $0.68/oz silver, these reserves would contain 4 to 5 ounces of silver per ton (assuming a gold value of 0.01 oz/ton). Carl Thetford and D.A. Corgill optioned the Commonwealth patented claims from the Strong - Harris estate in 1972 and exercised their option in 1977. From 1972 to 1977, Theford attempted to recover low grade precious metal values from the large tonnage of old cyanide tailings available from prior operations. Corgill died in 1981 and Thetford executed an option to buy Corgill's interest in the claims from the Corgill heirs. Several tens of thousands of tons of old tailings were shipped as smelter flux during high silver prices. Up to Carl Thetford's death in February of 1987, five mining companies carried out exploration programs on his claims, while one company evaluated contiguous claims. Some of their results are summarized below.

4.2 Recent Exploration

Platoro Mines, Inc. under the direction of Paul Eimon mapped, sampled, and drilled the property during 1975. Sampling of surface outcrops and the accessible workings of the third, fifth, and sixth levels of the Commonwealth Mine indicated potential for 5 to 25 million tons of open pit ore averaging 0.02 to 0.03 ounces per ton gold and two to four ounces per ton silver with an approximate three to one (3:1) stripping ratio. In August and September of 1975, Platoro drilled five (5) rotary holes along the southeast extension of the Commonwealth zone with very favorable results.

Bethex, the exploration subsidiary of Bethlehem Steel, optioned the property from Platoro in May 1976 on the basis of Platoro's encouraging drill exploration results. Bethex's objective was to test the down dip and lateral extent of the system. They drilled thirteen (13) percussion holes (4785 feet) and three (3) core holes (510 feet) with disappointing results.

Bethex concluded that their drilling had ruled out the possibility of a large bulk minable silver deposit, and dropped their option.

Western States Minerals Corporation then optioned the property from Thetford in 1977 and drilled thirteen (13) percussion holes in 1978. According to Thetford, several company executives were killed in an airplane crash and the property was released soon thereafter. Western States drilled the eastern extension of the North vein without success and delineated some low grade mineralization in holes between C and D shafts. However, their most interesting results were at the west end of the property, when higher gold values were encountered.

During 1981, John A. Stephens of Geo-Heindrick Exploration drilled adjacent property to the west, east, north and south of the Commonwealth Mine. Fourteen (14) holes were drilled in alluvium on the Galyen property in Section 4. No mineralization was encountered. At least four (4) holes were drilled at Six Mile Hill southwest of Pearce but the results are not available.

Alpine Resources, Ltd. of Grass Valley, California had the property under option during 1983 and 1984. Their program included aerial photography preparation of a 1" = 100' topographic base map, geologic mapping, with rock chip and dump sampling. A drilling program was recommended to evaluate both the east and west sides of the property, but due to a lack of funds, Alpine dropped the property without drilling.

Santa Fe Pacific Mining, Inc. optioned and drilled the property during late 1986, but released it back to Thetford shortly before his death in February 1987. Santa Fe drilled five (5) holes along the east extension of the North Vein, apparently on the assumption that it represented a caldera margin. One hole was drilled on the west side of the property per contractual agreement with Thetford at a site dowsed by one of this associates. None of the holes intersected significant mineralization. A quick metallurgical review program on high silver samples from the mine found that precious metals were difficult to recover at larger (+1/4") cyanide leach sizes.

During 1988 DRX's, Inc.'s mineral exploration subsidiary, Westland Minerals Exploration, Inc., optioned the property. In 1989, and 1990 Westland Minerals under the direction of Rudi Fronk, currently a Director of Harvest, conducted three phases of reverse circulation drilling aggregating some 16,225 feet of drilling in 55 holes, based on drill targets as recommended by consulting geologist Tom Patton. He recommended exploration on:

1. A principal west-northwesterly vein (Main Vein) with higher grade ore mineralization and a spatially associated easterly vein (North Vein) with lower grade ore mineralization. The veins intersect and enclose a southeast-plunging prism of mineralized ground in Pearce Hill.

2. Incompletely explored ground associated with earlier mining of the combined vein system on the west end of Pearce Hill, and to the west of the above intersection.

3. Incompletely explored ground associated with earlier mining in the east end of Pearce Hill and along the projection of the plunging intersection of the two veins.

The drilling results from all phases identified significant mineralization. The Phase I drill assays were conducted by fire assay at Barringer Laboratories and the Phase II and III drill assays were conducted by fire assay at Skyline Labs in Tucson, Arizona. Check assaying completed by Skyline Labs and Bondar-Clegg on Phase I samples indicated that the silver assays reported by Barringer were perhaps incorrect as the re-checks were consistently higher. Most of the significant mineralized intercepts on the western end of the deposit have been re-assayed by Skyline Labs.

In early 1990, Placer Dome reviewed the property, sending several composite drill samples to it's Golden Sunlight Mines, Inc. lab in Whitehall, Montana for bottle roll testing at fine grain sizes. All samples from low to high grades leached well for both gold and silver, yielding 91% for gold and 89% for silver with moderate cyanide and lime consumption. Assay head grades for the composites were only 67% to 85% of the expected drill head grades, but varied with different sample weights, while copper values ranged from 20 to 250 PPM. Calculated head grades for gold were 12% higher than expected for gold and generally lower on silver especially with higher average grades. Placer Dome did not pursue additional work.

In the summer of 1991, Westland subleased the property to Glamis Gold, Inc. Glamis had its subsidiary Chemgold, Inc. performed several short term (72 hours) bottle rolls on different size fractions. They then performed 8-day column tests that returned favorable gold leachablities. Glamis also drilled 4430 feet of reverse circulation in 13 holes predominately to define mineralization in the Bisbee Formation. Drill hole results were discouraging and Glamis dropped out.

In May of 1991, Westland retained Mintec, Inc. to compile a computer generated ore reserve of the Commonwealth Property. Mintec, using its MEDSYSTEM software, compiled all previous data, and generated a block model utilizing 10'x20'x20' composite blocks within a 45 degree pit constraint at a 12.5 tonnage factor. Mintec defined 4.6 million tons at a 0.037 gold and 2.06 silver ounce per ton grade, using an 0.016 recoverable equivalent gold grade. This is equal to a 0.041 recoverable equivalent ounce gold per ton under Harvest's reserve definitions.

Early in 1992 Western States Minerals Corp. (WSMC) again optioned the Commonwealth Property, but only after a lengthy study of potential political and environmental concerns, which were all but alleviated by local governmental meetings. WSMC then conducted 3,545 feet of reverse circulation drilling in 11 holes. Many holes tested potential Bisbee targets parallel to the North Vein structure, and returned poor results. WSMC also conducted cyanide leachable gold tests on hundreds of previous drilled sample intervals with favorable results showing approximately an 83% cyanide extractable gold value verses fire assay value. Further, a composite of 49 old drill samples, divided into low, medium and high grades was submitted to METCON Research, Inc. lab for bottle roll tests, also with favorable results. Lastly, a check assay program was instituted on some 124 old drill samples re-submitted to American and

Skyline labs. Check assays came in approximately 19% lower than the initial drillhole assay results, even though at least four different drill programs were evaluated. No explaination was given for the failure to confirm three other assay regimes. WSMC, discouraged by the results of the check assaying and the poor drilling results, abandoned the project back to Westland.

After the financial demise of DRX in mid-1992, Mr. Fronk founded Columbia Resources, Inc. with the designated purpose of advancing the Commonwealth Property. In October of 1992, Columbia Resources obtained an exclusive option to lease the Commonwealth Mine from the underlying owners.

Almost immediately, in November of 1992, Consolidated Nevada Goldfields, Corp. concluded an agreement with Columbia to test the Commonwealth Property with metallurgical testing, in-house at CNG's Brewer, South Carolina lab, and with bulk samples to McClelland Laboratories, Inc. in Reno, Nevada. CNG compiled an ore reserve study which showed 5.149 million tons at 0.046 ounce gold per ton and 1.91 ounce silver per ton using a 0.015 ounce gold cutoff grade. This equals 0.047 ounce recoverable gold equivalent per ton under Harvest definitions. CNG terminated their program before completion of the metallurgical tests. Those tests showed favorable results with 68% to 71% of the gold leached in 31 days and still producing with low cyanide and moderate lime consumption. McClelland showed that near surface samples leach poorly (<30%) at coarse sizes (5/8") but much better (>65%) at finer sizes (-10 mesh).

In late 1993, Columbia then attracted Pegasus Gold Corporation to undertake exploration work, prior to the required exercise of the option to lease. Pegasus drilled five (5) deep reverse circulation drill holes beneath the central and eastern portion of the Commonwealth workings aggregating some 3,215 feet. Pegasus lost three of their five Main Vein intercepts in old mine workings. Pegasus returned the property to Columbia in December of 1993, apparently moving its exploration emphasis to South America.

4.5 *Harvest Gold Corporation - Exploration and Development*

In early January of 1994, Harvest Gold Corporation obtained the right to lease the property through an agreement with Columbia Resources transferring all its rights to the property to Harvest. On January 31, 1994, Harvest exercised the option, and leased the property from the underlying owners. Harvest immediately began compiling all the outstanding Commonwealth information into a comprehensive database using MineSoft, Inc. TECHBASE software. Several potentially minable reserve scenarios were defined.

Aueq Cutoff	MM ore tons	Gold grade	Silver grade	Aueq grade	Recoverable Gold Eq oz.	Waste ore ratio
0.020	5.47	0.036	2.44	0.045	246,285	4.87
0.015	7.15	0.031	2.18	0.039	279,040	4.03
0.013	7.74	0.030	2.08	0.036	278,775	3.37
0.011	8.78	0.028	1.95	0.034	298,789	3.39

In late September 1994 Harvest commenced a proposed 12-hole reverse circulation drilling program designed to check potential high grade reserve areas, expand possible reserves and define a potential pit perimeter. On the fourth hole some 260 feet of drill rods twisted off in the old mine workings and the drilling company pulled their rig from the property. Two of the four holes were drilled for check assay purposes. Results compared favorably with previous results. Of the two exploration holes drilled, the second bottomed in a 5-foot intercept of 0.14 ounce gold per ton in the Bisbee formation.

Also in September of 1994, Harvest commenced underground bulk sampling of the Commonwealth Mine for metallurgical purposes. Six (6) individual samples were collected from various mine workings, two from near surface, three from the third level and one from the sixth level. These six bulk samples were selected from 93 underground channel sample locations from cross cutting workings. The head grade average of all six samples was virtually identical to the expected channel sample grade (without weighting) of 0.026 ounce gold and 2.29 ounces silver per ton, although wide variations in grade were found on individual samples. Five of the six bulk samples were lower in grade for gold while two of the bulk samples were lower in silver.

In October, 1994, Kappes, Cassiday & Associates, Inc. performed identical 100% -5/8" bottle rolls on each of the six underground samples. Two samples yielded over 90% recovery in 72 hours. Four samples (including the two near-surface samples) showed from 32% to 45% recovery. Kappa's recommended 60-day column leaches at -10 mesh for the poor samples. In late October 1994 the two surface samples were combined, and the two poor leaching, third level samples were also combined. These produced two -10 mesh column leaches. After 30 days leaching time 68% and 78% of the gold had been recovered.

The two good bottle leach samples from the western 3rd level and the 6th level were each placed in separate -5/8" column tests. The 5/8" material showed 84% and 93% gold recovery after 42 days of leach time. Silver recoveries ranged from 15% to 24%.

In March 1995, an additional 1/2 ton of underground bulk samples was delivered to Kappas, Cassiday for treatment under identical conditions with a specific concentration on maximizing silver recovery. Bottle rolls are currently in progress.

5.0 GEOLOGY AND MINERALIZATION

5.1 Regional Geology

The Pearce Hills and other low hills in the Sulphur Springs Valley lie between the Willcox Playa, the Dragoon Mountains to the west and the Swisshelm Mountains to the south and east. The Hills are composed of a complex series of middle Tertiary flows, welded tuffs, and pyroclastic rocks that were extruded over a platform of Cretaceous and older sediments.

These individual, tilted volcanic blocks strike northwest, dip 10 to 40 degrees northeast, and are separated by a series of northwesterly trending Basin and Range faults. The Pearce Hills may be a northwestern continuation of the Swisshelm Mountains, a theory that is supported by regional gravity and magnetic data. Although Tertiary rocks in the vicinity of Pearce have not been dated, an Oligocene-Miocene age (20 to 40 million years) is probably based on correlation with similar rocks in the Swisshelm and Chiricahua Mountains to the east.

Individual rock units can not be easily traced between the various isolated volcanic fault block hills. Certainly in the vicinity of Commonwealth, hydrothermal alteration, in particular potassic alteration has obscured the original rock type and made correlations difficult. Volcanic sequences generally consist of andesite flows overlain by rhyolitic ash flow tuffs. Most hill tops are capped by the relatively resistant rhyolite ash flows.

5.2 Local Geology - Rock Types

Bisbee Formation (Kb)

The oldest rocks in the mine area are well-sorted sandstones and mudstones of late Early Cretaceous age, generally regarded as the Bisbee Formation. Because the Bisbee Formation is soft and easily eroded, outcrops are limited to a few small exposures along the north side of Pearce Hill near the footwall of the North Vein. Bisbee sediments are, however, exposed in several underground workings on the north and west side of Pearce Hill, and in numerous drill holes. The Mominer shaft, west of Pearce Hill is situated entirely in Bisbee and contains local +0.1 ounce gold mineralization. The base of the Bisbee is not present in the property area. The upper contact is disconformable with Tertiary volcanics.

Where the Bisbee Formation is exposed along the North and Main vein, it is a clean, fine to medium-grained sandstone with abundant silicification, fracturing and iron staining, best described as a quartz arenite. Recrystallization is present near vein structures. Locally pebble conglomerate units may be present. Underground exposures show interbedded red mudstones which appear emerald green in drill cuttings outside of the zones of obvious oxidation. Drill logs also indicate that the Bisbee contains interbedded siltstones and sandy, calcareous mudstones which do not crop out.

Generally, the Bisbee, of unknown local thickness, has been regarded as a poor host rock for ore mineralization due to its friable nature, its structural incompetence and its propensity to produce fault gouge rather than open fractures. However, the Mominer Shaft, selected drill holes and crosscuts through the North Vein on the 3rd level show significant gold grades (+0.10 oz gold/ton) across significant widths (+40 feet) with little silver. As this ore grade material is virtually non-distinguishable from unmineralized Bisbee, careful attention must be made to properly evaluate Bisbee drill intercepts and outcrops. High carbonate interbeds could provide suitable loci for disseminated gold mineralization. Several past exploration efforts have attempted to prospect the Bisbee without success to date.

Lower Andesite

The Lower Andesite, also known as the First Flow, is identifiable largely on the basis of its stratigraphic position between the underlying Bisbee Formation and overlying Rhyolite

Breccia, and to a lesser degree because of observable crystalline differences with the Upper Andesite flow. It is best described as a dark aphanitic, locally porphyritic andesite flow, which, in the vicinity of the mine is of a trachyte composition due probably to superimposed hydrothermal potassic alteration.

The Lower Andesite is disconformable with both the Bisbee and the overlying volcanic units. Although numerous textural variations make generalizations hazardous, the following features are typical of Lower Andesite: 1) low-profile, dense, smooth, and well-fractured outcrops 2) stubby plagioclase phenocrysts set in a light gray to black aphanitic matrix 3) auto-brecciated fragments present, but subordinate, and 4) generally weak to non-magnetic. A basal auto-breccia is made of up to 40% andesite fragments.

The Lower Andesite crops out on the west end of Pearce Hill where drill holes and underground exposures show that it disconformably overlies eroded Bisbee Formation. A few outcrops and abundant float also occur on the west side of Huddy Hill about 1500 feet east of the mine. These are perhaps the faulted offset of the Pearce Hill outcrops. Several outcrops of andesite occur along the Main Vein near its point of intersection with the North Vein. Here the unit is highly shattered, silicified and iron-stained making positive identification difficult.

The Lower Andesite, approximately 150 feet thick, is the premier ore host rock at Commonwealth, providing competent vein walls and widespread wall rock fracturing parallel to major vein systems.

Rhyolite Breccia

The Rhyolite Breccia, also known as the First Ash-flow, is a distinctive rhyolite crystal lithic tuff or arenite, with phenocrysts of square quartz, potassium feldspar and biotite, and fragments of andesite and locally minor Bisbee Formation. Thin sections have identified it as predominantly ash-flow tuff, completely devitrified. It forms massive, easily recognizable outcrops on Pearce and Huddy Hills. Faulted slices of Rhyolite Breccia also form bold outcrops along the Main and North Veins in the center of the area of previous mining. The bottom is marked by a thin (<2 feet) waterlain tuff or surge flow disconformably overlying the Lower Andesite. It is overlain disconfomably by the Upper Andesite flow, but is separated from it by an irregular (<10 feet) water-lain tuff or surge flow which makes a good marker horizon.

The Rhyolite Breccia, approximately 200 feet thick, is the second most predominate ore host at the Commonwealth property. Generally, within 50 feet of vein mineralization this unit can be well silicified or welded-looking, and is perhaps recrystallized with a high potassium feldspar content. Away from vein areas, this unit is more friable and obviously tuff-like. Silica-indurated Rhyolite Breccia provides for well shattered wall rocks adjacent to vein structures, but less reactive wall rock chemistry.

Upper Andesite

The Upper Andesite, also known as the Second Flow, is the most areally extensive at the Commonwealth Mine, covering the southern and eastern parts of Pearce Hill and the extreme eastern side of Huddy Hill. The top of Pearce Hill is capped by this unit. The Upper Andesite typically forms light gray to brown scabby, rubbly weathering outcrops and has a light to dark brown fine-grained matrix with plagioclase laths. It is commonly weakly magnetic and has

easily recognized hornblende crystals and/or breccia fragments. A vesicular basalt at the north end of Metat Hill, east of the mine, may be a scoriaceous flow top of the Upper Andesite. As in the Lower Andesite, material near to vein systems is of a trachyte composition due to potassic alteration. The Upper Andesite is overlain disconformably by the Third Waterlain Tuff.

Although good exposures are rare, the Upper Andesite is estimated to be approximately 500 feet thick.. The majority of the eastern part of the Commonwealth ore zone has a hanging wall composed of this unit, but significant ore occurrences have been rare. The eastern portion of the ore zone seems to die out as the Upper Andesite is approached.

Ash Flow Tuff

This unit, the youngest of all volcanics in the mine area, caps Metat Hill and is similar to rocks in the Six Mile Hill area one half to three miles west of the property. The rock is a dense, welded tuff with flattened pumice fragments, quartz phenocrysts and local vitrophyric textures. Locally, this unit appears conglomeratic with rounded fragments of limestone, Bisbee Formation and andesite set in an arkosic sandstone matrix. It is best described as an arkosic arenite with occasional boulders approaching two feet in diameter. Along the North Vein, south of Huddy Hill, this unit has been well silicified and superficially resembles the Rhyolite Breccia.

The Ash Flow has a total thickness of about 450 feet and has not been found in the mine workings, but has been exposed by exploration shafts sunk to 100-foot depths about 1000 feet east of the ore zone. Except where silicified, the Ash Flow does not appear to be a favorable ore host.

The lower portion of this unit has been described as a waterlain tuff while the upper portion has been defined as a Second Ash Flow unit similar to the first Ash-Flow or Rhyolite Breccia. The degree of welding governs its classification. The Ash Flow tuff is disconformable overlain by additional tuffaceous and flow rock outside the mine area.

5.3 Local Geology - Structure

Local structure is dominated by regional northwest-trending Basin and Range features. All pre-Quaternary rocks have general northwesterly strikes of N.25W. to N.55W., and northeasterly dips ranging from 10 to 40 degrees. Although the volcanic units are disconformable, no significant angular unconformity exists.

One early set of fault offsets have been found. These older faults, trending west northwest to east-west, are now occupied by the Commonwealth veins. All veins are emplaced along a strong group of bifurcating fault zones which locally have significant offset and abundant wall rock fracturing. The west trending North Vein and the N.80W. Main Vein are the dominant features. Dips vary from 40 degrees south on the North Vein to almost vertical on the Main Vein and subsidiary features. Due to the more recent block faulting, the original emplacement dips at the time of formation may have been from 80 degrees South to 60 degrees North.

The North and Main Vein join on the westerly portion of the property, assume an east-west strike, and seemingly dissolve away in the Bisbee Formation. To the east the veins diverge

at a 20 degree angle, but still coalescing in a shallow east-plunging juncture at depth. Old underground maps suggest that the Main Vein structure curves to a more east-west trend about 200 feet east of the defined ore zone. This may explain the apparent lack of ore development much to the east of the D Shaft. In this same general area, underground maps hint that the North Vein may have flattened to less than a 35 degrees south dip.

Fault movement was predominantly normal, although substantial lateral strike-slip movement may be present. This has resulted in apparent right lateral offset of 600 to 800 feet along the Main Vein and perhaps up to 2,900 feet on the North Vein. Several smaller subsidiary structures with lesser or no apparent movement are also present and mineralized. The North Vein structure has significant gouge up to several feet in thickness while gouge on the Mine Vein structure is rarely more than one or two feet. Santa Fe geologists suggested that the North Vein feature may be a caldera rim fault.

Early fracturing and lower grade mineralization took place along the North vein, while the wedge of rock between the Main and North Veins was intensely fractured, silicified, and cut by several moderate sized veins and abundant quartz stringers. The bonanza ore bodies of the Commonwealth Mine occur near the intersection of the North Vein and these subsidiary veins with the Main Vein structure.

All these events have resulted in a generally conformable sequence of rocks south of the Main Vein and a faulted sequence of the same rocks to the north and on Huddy Hill to the east. Silver-gold mineralization of economic significance is restricted to the pie-shaped wedge of units between the North and Main Veins, and along the Main Vein and its subsidiaries on the western edge of Pearce Hill.

Generally, mineral veins lie along the footwall of fault structures. At the fault hanging wall, veins tend to be massive and tabular, grading into vein sheet zones or even stockworks in a diffuse footwall. Sheeted zones may contain individual quartz veinlets or late stage gouge. Rock-type significantly influences the strength and character of vein sheeting, being best developed in the Lower Andesite, followed by the Rhyolite Breccia.

Several later generations of faulting and mineralization are present. Late stage faulting and recementation of breccia quartz is common on the North Vein. Late gouge cuts all vein structures. Underground, several N.40W. gouge structures appear to slightly offset the Commonwealth Veins. This trend is believed to represent possible Basin and Range deformation after mineralization, however, minor late stage quartz is present on some of these structures, as well, suggesting an earlier origin. According to old reports, these features were sometimes responsible for terminating commercial mineralization. Recent underground work has been unable to confirm the implied significance of these faults.

5.4 Ore Mineralization

The Commonwealth Mine is typical of Tertiary epithermal precious metal systems found throughout the western United States. Several investigators have termed it a classical Bonanza-

type epithermal occurrence, modified and enriched by secondary processes. It has the characteristics of a low-sulfur system.

Silver and gold mineralization occurs within a series of quartz veins, massive or sheeted, localized along and between the Main and North veins. In 1927, Lewis Smith identified seven larger veins, four of which were splays off the Main Vein in a belt 350 feet wide by 4,000 feet long. Vein "horsetails" were common. All veins exhibit classical epithermal features, including drusy quartz-lined vugs, crustification, comb and cockade textures. Historical production came from supergene-enriched ores of silver (cerargyrite, embolite, argentite, native silver) and native gold. Gangue minerals include quartz, black, and white calcite, adularia, montmorillonite, and sericite. Iron oxides are abundant along fractures in the mineralized zone, but the original sulfide content of the system was low. Minor copper oxides are found on some dumps but is very rare.

Two distinct types of quartz veins have been recognized:

1. Main Vein System. Quartz is clear to yellow-green, exhibits crustification and cockade textures, and has late amethystine quartz crystals projecting from vein walls to form prominent comb structures. High grade silver-gold mineralization, probably both primary and secondary is associated with these veins.

2. North Vein System. Quartz is massive, white, and delicately banded with abundant amethyst and some cockade textures. Locally, it can be brecciated and recemented by late quartz. This type of vein is generally associated with low grade silver mineralization and appears to be a lower temperature variety than Main Vein system except that they are overlapping and intermingled.

Mineralization on the east end of the property appears to be high silver (+2.0 oz/ton) and low gold (<0.03 oz./ton), and is restricted to veins and stockwork zones, with gold and silver values directly related to silicification. At the western end, silver values decrease (averaging <1.0 oz./ton) but higher gold values (>0.03 oz./ton) are present and appear to be more widespread, and not always directly associated with quartz veining or silicification. Ore grade gold characteristically occurs in well fractured Lower Andesite or Rhyolite Breccia, along small fractures coated with limonite and/or hematite with minor manganese oxides.

Highest grade mineralization (+20 oz silver/ton and +0.2 oz. gold/ton) is usually found in waxy green quartz, reminiscent of the Oatman, Arizona district. Locally, it has been termed "talc quartz". The green tinge may be fluid inclusions or finely dispersed embolite, (silver bromide). Native gold occurs as micron particles on massive quartz. One to two percent limonite after pyrite pseudomorphs are common although actual unoxidized pyrite is rare.

Three ore shoots were found in the old mine. Each covered several hundred feet of strike length at the surface, but decreased in length to a few tens of feet at the 8th level, perhaps an average of 500 feet below the surface. Zones between shoots were generally devoid of the high grades sought by the old timers, however they were still mineralized by lesser grade material. Average ore shoot grades diminished from west to east, while shoot tonnages were the reverse.

All mineralization has been oxidized to the maximum depth obtained. Only limited, low sulfide base and precious metal primary mineralization was ever encountered. Base metal sulfides were apparently sphalerite and galena with lesser chalcopyrite, tetrahedrite, molybdenite and proustite. Old diamond drilling in the early 1900's, beneath the 8th level, as reported in dubious old reports, was not successful in locating deeper higher grade precious metals.

Secondary enrichment processes have been significant at Commonwealth. Old mine reports indicate several horizontally-oriented high silver and separate high gold areas throughout the old mine. Extensive old work has shown a possible correlation between the various elevations of ancient Pleistocene lakes of the Willcox playa, and the horizontal precious metal enrichments. Old work found that the average Gold/Silver ratio at Commonwealth was approximately 1:135, while the horizontal gold zones, some 10 to 15 feet in vertical thickness showed a 1:40 Gold/Silver ratio. These enrichments persist out into the adjacent wall rocks giving a blanket-like distribution to both silver and gold mineralization. Footwall fractures are always higher grade than hanging wall features, again suggesting downward migration.

Embolite, and cerargyrite are the predominate secondary ore minerals near-surface, while acanthite, usually a secondary silver sulfide, has been encountered in the deeper mine levels, as has native silver. Native gold and native silver have been found intertwined together.

A tentative paragenetic sequence is as follows:

1) Adularia-black (manganiferous) calcite-quartz veins with silver and minor gold.

2) Main stage white and green quartz with silver and native gold.

3) Barren white quartz and amethyst.

4) Barren white calcite.

5) Barren clay gouge.

6) Secondary enrichment of very late calcite, exotic silver and perhaps significant transported gold.

5.5 *Alteration*

Alteration is difficult to assess at Commonwealth. Visually, silicification near the veins, and minor chloritization or epidotization up to 500 feet away from the veins is the only obvious alteration features. However, thin sections have revealed ubiquitous and intense potassic alteration in and adjacent to most vein structures. Veinlet adularia is abundantly present in areas of early quartz and calcite veining. Potassic envelopes approaching 30 feet surround the Main Vein stopes, lesser so adjacent to other minor veins. Potassic zones grade laterally into sericitic material. Vertically, potassic stable envelopes range over some 500 feet, almost identical to the vertical range of commercial mineralization.

Locally, sericitization and argillization to montmorillonite can be present, but generally well away from the areas of ore grade development. Argillization has been found between, above and below areas of commercial ore grade. Argillic rock increases significantly both above and below mined areas, possibly indicating a stacked or telescoped mineral emplacement.

Comparisons with other hydrothermal systems suggests that the Commonwealth was emplaced at a depth of perhaps 1400 to 1800 feet below the present surface.

6.0 ORE RESERVES

6.1 Previous Reserve Studies

The last significant production from Commonwealth occurred in the 1920's although lessors are reported to have operated intermittently during the 40's and 50's. Modern exploration commenced in the mid-1970's when the property was recognized as having a bulk silver potential. From the late 70's until 1993 the property has been subjected to erratically directed exploration by numerous exploration companies, each exploring under its own pet theories. Bethlehem Copper, Santa Fe, Glamas Gold, Western States Minerals, Pegasus Gold and DRX Minerals, et al have added to the property database in varying degrees.

The aggregate digitized database now consists of some 126 drillholes from nine different drilling programs totaling some 40,320 feet which produced some 7183 gold and silver assays. Drill holes included regular rotary holes, reverse circulation rotary and diamond core holes. Hole sampling was generally done on 5-foot intervals although older holes have 10-foot sample intervals. The drillholes are combined together with approximately 6520 linear feet of underground channel sampling conducted by DRX in 1991 which yielded 1263 gold and silver assays.

According to previous independent mineral engineer reports, recent exploration through 1992 has defined a mineral resource as follows:

	James Askew Ass., Inc.	**Mintec, Inc.**
Cutoff Grade	0.02 oz. Gold/ton	0.012 oz Gold/ton
Total tons	4,579,000	5,011,000
Grade Gold oz. / ton	0.036	0.036
Grade Silver oz. / ton	2.26	1.76
Method	cross sections	computer block model

A third study of minable ore by Nevada Goldfields, defined approximately 6.2 million tons of 0.031 recoverable equivalent gold (combined gold and silver values) available at a 2.8 to 1 strip ratio using a 0.015 equivalent gold grade mining cutoff. Upon recent acquisition, Harvest management believed that an additional resource of 3 to 5 million tons could potentially be available within the existing resource and along the unprospected strike projections of mineralization between the two relatively well drilled portions of the previously defined mineral resource.

6.2 Harvest Gold corporation - Global Resource Estimation

In January of 1994, Harvest Gold began a complete review of the Commonwealth Property. Company personnel and consultants have engaged in detailed geological and computer statistical evaluation of the Commonwealth, with the specific goal of determining reliable tonnage, grade and economic statistics for the operation of the Commonwealth Property.

The resource study was made initially using MINEsoft Inc.'s, TECHBASE 2.02 software first issued in 1990, later upgraded to 2.2a (1993). The majority of the database was received in ASCII text form from the property vendor, and was sorted and reformatted.

A statistical computer modeling grid was laid out over the existing data utilizing an on-the-ground survey grid created by DRX which is based upon the coordinate 100,000 north, 100,000 east located at the SE corner of Section 33 T.17 S., R.25 E.

The computer model consisted of blocks 30' x 20' x 15' in depth oriented along a 100 degree azimuth, for a total of 600,000 individual blocks. The highest 15-foot bench level had its mid point at the 4732.5-foot elevation atop Pearce Hill, immediately south of the Commonwealth workings. The deepest level, correspondingly, then having a mid-point at the 3832.5-foot elevation, approximately 700 feet below the average mine surface.

Rock types range from sandstone, to rhyolite breccia to dense andesitic flows. The average rock was deemed to have a specific gravity of 13.5 cubic feet per ton, thereby yielding some 666 tons per block. Standard sets of statistics were run on the raw data to reveal the mean, mode, variance and standard deviation. Geologic features and rock types were ignored for calculation and summary purposes. No ore constraits were imposed on the North and Main fault zones, although the Main fault may actually limit mineralization to the south.

Drill hole and underground assay intervals were plotted via coordinates and, if necessary, truncated and averaged to derive assay intervals within discrete computer blocks. Compositing to minable bench heights was not attempted. A total of 8656 composite samples were generated.

Due to the presence of scattered high grade assays, arbitrary limiters, equal to approximately ten times the expected average grade were set for both gold and silver. Limits of 0.25 oz Gold/ton and 12.5 oz Silver/ton cut any value above such grades to those grades.

Sample composites were then subjected to semi-variogram analysis to determine the predictability of samples and valid sample value projection distances. The vertical variograms for all samples showed sample influence out to 160 feet for gold and over 200 feet for silver.

The sampling ellipse adopted for resource modeling gave a primary axis with a maximum radius of influence of 140 feet at azimuth 190 degrees, dipping 65 degrees, a secondary axis of 80 feet at 100 degrees with a 0 degree dip and a third axis of 60 feet at 10

degrees azimuth with a 25 degree dip. This alignment reflected the geologically determined average vein strike direction of 100 degrees azimuth, and the 65 degree average dip on the Main Vein. Essentially, any one sample's influence could be projected up to 80 feet along vein strike, 140 feet along the vein dip and 60 feet into the vein walls.

From the best ellipsoid fit, a "sill" value of .00058 for gold and 1.5 for silver was selected. Since the "sill" is the squared value of the standard deviation, this corresponds to a standard sample variation of 0.024 oz Gold/ton and 1.22 oz Silver/ton, somewhat similar to the all sample deposit average.

With the search ellipsoid now specified, kriging was instituted to estimate values for gold and silver within all possible blocks of the computer mine model. Values were estimated by ordinary three dimensional point kriging using a minimum of two and a maximum of six composite samples at 3 random longitudinal locations for both gold and silver.

Global reserves for the Commonwealth Project were then determined for several potential mining cutoff grades, however the relationship between gold and silver required a common factoring agent so as to present each metal accurately despite varying prices and metallurgical recovery rates. A special category know as the "recoverable equivalent gold grade" was determined by taking the kriged gold value times a 77.5% recovery factor (as determined from metallurgical work) and adding to it an equivalent gold grade as derived from the estimated silver value. As determined by metallurgical work, the first ounce of silver was assigned a recovery factor of 20% and added to subsequent estimated ounces at a 70% recovery rate. Hence 3 ounces of estimated silver per ton would yield 1.6 ounces of recoverable silver i.e. ((1 x .2) + ((3-1) x 70%)) = 1.6. The value ratio of silver to gold was then derived from their approximate respective market prices on or about February 1, 1994, $5.00 per ounce silver verses $375 per ounce gold. ($375 / $5 = 75). Seventy five ounces of silver equals one ounce of gold in value, hence the silver grade was divided by 75 to yield a recoverable equivalent gold grade, which was then added to the kriged recovered gold grade (Recoverable Gold + Recoverable Silver / 75 = Recoverable equivalent Gold).

Global Resources are the total amount of potential resource available at a given mining cutoff grade without regard for the actual costs and problems of mining. Since short composites were used prior to kriging estimation, no dilution has been introduced into the Global Resource for mining. The material that is mined will be subjected to low grade wall rock dilution, which increases tonnage but lowers average grade. The Global Resources for the Commonwealth are then as follows:

Recoverable Cutoff Grade	Total Tons	Recoverable Gold Equiv.	Gold oz/ton	Silver oz./ton	Recoverable Gold Eq. ounces	Total Gold ounces	Total Silver ounces
0.000	47,401,218	0.0098	0.0088	0.57	464,532	417,131	27,018,694
0.009	12,549,438	0.0289	0.0244	1.64	362,679	306,206	20,581,078
0.010	11,501,154	0.0307	0.0259	1.73	353,085	297,880	19,896,996
0.011	10,736,586	0.0321	0.0269	1.81	344,644	288,814	19,433,221
0.012	9,991,998	0.0336	0.0281	1.89	335,731	280,775	18,884,876
0.013	9,446,544	0.0349	0.0290	1.95	329,684	273,950	18,420,761
0.014	8,914,410	0.0361	0.0300	2.02	321,810	267,432	18,007,108
0.015	8,498,826	0.0372	0.0308	2.07	316,156	261,764	17,592,570
0.016	8,079,912	0.0383	0.0317	2.12	309,461	256,133	17,129,413
0.017	7,660,998	0.0395	0.0326	2.18	302,609	249,749	16,700,976
0.020	6,564,096	0.0430	0.0353	2.33	282,256	231,713	15,294,344

Harvest management also elected to apply a "mined tonnage factor" of 616,000 tons to all economic models of the Commonwealth deposit. Using the computer-saved block variance values, the following proven and probable reserves can be defined. No possible reserves were determined. Precious metal grades are derived from the previous chart.

Mining Cutoff		Tons Proven	Tons Probable	Less Mined Tonnage	Total Tonnage
0.009	eq. rec. oz Gold per ton	4,001,994	8,547,444	< 616,000	11,933,438
0.011	eq. rec. oz. Gold per ton	3,587,076	7,149,510	< 616,000	10,120,568
0.013	eq. rec. oz. Gold per ton	3,196,134	6,250,410	< 616,000	8,830,544
0.015	eq. rec. oz. Gold per ton	2,919,078	5,579,748	< 616,000	7,882,826

6.3 Harvest Gold Corporation - Minable Reserve Estimation

An economic evaluation of minable reserves gives a much more accurate valuation of the potential worth of any mining property.

Since gold prices have fluctuated above and below $380 per ounce during the term of the study, $380 per ounce of gold was the selected norm. By the formula used, silver therefore had a deemed value of $5.06 per ounce. The gold price was then further reduced by the cost of several items which directly impact the value of production regardless of the mines operating costs. A smelting and refining charge of 1.5% followed by a state severance tax of 1.7% and lastly an underlying landowner royalty of 3.52% of the net smelter return. These items reduced the gold price by a cumulative 6.6% to approximately $355 ($354.98) per ounce.

The economic mining model program used was TECHBASE 2.2a Open Pit Cone Optimization program using the kriged resource model previously defined. Pit wall slopes were set to a maximum 55 degree slope. Various mining cutoff grades were selected reflecting anticipated mining costs. Two cutoff grades were needed for each mining scenario, 1) the internal cutoff which governs the value of kriged blocks within the anticipated pit wall boundary

and 2) an APEX cutoff which was used to determine the exterior of the mined pit. Generally, the APEX cutoff graded 0.002 ounce per ton gold higher.

The computer was directed to assumed that all such blocks out side the kridged resource were waste and could be moved at a cost of $0.85 per ton or $566.10 per block of 666 tons. Preprogrammed runlogs were used to expedite simulated mining among the various differing scenarios, each runlog being modified by the appropriate variables. The results were as follows:

Gold Eq Cutoff Grade	Total tons Mined	Revised Ore tons	Waste to Ore	Gold eq Grade	Recovered Gold Eq oz.	Gold Grade	Total Gold oz	Mined Silver Grade	Total SILVER oz
0.020	32,136,498	5,472,995	4.87	0.045	246,285	0.036	197,028	2.44	13,354,107
0.017	32,299,002	6,387,080	4.06	0.041	261,870	0.033	210,774	2.29	14,626,414
0.015	35,954,676	7,154,863	4.03	0.039	279,040	0.031	221,801	2.18	15,597,601
0.013	33,816,816	7,743,763	3.37	0.036	278,775	0.030	232,313	2.08	16,107,027
0.011	38,586,042	8,787,920	3.39	0.034	298,789	0.028	246,062	1.95	17,136,444
0.009	40,090,536	9,922,118	3.04	0.032	317,508	0.026	257,975	1.81	17,959,034

Significantly, on all tested mining cutoffs (i.e. 0.009 to 0.020) over 85% of the kriged resource was available for economic extraction suggesting that additional exploration in and around the kriged model will likely obtain additional minable mineralization, thereby lowering the overall waste to ore extraction ratio, while boosting tonnage and ounces extracted. All of the anticipated mining, waste and ore, occurs entirely within leased patented mining claims.

6.4 Dump and Tailing Reserves

In 1993, Alpine Resources, Inc. conducted a bulk sampling program on the dumps at Commonwealth to determine a possible resource of commercial-grade mineralization. Twenty pound grab samples were collected from the B Shaft dump and several 600 to 700 pound samples were taken from backhoe trenches every 50 feet on the C & D Shaft dumps. All were assayed for gold and silver. The dumps were measured geometricly and contained the following tonnages and grades.

Area	Tonnage	Gold(oz/ton)	Silver(oz/ton)
B Shaft Dump	3,000	0.0435	2.45
C Shaft Dump	17,000	0.0175	2.07
D Shaft Dump	26,000	0.021	1.30
TOTAL	46,000	0.021	1.66

In addition to the three main dumps, there are a number of smaller mineralized dumps that probably aggregate about five thousand tons of potential ore-grade material. Thus, the total tonnage available from dumps on the property is about 50,000 tons.

In addition to the mine dumps, there is potential for over 100,000 tons of slope material which originated from erosion of the outcrop of the high-grade lodes. Preliminary Alpine Resources Inc. sampling of this colluvial material indicates a grade about 0.03 ounces gold and 2.0 ounces silver per ton. Metallurgical reviews have not been conducted on surface material, however, near-surface ore samples have generally responded poorly to coarse cyanide leaching. Dumps and colluvium have not been included in the Harvest Gold reserves.

Lastly, old cyanide leach facilities operated during the late 1890's and early 1900's. They have left a large potential reserve of old cyanide leach tailings off to the northeast of the anticipated open pit development. These tailings had been variously estimated to contain between 350,000 and 500,000 tons of -35 mesh material.

During the later 1970's andearly 80's the underlying owners shipped 210,000 tons as a high silica smelter flux to various copper smelters. This material graded 2.51 ounce of silver per ton. Undocumented assays suggest that the remaining tailings may grade about 0.012 oz. Gold and 2.1 oz Silver per ton. Supposedly 47% of the gold and 25% of the silver may still be recovered by agitated cyanide leaching without further grinding.

In February, 1995 Harvest Gold evaluated the tailings via surface samples and 5 backhoe trenches to a maximum depth of 13 feet. Company estimates place the current tailing reserve at approximately 200,000 tons grading approximately 0.008 ounce gold and 1.90 ounce silver per ton with 74.5% silica and low iron and alumina. The Company was unsuccessful at finding a buyer for this material at current (March 1995) metal prices.

These old cyanide tailings, owned by Breitner, et al, were excluded from the mine lease and option, but are available for purchase at a nominal fee per ton. These tailings would make an excellent base layer above the anticipated leach pad plastic liner. Approximately 200,000 tons could cover roughly 3.2 million square feet to a depth of 1.5 feet, probably enough for most of the known ore reserve and the anticipated pad space. Extra recoverable gold and silver could more than pay for the cost of purchasing, moving and installing this pad base. Further political credits could be obtained by reclaiming these environmentally "dangerous" cyanide tailings.

6.5 Additional Reserve Potential

Commonwealth Mine

Excellent potential exists to increase the precious metal mineral reserves at Commonwealth. Several mineral targets of significant potential have been defined. A general discussion, not in order of priority, but generally oriented west to east is as follows:

- The westerly portion of the Commonwealth structures contain higher grade gold values. This area, known sometimes as the "Gold Zone", has not been fully delineated at depth and is open to the east along strike of the Main Vein structure. A thousand-foot gap in detailed drilling has resulted in virtually no information regarding the Main Vein, its split with the North Vein, nor the intervening ground from just below the surface down to several hundred feet of depth along dip. The veins are present and old maps indicate abundant low grade

mineralization. The paucity of information was probably generated by completely inaccessible mine workings, a reported "barren" (actually just not high grade) zone between old ore shoots, and the difficulty of gaining drill access due to steep slopes and poor angles of intercept. Mineral reserves likely can be extended to the east yielding upwards of two million minable tons. An additional benefit is the almost one for one decrease in waste tonnage to be removed. This area lies between two minable ore zones and currently forms a septum in any proposed pit design. Ore grade mineralization will allow it to be mined with a decrease in the overall waste to ore ratio. Harvest has constructed drill roads and plans a five hole reverse circulation drilling program to test this highly prospective area. Several more holes of 500 to 600-foot depths may be necessary.

- Also in the Gold Zone area, several bulk dump samples from the Mominer shaft located south of the Gold Zone drilling contained up 0.70 ounces per ton gold and 8.12 ounces per ton silver in altered and iron stained Bisbee Formation. All samples contained commerical grade mineralization. The exact location or cause of this mineralization has not been determined, as the Mominer is too dangerous to enter. When evaluated in conjunction with deep moderate grade intersections in old rotary holes, this material may indicate a deeper high grade ore shoot essentially undefined by recent drilling. Such shoot would be at depth and offset slightly west from the current Gold Zone mineralization. Tonnages could approach a few hundred thousand tons of moderate grade material, with the possibility of a new discovery of continuing vein mineralization in the Bisbee. Four holes to 500-foot depths could test this area.

- The most obvious prospective area at Commonwealth for developing additional ore tons is right in the vicinity of the main productive area of the deposit, generally at greater depths than those currently drilled. The potential lies in the mineralized wedge of Rhyolite Breccia and Lower Andesite between the North and Main Veins. Drilling has adequately defined significant ore tonnage above the 5th level of the old mine, generally averaging above the 4,300 foot level. Deeper levels have only occasionally been tested. This has resulted in a "rolling bottom" configuration to potential open pit configurations. Deeper infill drilling could add several million tons of low grade material deep in a future pit. Since the Main Vein and North Vein converge at depth, this potential target narrows and perhaps dies out at 150 to 200 feet below currently defined reserves. Average grade would be low and the waste to ore ratio high (+3:1). High grade, narrower vein intercepts are likely. Ten holes, each to 650 feet could define this region well.

- Along the northern rim of any proposed pit, local spots of well mineralized Bisbee Formation are present. Sometimes known veins such as the Eisenhart are present, others show no obvious structures other than the erratically mineralized North Vein nearby from 10 to 80 feet away. Apparently portions of the Bisbee can be quite well mineralized without obvious features identifiable in hand specimen. Glamis Gold and Western States both attempted to prospect this mineralized Bisbee without success. Five additional drill holes to 300-foot depths can probably prospect the remaining Bisbee possibilities. A potential target of two million tons may be present.

- To the immediate east of the developed reserve, along the North Vein, potential low grade is present. Several drill holes have found that scattered low grade silver and gold is common, sometimes approaching ore grade. Harvest's drillhole C-94-1, cut this area east of the D shaft with poor results except for a single deep (435') 5-foot intercept of 0.14 oz Gold/ton in the Bisbee Formation below the North Vein. Since the waste to ore ratio may be low (<2:1), three additional holes to 500-foot depths could yield another one half million tons. If the Bisbee is consistantly mineralized, abundant targets may be revealed.

- Also to the immediate east of the currently developed reserves, but along the easterly extension of the Main Vein, some deep vein drill intercepts suggest that low grade gold (0.02 oz./ton) with moderate grade silver (2.0 oz/ton) may be present. Reserves would be narrow, tabular and deep following the favored host rocks of the Lower Andesite and Rhyolite Breccia to depth. Perhaps 3/4's to one million additional tons may be present but at a high waste to ore ratio (+3:1). Four holes to 650 feet would test this area adequately.

- Another 500 feet to the east southeast. A dump sample from the +200 foot North Shaft contained 0.068 ounces per ton gold and 15.94 ounces per ton silver. This shaft was thought by some to have encountered the intersection of the Main Vein and the North vein at depth. Old underground maps suggest that the Main Vein may have curved slightly northward, perhaps making this area an en echelon feature, perhaps worthy of testing. Also a surface vein sample near the Pearce shaft located in the southern portion of this area contained 0.012 ounces per ton gold and 4.92 ounces per ton silver. Four to six 500-foot holes could test these potential target.

- A low priority target is the far eastward extension of the North Vein toward Huddy Hill. Shallow drilling conducted by Santa Fe intercepted low silver (0.5 to 2.0 oz/ton) values through the North Vein and some low gold values (0.015 oz/ton) in the footwall. Reportedly, underground workings run 900 feet east of the D shaft along the Main Vein, turned north and explored a 400-foot portion of the North Vein just above the old water table. A limited gold ore zone without silver values was found in the footwall of the North Vein and was bounded by assay walls. Harvest drilled C-94-2 into this region and found 10 feet of open stope but no significant assay walls. Two or three additional holes could further test this prospect.

- Local vein mineralization at Huddy Hill and other small prospects on the Galyen lease may contain potential, but additional field work is necessary. Rock chip sampling together with field structural mapping may yield good results.

Six-Mile Hill Area

Six-Mile Hill, lying about one mile west southwest of Commonwealth, is geologically similar to the eastern portion of the Commonwealth Mine area. A reasonable potential for similar style mineralization may occur in the following areas:

- A quartz-calcite vein which is at least 65 feet in width exposed in an adit at the northwest corner of Six-Mile Hill. Three composite samples taken at various locations across this vein contained 0.033, 0.024, and 0.013 oz/ton gold with 0.15, 0.22, 0.094 oz/ton silver. Several additional outcrops of similar-looking veins are present in this area and deserve further attention. The host rocks are the upper Pearce Volcanics which are not as favorable as the underlying units so well mineralized at Commonwealth.

- An area of hot springs sinter outcrops in the north central portion of Six-Mile. Rock samples from this sinter contained anomalous gold, silver, arsenic, antimony, bismuth, gallium, and zinc, but no ore values. They occur in a down-dropped fault block and may represent the upper level of an epithermal system perhaps similar to Commonwealth. Exploration by Santa Fe was negative, but much additional geologic work could be done on this interesting occurrence.

- Lastly, an area of reported surface soil mercury and arsenic anomalies with associated magnetic anomalies is located on the eastern portion of Six-Mile Hill. Although somewhat speculative, additional work may be warranted.

Other Prospect Areas

- The Blue Jeep and San Ignacio prospects are located about one mile and three miles respectively east northeast of Commonwealth Property. They have had significant exploration activity, including limited drilling, some with ore grade intercepts. Additional work is definitely warranted.

- The Mexican Hat deposit is about 6 miles south of Commonwealth just off the county road to Courtland-Gleason. Owed by a Peace local, it is currently controlled by Oneida Resources, Inc. of Vancouver, BC. It may represent a significant gold resource. Originally drilled by Placer Dome, it is reported to contain over 7.6 million tons grading 0.034 oz. Gold/ton, or some 260,000 ounces of gold. Reportedly, it is open ended, but with a high waste to ore ratio.

- The Maud Hill area near Cortland-Gleason, about 10 miles south, has been rumored to contain potential reserves approaching 11 million tons grading 1.5% copper and 0.05 oz/ton gold. No work has been done in this area recently.

7.0 1994 RESERVE IN-FILL, METALLURGY & EXPLORATION

The objectives of Harvest's 1995 program is to better define that a commercial gold-silver heap leach operation can be established at Commonwealth. This will be done by : a) an in-fill drilling program to increase the measured reserves by 2.0 million tons (i.e. in excess of 100,000 ounces of gold equivalent); b) determination of the final metallurgical characteristics of

the Commonwealth, c) design the final pit and facility plans, d) commence permitting, and lastly e) conducting ground exploration at Six-Mile Hill and other areas in the local region. The envisioned program, already partially completed, will consist of the following:

1. Re-establish a surveyed grid over the property to accurately locate all past drill holes, adits, shafts, etc. This grid can then be used as a base for future work.

2. Locate all drill holes for the next phase of drilling, and construct required drill roads and pads for future drilling. This phase of drilling will better define and probably extend the Commonwealth ore reserve. A total of approximately 5,500 feet of in-fill drilling is proposed to a) increase the reserves, b) perform check assaying through important ore areas, and c) test new areas of potential mineralization. In addition, a future program of some 35 drill holes aggregating an additional 18,300 feet of drilling is recommended to extend the reserves to the west and the east along strike. Additional in-fill drilling will simplify mine planning, however, with only a small portion of this drilling, mine planning functions can commence. A final mine plan will be delivered.

3. Re-assay and check assaying of any of the important drill holes and underground samples will be part of any ongoing program.

4. Collection of additional bulk metallurgical samples from the surface and underground. Definitive metallurgical analysis, some already in progress requires proper collection and evaluation of a multitude of representative samples. A bulk sample approaching 100 tons may be necessary prior to final process determination and facility design. Large scale bottle roll and column testing will insure accurate results. Final metallurgical results will lead to a process flow sheet, in turn allowing for facility design and construction plans.

5. With pit designs and processing plans complete, one must proceed with operating permit acquisition immediately. This is a critical path item. Water quality and air quality base line studies are in progress.

6. The Six Mile Hill area warrants additional exploration. Acquisition and initial geologic studies will be followed by two shallow holes to check quartz mineralization which is very similar to Commonwealth.

7. Compile all existing geologic mapping for Commonwealth and Six-Mile onto a uniform base. Field check old mapping and conduct additional detailed mapping. Conduct additional surface sampling at Six-Mile and Commonwealth to delineate future drill targets. Conduct a quick reconnaissance program and land status survey of other Tertiary volcanic outcrops in the region and make exploration and lease recommendations.

The total cost for the Commonwealth, 1995 refinement program is estimated at US$650,000. Drilling and metallurgical work will require approximately four months. Permitting work is already in progress, but may approach one year from start to finish. Initial work was commenced in October of 1994.

8.0 METALLURGICAL TESTING

8.1 *Old Mine Operations*

The first milling operation at Commonwealth was established in 1898 by John Brockman, D.M. Barringer and R.A.F. Penrose of the Commonwealth Mining and Milling Company. Little information is available, however, the first operation was reported to be a 30 ton-per-day pan amalgamation mill, later increased to a 200 ton-per-day stamp and roll mill configuration. Recovery was reported at 83% of the contained precious metals.

In June of 1900, this mill burned and was replaced with a new 80 stamp, 240 ton per day mill in January 1901 which operated continuously until mid-1905. From 1905 on to 1910, a 250 ton per day cyanide plant was in operation on the old amalgamation tailings, and in 1906 this included mine-run ore. No information has been located on the details of this plant.

In 1910, the Montana Tonopah Mining Company constructed a new cyanide plant which operated into 1917 on -35 mesh ground ore. From 1917 until 1927 some 115,000 tons of ore was shipped directly to the Douglas copper smelter as high silica smelter flux. No significant production, other than intermittent lessors was done after 1927.

8.2 *Previous Metallurgical Testing*

Several generations of metallurgical testing have been conducted at Commonwealth. In December of 1969, Basic Metals, Inc. investigated the Commonwealth mill tailings and defined about 808,000 tons grading 0.012 ounce gold and 2.48 ounce silver per ton. A screen analysis showed that 95% of the material was -35 mesh with a relatively uniform distribution of values amongst the various screen fractions. Froth flotation of the tails was unsuccessful, as was gravity concentration. Two large cyanide bottle rolls of the tailings yielded 47% and 60% of the gold and 25% and 40% of the silver.

In mid-1975 Platoro Mines, Inc. conducted 36 laboratory tests for gold and silver recovery from four underground composite samples and one old tailing sample. On the tailings, grinding to -200 mesh with flotation yielded 50% or the gold and 25% of the silver, while cyanidation gave better than 50% of the gold and 30% to 35% of the silver. On ore samples, finer grinds (<200 mesh) always yielded +92 % of the gold and generally 63% to 71% of the silver. They believed that approximately one ounce of silver per ton was locked into the ore and difficult to extract.

In late 1983, Santa Fe Mining, Inc. contracted with Mountain States Research and Development to conduct cyanide and flotation tests. Santa Fe delivered some 630 pounds of -4 inch run of mine material grading 0.013 ounce of gold per ton and 9.8 ounces of silver per ton with the ore values evenly distributed among the various sample size fractions. Four thousand gram bottle rolls on -2 inch, -1 inch, - 1/2 inch and -1/4 inch, and 10% +100 mesh material showed widely varying results. In 72 hours, finer material yielded 85% of the gold but only 22% of the silver, while the -1/4 inch material gave 62% of the gold and only 13% of the silver. Coarser size recovery was very poor (<20%). Flotation test results were also poor.

In early 1989, Westland Exploration contracted with KD Engineering of Tucson for a series of six preliminary bottle roll leach tests on drill cuttings from Westland's initial phase of drilling on the western gold-rich zone. Here the gold and silver recoveries averaged 78 and 34 percent respectively with average cyanide consumption of 0.5 pounds per ton and average lime consumption of 2.8 pounds per ton. Westland also shipped numerous drill samples to Barringer Laboratories, Inc. of Sparks, Nevada for gold and silver bottle leaches to determine the ratio of extractable gold and silver to total gold and silver. The initial batch showed an 79% gold and an 81% silver ratio. While two later batches yielded an 85% and 82% ratio for both gold and silver.

In mid-1989, Westland had additional composites tested by METCON Research, Inc. of Tucson, Arizona. Six drillhole composites also from the western portion of the deposit, each ground to -10 mesh in 500 gram bottle rolls for 72 hours, yielded gold recoveries from 38% to 95% and 2% to 70% recovery of the silver. The composite recovery average was 78% and 38% for the gold and silver. Cyanide and lime consumption were 0.81 and 4.1 respectively.

In early 1990, Placer Dome submitted four drill hole composite samples for testing at the Golden Sunlight Mines, Inc. lab in Whitehall, Montana. The samples ranged from 6 five-foot intervals composited to 10 five-foot drill cutting samples composited with composite values ranging from 0.016 to 0.161 ounce gold per ton and from 0.46 to 3.05 ounce silver per ton. Cyanide bottle roll tests with 2 pounds of cyanide per ton and an 11.0 ph done on coarser material (25%+100 mesh) yielded from 85 to 94% gold recovery and 84% to 92% silver recovery in 48 hours with approximately 1.2 pounds of cyanide and 5 pounds of lime consumed. Finer grinding to 200 mesh improved recovery slightly, but generally 0.003 ounce gold per ton and 0.15 ounce of silver per ton always remained unrecovered.

In early 1991, ASARCO investigated Commonwealth. Three drill hole composites were sent to METCON. All samples were crushed to -10 mesh and 500 grams were bottle roll leached for 72 hours. Recoveries ranged from 58% to 99% of the gold and 12% to 39 % of the silver. The average recovery was 77% of the gold and 30% of the silver. Cyanide consumption was 1.3 pounds and lime was 2.7 pounds per ton with an 11 ph. Lower grade head samples generally yielded the poorer recoveries. They also noted that high grade gold values leach out very quickly. A second batch of composites leached for 120 hours gave 84% gold extraction and 52% silver recovery albeit with cyanide consumption at 0.9 pound and lime at 2.9 pounds per ton with a 10.8 ph.

In mid-1991, Chemgold, Inc., a subsidiary of Glamis Gold, Inc. performed bottle rolls on each of three ore bearing rocks at Commonwealth: the Bisbee Sandstone, the Upper Andesite and the Rhyolite Breccia. Approximately 450 pounds of material was collected, predominately from the western portion of the deposit. Each rock type was subjected to three bottle rolls at +4 mesh, -4 +10 mesh and -10 mesh. The Bisbee samples leached well for gold after 72 hours yielding 72%, 89% and 88% respectively all from a head grade of 0.037 ounce gold per ton. Silver showed no leach at all. The Upper Andesite was low grade with an average assay head of 0.006 but a calculated head of 0.021 ounce per ton gold and approximately 1.42 ounce per ton silver. Gold leached 37% to 54% with about 24% of the silver. Lastly, the Rhyolite leached poorly, yielding an average of only 21% of the gold and 13% of the silver, the best recovery by far at -10 mesh. Two 12 inch, 10-foot columns were then loaded and leached at -1.5 inch material and 1.5 to 2 inch material. Unfortunately, only four days of leaching data is available however it was noted that substantial gold leaching occurred very quickly.

In late 1991, Western States Minerals Corporation did extensive drill and metallurgical testing at Commonwealth. METCON Research was retained by Western States to conduct a large program of bottle rolls on drill hole composites. On some 18 tests with values ranging from 0.016 to 0.17 ounce gold per ton, gold recoveries ranged from 38% to 96% with an average of 77% and silver from 24% to 58% (average 37%) with a low 0.9 pound cyanide and 2.9 pound lime consumption. The material was both 1/4 inch and -10 mesh for a 1000 gram charge. The best recoveries were from higher grades crushed to -10 mesh. Lower grade samples generally had lower recoveries with about 0.003 ounce gold per ton the minimum tail value. Further, they determined that coarse free gold is not an important constituent of the ore and cyanide solubility is approximately 88% of the fire assay on average.

In mid-1992, Westland had METCON conduct two 96 hour bottle rolls on -3/4 inch material, one of andesite and one of Bisbee. Recoveries were 38% of the gold and 43% of the silver in the andesite, verses 88% of the gold and 20% of the silver in the Bisbee. Cyanide consumption averaged 0.45 pound and lime was 4.5 pounds per ton.

In late 1992, Consolidated Nevada Goldfields, Inc. shipped four small sample composites (3 from surface exposures and 1 from underground) to McClelland Laboratories, Inc., of Reno, Nevada and to CNG's Barite Hill operation in South Carolina. Two additional, large scale underground bulk samples were also sent to McClelland Laboratories, Inc. All these samples were to be used to determine precious metal recovery, recovery rates, reagent requirements and sensitivity to feed size. The samples sent to Barite Hill were subjected to various 96 hour bottle rolls at -5/8 inch -3/8, -1/4 inch, and -10 mesh. Recoveries were 25% to 56% at -5/8, 35% to 39% at -3/8, 36% to 69% at -1/4 inch and 55% to 63% at -10 mesh. Column leaches of approximately 70 pounds -5/8 material yielded from 26% to 56% depending upon rock type and average grade. Cyanide and lime consumption was 0.3 pound and 5 pounds respectively.

At McClelland, two feed sizes were tested 80% -5/8 inch and 100% - 10 mesh. Bottle rolls on 5/8 inch surface samples yielded only 25% gold and 24% silver recovery in 120 hours

suggesting that a surface oxidation product retards precious metal recovery. The underground samples gave 44% to 60% gold recovery and 7% to 29% silver recovery in 120 hours at the 5/8 inch size. All the 10 mesh samples, including surface samples, yielded 60% to 87% of the gold and 22% to 50% of the silver in 120 hours. The majority of metal recovery was rapid, however a longer leaching cycles would yield better recovery. Cyanide consumption was low at from 0.1 to 0.4 pound cyanide per ton with moderate lime consumption at from 3 to 11 pounds per ton. Column tests on the two underground bulk samples, sized at 80% -5/8 inch and grading 0.021 to 0.070 gold and 0.69 to 3.56 silver per ton, gave recoveries 20% higher than the bottle rolls. These tests using 8-foot 6 inch columns each with about 115 pound of material, gave 68% and 71% gold recovery and 19% and 36% silver recovery after 30 days, but were still increasing slowly at premature termination. Cyanide consumption was approximately 2 pounds per ton, with lime consumption at 4 pounds per ton to hold a +10.3 ph value. In both tests lower recovery was prominent on the +10 mesh fractions of the samples. McClelland final conclusion was that the Commonwealth ore was amenable to heap leaching at coarser sizes.

8.3 *1994-95 Harvest Gold Metallurgical Testing*

Harvest commenced metallurgical tests in September 1994. Kappas, Cassiday and Associates, Inc. of Sparks, Nevada were retained to provide testing services. Initially two near surface and four deeper underground samples were collected from crosscuts in the old mine workings. Three samples were derived from the eastern end of the 3rd mine level and one from the eastern end of the 6th level. All head grades were low running from 0.015 to 0.042 gold and 1.45 to 3.08 silver per ton. This approximates the average expected minable grade of the deposit as a whole, or 0.026 ounce gold and 2.29 ounce silver per ton, equaling about an 0.035 recoverable gold equivalent grade. Large 5000 gram bottle rolls were performed on all samples at -5/8 mesh material. The surface samples were not expected to leach well due to oxidation problems. Only about 34% of their gold was recovered in 96 hours. Two of the underground samples to the west on the 3rd and 6th level gave an average of 95% gold recovery while the two lying to the east side of the deposit on the 3rd level gave an average 43% recovery. Silver recoveries are low from 11% to 25%. Cyanide consumption was low at about 0.6 pounds per ton with lime at approximately 1.3 pound per ton at 10.3 ph.

ore, crushed and, if necessary, blended with cement, cured for 48 hours and then placed into 8 to 12 inch columns filled with material to a height of 6 or 8 feet. They would then be leached with a 2 pound per ton sodium cyanide solution at a ph of 10 to 11. The irrigation rate used for leaching will be .0025 to 0.005 GPM/sq. ft. The ore will be leached until the daily extraction drops below an economic level. The estimated test duration is at least 60 days. The cost for additional testing is estimated at $54,000 including a mineralogical evaluation. Total cost for any additional testing would approximate $85,000 depending upon the collection methods used, but exclusive of in-house personnel and expenses.

9.0 PERMITTING

There is one principle permit and several minor permits or notices required for any proposed mining operation at the Commonwealth Mine. The main permits are the Aquifer Protection Permit issued by the Arizona Department of Environmental Quality - Office of Water Quality, and secondarily a Air Emissions Permit from the Office of Air Quality. These two are deemed the critical path permits, because of their possible need for baseline and other technical information, and the general length of time required to receive these permits.

9.1 *Office of Water Quality - MAJOR PERMIT*

The Office of Water Quality requires that an application for the Aquifer Protection Permit and a Notice of Discharge be filed with them. Current regulations are such that Harvest will be required to meet the Best Available Demonstrated Control Technology ("BADCT"). Issuance of this permit will require from 3 to 6 months from the date of application, longer periods approaching 12 months are possible.

In order to expedite the filing of the Aquifer Protection Permit, Harvest Gold has retained Errol Montgomery & Associates, Inc., hydrologists of Tucson, Arizona to assist in its preparation. To date Montgomery has researched the regional water situation, toured the site and has prepared a map and water data summary for a three mile radius around the Commonwealth Mine. Mongomery quoted in their January 3, 1995 report: ....**"Based on information reviewed thus far and our knowledge of the APP program, we do not foresee any substancial impediments to obtaining an APP for the Commonwealth Mine Project, especially if optium Best Available Demonstrated Control Technology (BADCT) is used for construction of facilities"....** Montgomery and other consultants will be directly involved in discussions with the personnel of the Office of Water Quality, first as initial informal discussions and later as formal applications. Their work will include preparation of the following:

- site plan
- process flow diagrams
- facility design plans
- process description.

In mid-October 1994, the surface samples were combined into a single 5-foot, 3 inch diameter column for leaching at 100% -10 mesh. The two low-leaching, east side 3rd level samples were also combined into a 5-foot 3 inch column test at 100% -10 mesh. Ten mesh is regarded as the smallest range suitable for heap leaching. Kappes, Cassiday economic studies have shown that operating costs are increased to approximately $2.30 per ton by the necessary finer crushing and the attendant cement agglomeration cost. Agglomeration tests indicated that 4 pounds per ton of Portland type II cement was adaquate for proper binding of the ten mesh material. After 30 days leaching time 68% and 78% of the gold had been recovered while only 15% to 19% of the silver was recovered. Kappes estimated field cyanide consumption at only 0.3 pound per ton of ore.

The two good bottle leach samples from the western 3rd level and the 6th level were each placed in separate -5/8" columns 6 inches in diameter and 5 feet high. The 5/8" material showed 84% and 93% gold recovery after 42 days of leach time. Silver recoveries ranged from 20% to 24%. Cyanide consumption was again estimated at a very low 0.33 pound per ton under field conditions.

In March 1995, an additional 1/2 ton of underground bulk samples was delivered to Kappas, Cassiday for treatment under identical conditions with a specific concentration on maximizing silver recovery. Two near surface samples were collected from underground workings to better define the nature of near surface oxidation and silica encapsulation on a small portion of the ore reserve. Bottle rolls are currently in progress.

8.5 *Additional Testing*

As the current Kappes, Cassiday data is collected, a need for additional bottle roll tests and column leaches may be found, so as to develop sufficient data for final feasibility. If this is the case, this additional testing may require a suite of representative composite samples with a total weight of perhaps a minimum of 2,000 pounds or perhaps even up to several tens of tons. These samples can be procured in various ways: a) surface excavation after limited blasting, b) by drilling core of a minimum size of 2.5 to 3 inches, or c) by entering the old workings and physically obtaining a bulk sample by chipping and perhaps blasting.

Excavation via one or more surface cuts is the most logical, however problems have been noted in the leaching characteristics of near surface material. An estimated cost for dozer excavation, drilling and blasting and backhoe extraction could approach $30,000. Harvest has obtained bids for completing diamond coring of 3 inch core at approximately $30.00 per foot with a total of 1,800 feet necessary for obtaining the sample for a cost of about $60,000, including auxiliary costs If a bulk sample from old workings is used Harvest estimates a cost of $22,000, mostly labor to obtain good samples.

A series of bottle rolls would be conducted using the procedures defined by Kappes, Cassiday. These tests will be used to identify any problems associated with the ore, such as the previously reported surface oxidation or any silver recovery problem. Adjustments to cyanide strength and ph control should be able to maximize silver recovery. Further to the bottle roll tests, a series of 6 to 8 column tests may also need to be conducted. For each of these tests, the

A cost estimate for completing the above is approximately $70,000 and would require approximately 60 days for completion prior to application.

The above information will be used to make an informal presentation to the Office of Water Quality to insure that our application is complete prior to filing. Once filed in final form, the schedule for receiving the Aquifer Protection Permit is as follows:

1. Director of DEQ will notify applicant within 30 days if application is complete.

2. Director will notify applicant of the preliminary decision to issue or deny permit within 90 days of receipt of complete application.

3. Director will cause publication of notice of preliminary decision to issue or deny permit within 30 days after applicant is notified of the preliminary decision to issue or deny permit.

4. The DEQ will make a decision whether to conduct a public hearing within 45 days after publication of the public notice. If a hearing is to be held, the department will schedule a hearing on or before 75 days from the close of the public comment period. The hearing record shall close seven days after the hearing.

5. If a public hearing is not required, the Director shall notify the applicant within 30 days of the end of the public comment period of the final decision to issue or deny permit.

6. If a public hearing is required, the Director shall notify applicant within 45 days after public hearing record is closed of the final decision to issue or deny permit.

The maximum permissible period of application to issuance is approximately 315 days, but a minimum is 225 days. This assumes that all documents and data are complete at submission. Additional information requests may be made by the Office. Consultant fees to shepherd the application through the Office may approximate $25,000. Actual application fees have not yet been determined, but could approached $10,000. Harvest has not yet submitted an initial Water Quality application, but has engaged in informal discussions. Total cost of permit estimated at $100,000 exclusive of Company personnel time and incidental expenses.

9.2 *Office of Air Quality- MINOR PERMIT*

The Air Emissions Permit issued by the Office of Air Quality will require at least 6 to 8 weeks to be issued following application. The proposed operation would most likely be classified as a Class C (minor emission source) permit and require an application fee of approximately $1,000.

Harvest personnel are currently in discussion with Air Quality personnel in regards to monitoring requirements. They have requested details of minesite operation, and have tenatively indicated that the Commonwealth Mine may be an insignificant particulate emission source, not

requiring a monitoring system. If however, a baseline measurement of air quality for solid particulate is necessary, the Company has already acquired the necessary equipment. For the type of operation anticipated, one EPA approved PM-10 Monitor would need to be installed down wind of the intended dust source. Filters must be changed following each sampling period which is anticipated to be every other day. As much base line data as possible would be collected before applying for the final permit. Most work can be completed by Company personnel, however, $10,000 in consultant fees may be prudent.

9.3 *Department of Water Resources*

Commonwealth is not located in a controlled or restricted water use area. No special permits for water development or water adjudication are required. Once potential well sites are located only a notice of intent to develop water resources needs to be filed. No monitoring activities are required. Costs are minimal.

9.4 *Arizona State Mine Inspector*

The Inspector must be notified of an intent to operate a mining facility. Only notification is necessary. No ongoing monitoring is required. All cyanide operations required that at least six employees undergo the state cyanidation plant training course at Company expense which is minimal.

9.5 *Arizona Commission of Agriculture and Horticulture*

The Commonwealth Project is designed to operate only on private land, generally outside the jurisdiction of the Commission of Agriculture. As a courtesy, the Company intends to perform a limited biological and archeological review of the area to be disturbed. Special permits are needed to relocate specific plants that may be endangered, if any. Although no items of significance have been noted to date, minor allocations may be made to conserving potential impact items. The cost of selected consultants should not exceed $20,000.

9.6 *Cochise County Regulations*

Cochise County Department of Health requires notification of pending sewerage and potable water facilities, however no specific building permits or zoning laws infringe upon mining claim development.

9.7 *Federal Agencies*

All operations at Commonwealth are anticipated to be conducted upon private land. If federal lands can be avoided, which the can, then no federal permitting requirements need be met. Any attempt to use federal lands may subject the entire operation to federal requirements. Once operations have commenced, the federal Mine Safety and Health Administration, the Occupational Safety and Health Administration and other agencies may be involved in monitoring operational activities. Federal endangered species, water quality and other regulatory requirements may need to be met.

10.0 PROJECT PLAN, SCHEDULE AND BUDGET

10.1 Pit and Facility Layout

Several preliminary pit outlines have been drawn via computer. The maximum pit dimensions under the 0.009 cutoff approached 2400 feet in about the N. 70 E. direction and has approximately 1200 feet of maximum width. Due to erratic deep drill intercepts, the pit bottom is irregular. The top of Pearce Hill, at 4,732 feet in elevation, was removed down to the 4580 level, while the deepest excavation approaches the 3980-foot elevation for a total maximum relief of about 752 feet.

As per the TECHBASE cone mining program, all pit outlines assumed a maximum pit slope of 55 degrees. Only the southern pit wall, located within competent Upper Andesite and Rhyolite Breccia, achieves the maximum slope angle. The northern pit slope conforms with the morphology of the North Vein system, generally dipping 40 to 45 degrees south. While the east and west pit walls are relatively narrow with intermediate slopes. Only the far western pit boundary breaches Pearce Hill completely down to the pediment surface level at about the 4420 level, although the eastern wall reaches down to within 40 feet of breaching onto the southeastern pediment level.

Waste rock disposal is best accomplished south of open pit development. The top of Pearce Hill can be excavated via blasting and dozing from 4732 to the 4580 level pushing all waste rock south over the slope edge. Some 160-feet of post mining relief allows for 8 million tons of waste storage on the south flank of Pearce Hill solely on optioned patented ground. Haulage distance is less than 1000 feet from southeast pit access. This area can receive upwards of 20 million tons if expanded over private surface and US mineral ground, south of the patented claims, but east of the Courtland-Gleason county road. Additional, virtually unlimited waste storage can be found to the north, east and south on both optioned private and US surface grounds. Haulage distances would be increased to about 1500 to 2000 feet from the southeast pit rim.

Crusher and agglomeration facilities are best situated approximately 1500 feet south southeast of the pit wholly upon Galyen optioned fee lands. Several hundred acres with a gentle 1.5 degree northeast slope, provide excellent heap leach terrain. The anticipated leach liquor facility would be situated in the NW1/4 of the SE1/4, Sec 4, T.18 S., R.25 E. also on optioned fee land. Access would be via a 3/4 mile spur road off the Courtland-Gleason road about one mine south of the Pearce crossroads. An alternate access, avoiding the Pearce Townsite area completely, would involve about 3/4 mile of spur road off Highway 191 about 1.25 mile east of the Pearce crossroads. Virtually all operations and roads would be on private surface lands.

Visually, the proposed Commonwealth Mine would expose only the flattened top of Pearce Hill and several mining benches to Highway 191 traffic and the townsites of Sunsites and Pearce. The large majority of waste dumps, crushing and leach liquor facilities would not be visible from the main highway nor old Pearce, except along the highway at great distances to the

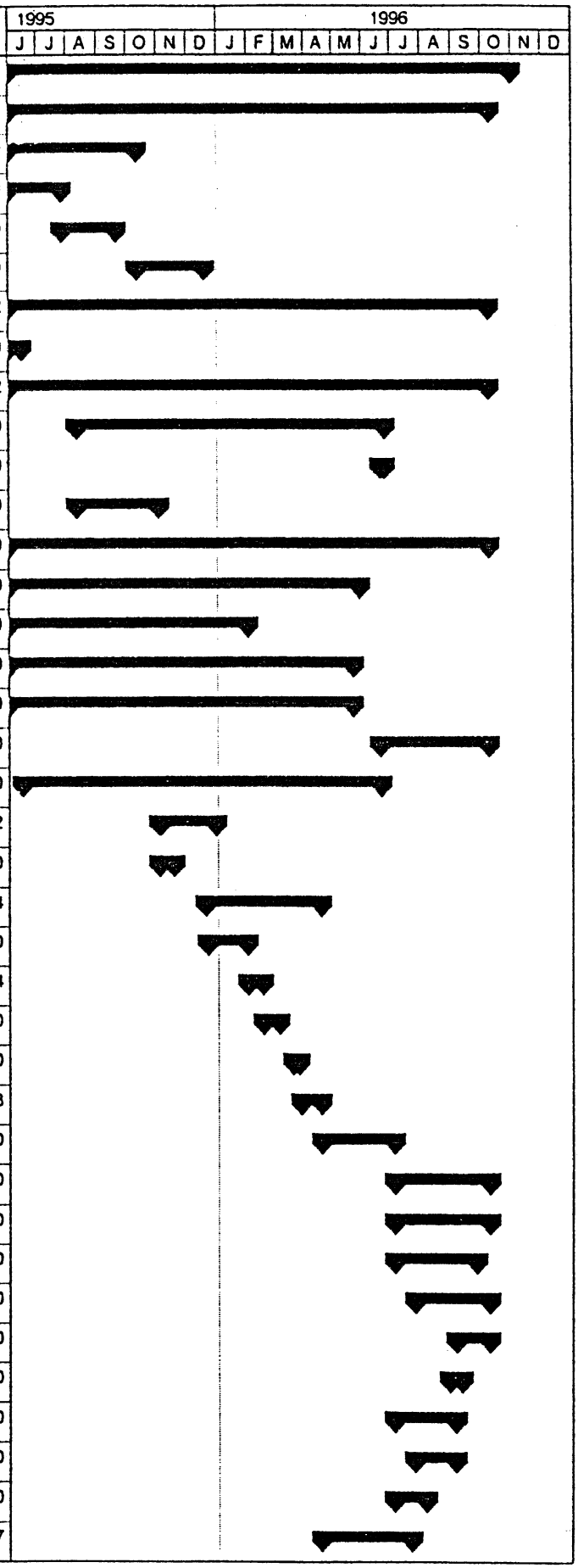
east. The Courtland-Gleason road would skirt the western pit margin requiring some limited relocation and the majority of waste dump would parallel the road but shield the operational facilities from close view. Dust and blast mitigation are a priority.

Current planning calls for final feasibility study of the Commonwealth Project on 7.7 million tons (i.e. in excess of 250,000 ounces of gold equivalent). An independent consultant can be expected to complete this task within two months of commencement. The expected cost of such a study is estimated at $125,000.

10.2 Project Schedule and Budget

Harvest Gold Corporation - COMMONWEALTH SCHEDULE with PRELIMINARY BUDGET

ID	Name	Total Cost
1	Commonwealth Operation (assumes 6/1/95 startup)	$6,411,549.63
2	Commonwealth Rock Products (Mining Co.)	$2,948,635.93
3	Ore Reserve Delineation	$338,552.00
4	Phase 1 drill program	$154,078.00
9	Phase 2 drill program	$127,930.00
16	Mining Feasibility	$76,472.80
23	Permitting	$392,575.12
25	Title review	$3,051.80
32	Permitting requirements	$363,859.32
33	Federal Requirements	$82,406.30
34	MSHA	$0.00
36	USBLM (if required)	$3,600.00
43	State Requirements	$260,785.10
44	AZ Dept. of Enviromental Qu	$103,440.00
46	Office of Air Qualtiy	$20,760.00
49	AZ Dept of Water Resources	$0.00
50	Notice of Intent to drill	$0.00
54	AZ State Mine Inspector	$0.00
57	AZ Com. of Ag. & Horticultur	$16,000.00
67	Cochise County Requirements	$3,886.32
68	Dept of Health	$1,200.00
75	Engineering Design	$72,696.34
77	Rock Mechanics	$14,687.20
82	Haulage requirements	$560.64
85	Dumping requirements	$1,401.60
91	Maintenance Requirements	$1,500.00
95	Site Plan	$10,774.48
101	Construction Solicitation	$10,890.80
106	Mine Construction Phase	$1,930,408.20
109	Construction	$1,689,858.00
110	Mine	$415,530.00
114	Crushing Circuit	$1,020,500.00
119	Agglomeration Circuit	$254,000.00
126	Dump Areas	$7,620.00
133	Buildings	$186,960.00
134	Main office (contract)	$81,480.00
138	Warehouse	$48,480.00
144	Water Well Program	$127,040.67



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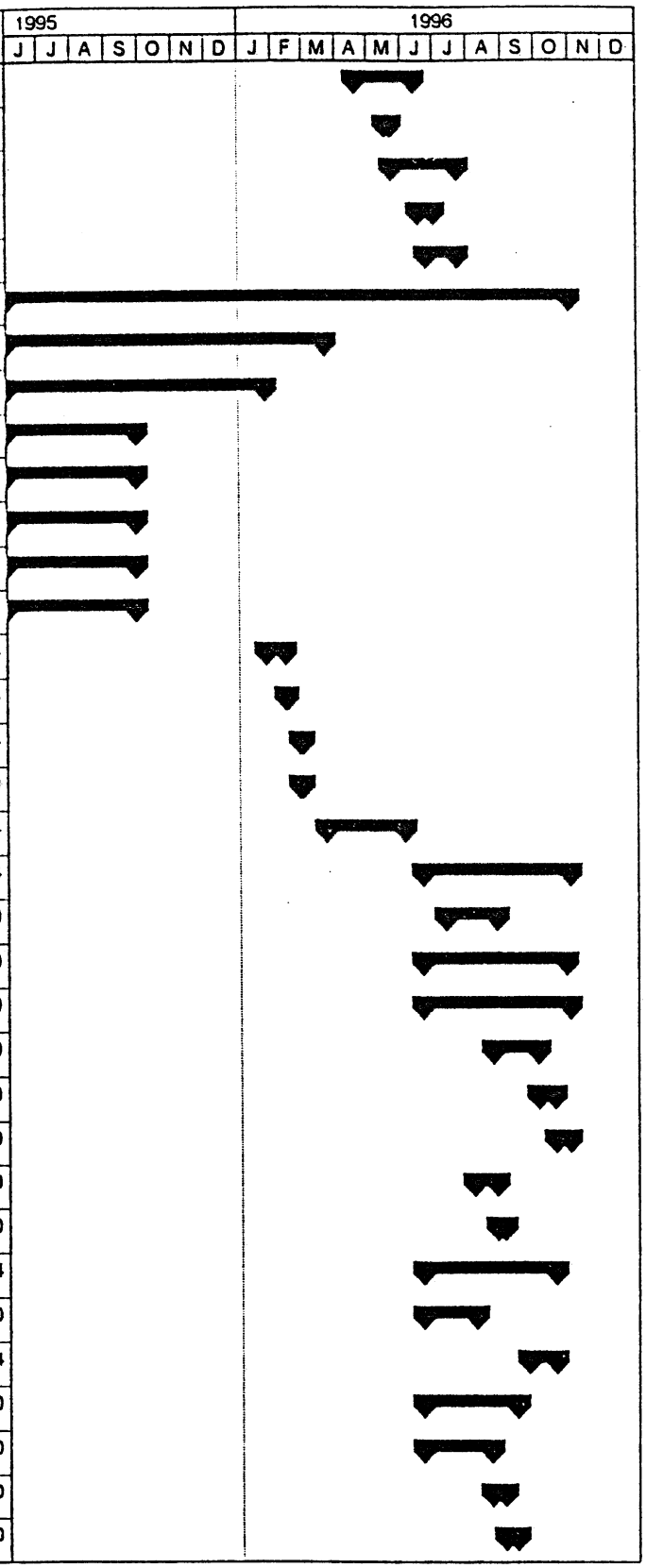
Harvest Gold Corporation - COMMONWEALTH SCHEDULE with PRELIMINARY BUDGET

ID	Name	Total Cost
145	Water rights	$4,949.40
147	Retain Hydrologist	$3,600.00
151	Water Acquisition	$50,620.00
157	Water Delivery	$17,746.40
161	Water implementation	$49,710.00
164	Dragoon Metals, Inc. (Milling Company)	$3,161,917.76
165	Final Metallurgical Feasibility	$175,579.08
166	Definitive Metallurgical Testing	$112,708.04
169	Sample Collection	$31,008.04
170	Underground	$12,252.50
172	Collect Samples	$12,252.50
177	Surface	$14,097.50
179	Collect Samples	$14,097.50
190	Site layout and design	$12,560.64
195	Utility requirements	$2,093.44
201	Schedule	$3,827.04
202	Define requirements	$0.00
211	Construction Solicitation	$9,699.84
216	Mill Construction Phase	$2,976,638.84
220	Mill	$297,900.00
226	Pads (1 yr production 1.25mm tons)	$1,150,000.00
237	Ponds	$595,300.00
240	Preg pond	$0.00
246	Barren pond	$0.00
252	Safety pond	$0.00
259	Preg circuit	$10,220.00
262	Barren circuit	$9,780.00
265	Buildings	$390,332.24
267	Office, Assay and Lab	$222,480.00
273	Security Facility	$51,584.24
278	Utility construction	$175,435.00
279	Electric	$164,195.00
284	Propane	$6,040.00
287	Domestic Water	$5,200.00



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ANALYSIS OF PAST EXPLORATION WORK

at the

COMMONWEALTH PROPERTY

Cochise County, Arizona, USA

June 1, 1995
Revised September 16, 1996

compiled by: R.A. Forrest

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ANALYSIS OF PAST EXPLORATION WORK

at the

COMMONWEALTH PROPERTY

Cochise County, Arizona, USA

The Commonwealth property is a past producer of approximately **122,000 ounces of gold and 13 million ounces of silver**, between 1895 and 1940. R.A.F. Penrose, the well known Cripple Creek mining geologist, steered the original Commonwealth Mining and Milling Company to many years of profitable activities, which terminated in the early 1900's. This was followed by many intermittent years of small company and lessor operations.

Unfortunately, between 1940 and today, many of the old records of operations, meticulously collected by Penrose and his associates, have been lost or destroyed. Only sparse records of underground development have been located to date. As such, the geologic data base on the Commonwealth has had to been reconstructed almost from scratch.

Since 1969, no less than 16 companies have explored or examined Commonwealth in some detail, with perhaps scores of individual company examinations over the same years. Interest was limited until the precious metal prices escalated in late 1970's and early 1980's. Exploration in earnest really began in the mid-1980's after the very significant price escalation of 1980. Wide spread, better grade, gold zones were not recognized until the late 1980's, hindering the earlier activity.

The large number of involved companies leads to speculation of potential problems perhaps inherent to the Commonwealth Property. Harvest Gold, in its attempt to better understand the history of Commonwealth has attempted to reconstruct activities conducted by previous property holders and examiners. The complete exploration work history of Commonwealth is documented on the attached appendix. Some 171 drill holes, wide spread channel sampling, abundant metallurgical work and other attendant activities have created an excellent data base, all of which has now been incorporated by Harvest into a MineSoft-**TECHBASE** software package.

Still, one is curious as to the individual decisions that led to a company's initial acquisition of Commonwealth and its subsequent disposal. Harvest has reviewed the available information, randomly available correspondence and some personal contacts to evolve the following information.

Significant Activities at Commonwealth

1969 **Basic Industries**: Examined tailings, but flotation or cyanidation was unsuccessful in recovering sufficient metal for commercial operations.

1975-76 **Platoro Mines** (Paul Eimon, et al): Mr. Eimon, being a noted silver expert, sought out Commonwealth for acquisition. Platoro did extensive exploration with some successful results. They found an eastern vein extension and indications of a possible bulk tonnage silver deposit. Limited met work was favorable. Lacking funds they then subleased the property to Bethex.

1976 **Bethex** (Bethlehem Copper Co.): Looking to develop a bulk silver target, Bethex drilled 16 holes, mostly on the east side, widely scattered, but got poor recovery due to the use of standard rotary drilling and old workings. Their sample results were poor with even some negative indications. Bethex did not believe that a large tonnage silver deposit was present and dropped out. Platoro failed to continue, allowing the underlying lease to lapse.

1977-78 **Western States Minerals**: Also seeking a bulk silver target, WSM drilled 13 holes all around property, located a high gold zone to the west with one hole, and had some encouragement to the east. Their lease lapsed after a plane crash killed several members of exploration group and management.

1979-1982 **Cor-ford, Inc**. When silver prices sky rocketed in the early 80's, the property owners shipped $3.0 million in tailings to nearby smelters. Smelter records indicate that operations were quite profitable for many months.

1981 **Geo-Hendricks** (a successor to Platoro's remaining interest in an adjacent property): GH tried to locate the Commonwealth Vein extensions as postulated by a mid-1970's Master's thesis. They drilled 14 holes to shallow depths, only a few feet into bedrock, testing some outlying property areas. Most holes were barren. At the time, they did not control the main Commonwealth Mine. One deep hole south of the Commonwealth, penetrated a mineralized thrust plane at a 1000-foot depth.

1983-84 **Alpine Resources**: A promotional outfit leased the property and instigated geologic mapping and sampled dumps. They dropped out when they were unable to raise funding.

1985-86 **Santa Fe**: Drilled 5 standard rotary holes, four of which were on the eastern extension of the North vein, well away from main mine area. One hole drilled to the west was on an owner-dowsed site. Metallurgical work on high quartz, silver vein material was poor. Santa Fe was apparently testing a caldera rim model which failed to meet their specs. The property was dropped without much work in the old mine area.

1988-92 **DRX, Inc**: This was the first real detailed exploration testing. DRX, a small exploration company, drilled 55 holes, explored the western high gold zone, central and eastern high silver areas. They reopened old workings and conducted abundant channel sampling and some metallurgical work. They established a mineable reserve but tried and failed to finance a small heap leach operation for the western gold zone. The company financially failed in 1992 after examinations, leasing or optioning to Placer, ASARCO, Glamis Gold and Western States.

1990 **Placer Dome**: PD had a brief successful exam and metallurgical tests, but a failure to follow through, probably due to limited size potential and onerous terms from DRX. Placer explored and dropped the Mexican Hat deposit six miles south, as well.

1991 **ASARCO**: More extensive exam with abundant check sampling that confirmed previous sampling. Their met samples were moderately successful, but resulted in no follow through. DRX's terms and perceived deposit size may have been a factor.

1991 **Glamis Gold**: Seeking a high gold target, Glamis drilled 13 holes and conducted partially successful metallurgical work. Glamis drilled the majority of their holes into the Bisbee Formation seeking a postulated, bedded Bisbee target. Unfortunately, drilling found widespread gold but was unsuccessful in finding a continuous Bisbee ore zone. DRX's terms, the seemingly refractory siliceous ores and the lack of Bisbee encouragement led to their termination.

1992 **Western States Minerals**: Upon review of prior information, WSM again subleased the property from DRX and drilled 11 holes and conducted many check assays. Meetings were held with locals to explore mine development resistance, which was nil. Later, their site geologist somehow concluded that the average grade must be lower since his samples were lower than three other drilling and sampling programs, all from different labs. This together with the cost of the deal and expected deposit size again led to termination.

1993 **Columbia Resources**: Upon the failure of DRX, an officer of DRX formed Columbia and optioned the property from the underlying owners. Reports were compiled, but no significant work performed.

1993 **Consolidated Nevada Goldfields**: CNG took over the lease and option from Columbia, and did abundant, successful metallurgical work. They discovered that near-surface mineralization was partially refractory to cyanidation, but could be mitigated by finer crushing. They were then forced to terminate operations due to a bankruptcy reorganization and management change.

1993 **Pegasus Gold**: PG optioned from Columbia and drilled 5 deeper reverse rotary holes into narrower widths, but higher grades of mineralization. They lost two holes in old mine workings, and were disappointed in not finding widespread low grade in

hangingwall, although recovery was sometimes poor. Despite desires of their project manager, they let the option lapse when the company decided to direct most exploration operations overseas.

1994 **Harvest Gold** (the current optionee): Harvest took a full assignment of the property from Columbia. With a limited budget, they pursued data acquisition, a limited drill program and an extensive and successful metallurgical work program with Kappas-Cassiday. The drill program was terminated early due to the failure of the contractor to get adequate samples and ultimately losing a string of rods. All data was placed in a TECHBASE format. Harvest then optioned the property to Atlas.

1995-96 **Atlas Precious Metals:** Atlas arranged a one-year purchase of assets option with Harvest. They 1) compiled all previous works on 50 scale maps after abundant resurveying, 2) conducted a successful check assay program, 3) re-habilitated the collar of the "D" shaft, 4) collected 565' of surface and 2110' of underground channel samples, including new discovery sampling on the old 7th mine level, 5) conducted numerous bottle roll and 14 column leach tests with Kappas-Cassiday (some to 180 days), 6) drilled 26 reverse rotary holes and 4 HQ core holes, all as infill holes, 7) prepared a geotechnical report through Call & Nicholas, Inc., 8) prepared a petrological review of the ore material, 9) prepared an environmental overview report through Harding Lawson Associates, which included an environmental geochem program, and 10) prepared a Med System mine model of the deposit. Although the results indicated a potentially minable reserve, apparently the required purchase price and Atlas' low stock price and cash short position dictated that they drop out.

1996 **Harvest Gold:** Harvest is again in receipt of the property, slowly compiling additional data including a VLF and geochemical recon survey of the eastern extension area. On site management has begun permit acquisition.

Harvest Gold Corporation

Commonwealth Data Base valuation

All Work recalculated into 1995 dollars

Exclusive of land payments

Basic (1969)		tailings study			$	22,500
Platoro Mines (1975-76)	2,100	Assays		$ 13.00	$	27,300
	5	drill holes	2200	$ 11.00	$	24,200
		mapping			$	17,000
	36	bottle rolls	750		$	27,000
		dozer			$	5,500
		labor			$	68,000
Bethex (1976)	13	percussion	4785	$ 9.00	$	43,065
	3	core	510	$ 40.00	$	20,400
	650	assays		$ 13.00	$	8,450
		dozer			$	5,000
		labor			$	55,000
Western States(1977-78)	13	percussion	4500	$ 9.00	$	40,500
	500	assays		$ 13.00	$	6,500
		dozer			$	4,500
		labor			$	35,000
Geo-Hendricks (1981)	14	rotary	2500	$ 9.00	$	22,500
		labor			$	19,000
Alpine (1983-84)		mapping			$	32,000
		dump sampling			$	15,000
Santa Fe (1986-87)	5	rotary	2000	$ 11.00	$	22,000
	250	assays		$ 13.00	$	3,250
	5	bottle rolls	1250		$	6,250
		dozer			$	2,000
		labor			$	31,000
DRX (1988-92)	55	rotary	16225	$ 11.00	$	178,475
Westland Exploration	5400	assays		$ 13.00	$	70,200
		Underground access			$	225,000
		consultants			$	27,500
	6	bottle rolls	750		$	4,500
	11	bottle rolls	750		$	8,250
	6	bottle rolls	750		$	4,500
	2	large bottle	1250		$	2,500
		dozer			$	23,000

		labor			$	145,000
Placer Dome (1990)	10	bottle rolls		$ 750.00	$	7,500
		sampling			$	1,200
ASARCO(1991)	10	bottle rolls		$ 750.00	$	7,500
		sampling			$	2,200
Glamis Gold (1991)	13	rotary	4430	$ 11.00	$	48,730
	950	assays		$ 13.00	$	12,350
	4	column		$ 3,500.00	$	14,000
	9	bottle rolls		$ 750.00	$	6,750
		dozer			$	5,000
		labor			$	46,000
Mintec (1991)		mine reserve study			$	15.500
Western States (1992)	11	rotary	3445	$ 11.00	$	37,895
	850	assays		$ 13.00	$	11,050
	190	assays		$ 13.00	$	2,470
	18	bottle rolls		$ 750.00	$	13,500
		dozer			$	3,000
		labor			$	38,000
Columbia Resources (1993)		geologic work			$	27,000
NV Goldfields (1993)	2	columns		$ 3,000.00	$	6,000
	16	bottle rolls		$ 750.00	$	12,000
	12	McClelland bottle		$ 750.00	$	9,000
	2	McClelland columns		$ 4,000.00	$	8,000
		labor			$	23,000
		sampling			$	5,500
Pegasus Gold (1993)	5	rotary	3215	$ 11.00	$	35,365
	650	assays		$ 13.00	$	8,450
		dozer			$	4,500
		labor			$	24,000
		sampling			$	1,200
Harvest Gold (1994)	4	rotary	1675	$ 11.00	$	18,425
	25	bottle rolls		$ 750.00	$	18,750
	4	columns		$ 4,000.00	$	16,000
	600	assays		$ 13.00	$	7,800
		dozer			$	2,800
		labor			$	62,000
		underground rehab			$	4,500
		ore zone boundary study			$	4,000
		water study			$	12,000

Atlas Precious Metals	26	rotary	8435	$ 11.00	$	92,785
(1995-96)	4	core	1209	$45	$	54,405
	48	bottle rolls		$ 750.00	$	36,000
	22	columns		$ 4,800.00	$	105,600
	11	Agglomeration tests		$ 250.00	$	2,750
		misc met testing			$	18,000
		petrographic study			$	6,500
		enviromental study			$	16,000
		geotechnical study			$	11,000
		underground digitization			$	21,000
		adjacent property recon			$	6,500
		title work			$	7,400
		shaft rehab			$	28,000
	2670	assays		$ 13.00	$	34,710
		dozer			$	6,700
		inhouse mine design study			$	42,000
		labor			$	138,000

Total Value of Commonwealth Database $ 2,462,125

HARVEST GOLD CORPORATION

COMMONWEALTH PROJECT

Cochise County, Arizona USA

A GOLD -SILVER HEAP LEACH PROPERTY

Ultimate Area Reserve Potential

May 3, 1995
Revised September 12, 1996

compiled by: R.A. Forrest

Contact:

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COMMONWEALTH PROJECT
Cochise County, Arizona USA

Ultimate Area Reserve Potential

The Commonwealth Mine is typical of Tertiary epithermal precious metal systems found throughout the western United States. Several investigators have termed it a classical Bonanza-type epithermal occurrence, modified and enriched by secondary processes. It has the characteristics of a low-sulfur system. Past precious metal production equals roughly 122,000 ounces of gold and 13 million ounces of silver. Current mineable reserves are conservatively estimated **9.1 million tons grading 0.024 ounce gold and 1.6 ounces of silver per ton**. Higher precious metal grades are likely With ongoing exploration, the ultimate reserve potential for the district may exceed **37 million tons grading approximately 0.027 ounce gold and 1.4 ounce of silver per ton** yielding over 1.0 million ounces of gold and over 54 million ounces of silver for a total ***gold equivalent of approximately 1.4 million ounces***.

Silver and gold mineralization at Commonwealth occurs within a series of quartz veins, massive or sheeted, localized along and between two major vein structures, the "Main" and "North" veins. Widespread "dry" precious metal mineralization occupying thin fracture surfaces is present between and adjacent to the massive veins. In 1927, Lewis Smith identified seven larger veins, four of which were splays off the Main Vein in a belt 350 feet wide by 4,000 feet long. Vein "horsetails" were common. All veins exhibit classical epithermal features, including drusy quartz-lined vugs, crustification, comb and cockade textures. Historical production came from supergene-enriched ores of silver (cerargyrite, embolite, argentite, native silver) and native gold. Gangue minerals include quartz, black and white calcite, adularia, montmorillonite, and sericite. Iron oxides are now abundant along fractures in the mineralized zone, but the original sulfide content of the system was low. Minor copper oxides are found on some dumps but is very rare.

Mineralization on the east end of the property appears to be high silver (+2.0 oz/ton) and low gold (<0.03 oz./ton), and is restricted to veins and stockwork zones, with gold and silver values directly related to silicification. At the western end and deep on the eastern end, silver values decrease (averaging <1.0 oz./ton) but higher gold values (>0.035 oz./ton) are present and appear to be more widespread, but not always directly associated with quartz veining or silicification. Ore grade gold characteristically occurs in well fractured Tertiary Lower Andesite, Cretaceous Bisbee Formation or sometimes in Tertiary Rhyolite Breccia, generally along small fractures coated with limonite and/or hematite with minor manganese oxides.

Highest grade mineralization (+20 oz silver/ton and +0.2 oz. gold/ton) is usually found in waxy green quartz, reminiscent of the Oatman, Arizona district. Locally, it has been termed "talc quartz". The green tinge may be fluid inclusions or finely dispersed embolite, (silver bromide). Native gold occurs as micron particles on massive quartz. One to two percent limonite after pyrite pseudomorphs are common although actual unoxidized pyrite is rare.

All mineralization has been oxidized to the maximum depth observed. Only limited, low sulfide base and precious metal primary mineralization was ever encountered in the old mine. Base metal sulfides were apparently sphalerite and galena with lesser chalcopyrite, tetrahedrite, molybdenite and proustite. Old diamond drilling in the early 1900's, beneath the 8th level, as reported in dubious old reports, was not successful in locating deeper higher grade precious metals.

Reserve Potential at the Commonwealth Mine

Excellent potential exists to increase the precious metal mineral reserves at the Commonwealth. Several mineral targets have been defined. A general discussion, not in order of priority, but generally oriented west to east is as follows:

- *West-Central Pit Area:* The westerly portion of the Commonwealth structures contain higher grade gold values. This area, known sometimes as the "Gold Zone", has not been fully delineated at depth and is partially open directly to the east along strike of the Main Vein structure. A thousand-foot drilling density gap has resulted in virtually no information regarding the Main Vein, its split with the North Vein, nor the intervening ground from just below the surface down to several hundred feet of depth along dip. The veins are present and old maps indicate abundant low grade mineralization. The paucity of information was probably generated by completely inaccessible mine workings, a reported "barren" (actually, just not higher grade) zone between old ore shoots, and the difficulty of gaining drill access due to steep slopes and poor angles of intercept. Mineral reserves likely can be extended to the east yielding upwards of one million minable tons. An additional benefit is the almost one for one decrease in waste tonnage to be removed. This area lies between two minable ore zones and currently forms a septum in any proposed pit design. Ore grade mineralization will allow it to be mined with a decrease in the overall waste to ore ratio. **Ultimate potential: 1.2 million Tons grading 0.025 ounce gold and 1.25 ounce silver per ton.**

- *Southwest Veins:* Also in the Gold Zone area, several channel samples and some bulk dump samples from the Mominer shaft located south of the Gold Zone drilling contained up 0.70 ounces per ton gold and 8.12 ounces per ton silver in altered and iron stained Bisbee Formation. All samples contained commercial grade mineralization. The extent of this mineralization has not been determined. When evaluated in conjunction with deep moderate grade intersections in old rotary holes, this material may indicate a deeper high grade ore shoot essentially undefined by recent drilling. Such shoot would be at depth and offset slightly west from the current Gold Zone mineralization. **Ultimate potential: 0.6 million Tons grading 0.047 ounce gold and 1.0 ounce silver per ton.**

- *Deep Pit Extensions:* The most obvious prospective area at Commonwealth for developing additional ore tons is right in the vicinity of the main productive area of the deposit, generally at greater depths than those currently drilled. The potential lies in the mineralized wedge of Rhyolite Breccia and Lower Andesite between the North and Main Veins. Drilling has adequately defined significant ore tonnage above the 5th level of the old mine, generally averaging above the 4,300 foot level. Deeper levels have only occasionally been tested. Recent sampling on the 7th level has found several hundred feet of 0.025 mineralization containing 5 to 15 foot zones of +0.5 oz Au per ton material. Deeper infill drilling is necessary. Since the Main Vein and North Vein converge at depth, this potential target narrows and perhaps dies out at 150 to 200 feet below currently defined reserves. Average grade would be moderate and the waste to ore ratio high (+3:1). High grade, narrower vein intercepts are also likely. Very deep (+700 feet) underground vein mineralization maybe be present. **Ultimate pit potential: 3.2 million Tons grading 0.025 ounce gold and 1.85 ounce silver per ton.**

- *North Pit Rim:* Along the northern rim of the proposed pit, local spots of well mineralized Bisbee Formation are present. Sometimes known veins such as the Eisenhart are present, others show no obvious structures other than the erratically mineralized North Vein nearby from 10 to 80 feet away. Apparently portions of the Bisbee can be quite well mineralized without obvious features identifiable in hand specimen. Atlas, Glamis Gold and Western States all attempted to prospect this mineralized Bisbee with some success. **Ultimate potential: 2.7 million Tons grading 0.020 ounce gold and 2.0 ounce silver per ton.**

- *Northeast Veins:* To the immediate east of the developed reserve, along the North Vein, potential low grade ore is present. Several drill holes have found that scattered low grade silver and spotty gold is common, sometimes approaching ore grade, but also containing local high grade veins. If the Bisbee is consistently mineralized, abundant targets may be revealed by future work. **Ultimate potential: 1.5 million Tons grading 0.022 ounce gold and 2.50 ounce silver per ton.**

- *Main Vein Extension:* Also to the immediate east of the currently developed reserves, but along the easterly extension of the Main Vein, some deep vein drill intercepts suggest that low grade gold (0.02 oz./ton) with moderate grade silver (2.5 oz/ton) may be present. Reserves would be narrow (>100 feet wide), tabular and deep following the favored host rocks of the Lower Andesite and Rhyolite Breccia to depth. Perhaps **Ultimate potential: 2.0 million Tons grading 0.029 ounce gold and 2.75 ounce silver per ton.**

- *North Shaft Area:* Another 500 feet to the east southeast of the East Main Vein target, a dump sample from the +200 foot North Shaft contained 0.068 ounces per ton gold and 15.94 ounces per ton silver. This shaft was thought by some to have encountered the intersection of the Main Vein and the North vein at depth. Old underground maps suggest that the Main Vein may have curved slightly northward, making this area an en echelon feature, perhaps worthy of testing. Also a surface vein sample near the Pearce shaft located in the southern portion of this area contained 0.012 ounces per ton gold and 4.92 ounces per ton silver.

Ultimate potential: 0.5 million Tons grading 0.02 ounce gold and 3.0 ounce silver per ton.

- *North Vein Extension - Huddy Hill:* A low priority target is the far eastward extension of the North Vein toward Huddy Hill. Shallow drilling conducted by Santa Fe intercepted low silver (0.5 to 2.0 oz/ton) values through the North Vein and some low gold values (0.015 oz/ton) in the footwall. Reportedly, underground workings run 900 feet east of the D shaft along the Main Vein, turned north and explored a 400-foot portion of the North Vein just above the old water table. A small gold ore shoot was reportedly mined here, generally as a limited-size gold ore zone without silver values in the footwall of the North Vein and completely bounded by assay walls. A shallow drill hole confirmed the presence of mined out workings. **Ultimate potential: 1.50 million Tons grading 0.020 ounce gold and 2.25 ounce silver per ton.**

Six-Mile Hill Area

Six-Mile Hill, lying about one mile west southwest of Commonwealth, is geologically similar to the eastern portion of the Commonwealth Mine area. A reasonable potential for similar style mineralization may occur in the following areas:

- *San Ramon Veins:* A quartz-calcite vein which is at least 65 feet in width is exposed in an adit at the northwest corner of Six-Mile Hill. Three composite samples taken at various locations across this vein contained 0.033, 0.024, and 0.013 oz/ton gold with 0.15, 0.22, 0.094 oz/ton silver respectively. Several additional outcrops of similar-looking veins are present in this area and deserve further attention. The host rocks are the upper Pearce Volcanics which could be as favorable as the underlying units so well mineralized at Commonwealth. **Ultimate potential: 2.5 million Tons grading 0.03 ounce gold and 1.0 ounce silver per ton.**

- *Six Mile Hot Springs:* An area of hot springs sinter outcrops in the north central portion of Six-Mile Hill. Rock samples from this sinter contained anomalous gold, silver, arsenic, antimony, bismuth, gallium, and zinc, but no ore values. They occur in a down-dropped fault block and may represent the upper level of an epithermal system perhaps similar to Commonwealth. **Ultimate potential: Unknown**

- *Six Mile Mag Area:* Lastly, an area of reported surface soil mercury and arsenic anomalies with associated magnetic anomalies is located on the eastern portion of Six-Mile Hill. Although somewhat speculative, additional work may be warranted. **Ultimate potential: Unknown**

Adjacent Ore Occurrences:

Several prospective ore occurrences are found within a few mile radius of the proposed Commonwealth Mine.

- *Blue Jeep and San Ignacio Prospects*: **The Blue Jeep and San Ignacio prospects are located about one mile and three miles respectively east northeast of Commonwealth Property. They have had significant exploration activity, including limited drilling, some with ore grade intercepts. A December, 1995 study found that the.** San Ignacio potential: 2.0 million Tons grading 0.025 ounce gold and 0.5 ounce silver per ton. Blue Jeep potential: 1.0 million tons at .03 Au and 3.5 ounce Ag per ton.

- *Mexican Hat Deposit:* The Mexican Hat deposit is about 6 miles south of Commonwealth just off the county road to Courtland-Gleason. Owed by a Pearce local, it is currently controlled by a Vancouver, BC promoter, and currently leased by Kalihari Resources. This is a significant gold resource. Originally drilled by Placer Dome, it is reported to contain over 7.6 million tons grading 0.034 oz. Gold/ton, or some 260,000 ounces of gold. Reportedly, it is open ended, but with a high waste to ore ratio. **Ultimate potential: 10.0 million Tons grading 0.034 ounce gold and 0.5 ounce silver per ton.**

Commonwealth Project
Ultimate Reserve Potential

		Millions	Potential		Gold	Total Ounces	Total Ounces	Equivalent Gold ozs IN PLACE using 150 Ag = 1Au
		of Tons	oz Au/ton	oz Ag/ton	Equiv.	Gold	Silver	Gold + Silver Equiv.
Current Mineable Reserves		**9.10**	**0.024**	**1.60**	**0.035**	**218,400**	**14,560,000**	**315,467**
Exploration Target Area	Discovery Priority							
West-Central Pit Area	High	1.20	0.025	1.25	0.033	30,000	1,500,000	40,000
Southwest Veins	moderate	0.60	0.047	1.00	0.054	28,200	600,000	32,200
Deep Pit Extensions	High	3.20	0.025	1.85	0.037	80,000	5,920,000	119,467
North Pit Rim	High	2.70	0.020	2.00	0.033	54,000	5,400,000	90,000
Northeast Veins	moderate	1.50	0.022	2.50	0.039	33,000	3,750,000	58,000
Main Vein Extension	High	2.00	0.029	2.75	0.047	58,000	5,500,000	94,667
North Shaft Area	low	0.50	0.020	3.00	0.040	10,000	1,500,000	20,000
North Vein Extension - Hudd	low	1.50	0.020	2.25	0.035	30,000	3,375,000	52,500
Exploration Total Possible Reserves:		*13.20*	*0.024*	*2.09*	*0.038*	*323,200*	*27,545,000*	*506,833*
Harvest Controlled Properties:		**22.30**	**0.024**	**1.89**	**0.037**	**541,600**	**42,105,000**	**822,300**
San Ramon Prospect	moderate	2.50	0.030	1.00	0.037	75,000	2,500,000	91,667
Six Mile Hot Springs	low					-	-	-
Six Mile Mag Area	low					-	-	-
Blue Jeep Prospect	High	1.00	0.030	3.50	0.053	30,000	3,500,000	53,333
San Ignacio Prospect	High	2.00	0.025	0.50	0.028	50,000	1,000,000	56,667
Mexican Hat Project	High	10.00	0.034	0.50	0.037	340,000	5,000,000	373,333
All Other Properties		*15.50*	*0.032*	*0.77*	*0.037*	***495,000***	***12,000,000***	***575,000***
All Properties Combined		**37.80**	**0.027**	**1.43**	**0.037**	**1,036,600**	**54,105,000**	**1,397,300** Equiv. ozs. Gold

Rex E. Loesby, P.E.

6234 East Peakview Avenue, Englewood, CO 80111
Telephone: (303) 771-9610 Fax: (303) 771-9652

August 29, 1996

Mr. Randy Moore
Cambior, Inc.
230 South Rock Blvd., Suite 23
Reno, NV 89502

Dear Randy:

Enclosed is a Property Summary for the Commonwealth Gold Project near Pearce Arizona. The project was most recently worked by Atlas Corporation in 1995 and 1996. Atlas drilled 30 new holes, took 3500 underground samples, performed extensive metallurgical testing, and completed an environmental review of the project. While all of the studies showed positive results, Atlas chose not to exercise its option, primarily because the reserve (260,000 ounces) was not expanded to over 400,000 ounces, but also because Atlas' acquisition strategy had changed to a South American focus. The owner, Harvest Gold of Denver, is seeking a straight cash or combination of cash and free trading stock transaction.

Please let me know if you are interested in learning more about the Commonwealth Gold Project.

Sincerely,

Rex E. Loesby

Atlas / Harvest

John Watson
303-694-3111

25/02
1-3 cash rest in stock

REC - CAMBIOR USA
SEP - 3 1996

COMMONWEALTH PROJECT

PROJECT SUMMARY

Prepared by Rex E. Loesby, P. E.

September 1996

While the information contained in this Venture Summary has been reviewed and is believed to accurately reflect the reports delivered to Mr. Loesby by the owners of the properties described herein and others, as well as information gathered in conversations with the owners of the properties described herein and others, Mr. Loesby expressly disclaims any and all liability for representations, expressed or implied, contained in, or omissions from, this report or any other written or oral communication transmitted to any interested party in the course of the reader's evaluation of the properties described herein. The reader should rely upon his or her own evaluation of the venture and independently verify all of the information presented in this summary report before taking any action with respect to the venture.

NEITHER THIS DOCUMENT NOR ITS DELIVERY TO THE READER SHALL CONSTITUTE OR BE CONSTRUED TO BE AN OFFER TO SELL ANY OF THE SECURITIES OF ANY COMPANY. SUCH AN OFFER CAN ONLY BE MADE BY THE DELIVERY OF AN OFFERING MEMORANDUM BY SUCH COMPANY TO THE PROSPECTIVE INVESTOR.

For information, please contact Rex E. Loesby at 6234 E. Peakview Ave., Englewood, CO 80111
(303) 771-9610, Fax (303) 771-9652

Property Description: The Commonwealth Gold Project, controlled by Harvest Gold Corporation (Harvest), of Golden, Colorado, consists of 1020 acres of property located in Cochise County, Arizona, near the ghost town of Pearce. Historic production was from underground vein mines, but an estimated 260,000 ounce open pitable reserve has been defined by drilling.

Reserves: Reserve information consists of data from 156 drill holes (ten separate drilling programs between 1975 and 1996), over 50,000 feet of total drilling, and over 10,000 gold and silver assays. Drill holes included regular rotary holes, reverse circulation holes, and diamond core holes. Hole sampling was generally done on five foot intervals, although older holes have 10 foot intervals. The assay data includes over 8,000 linear feet of underground channel sampling which yielded 3,500 gold and silver assays. Harvest compiled all reserve information and used MineSoft, Inc.'s TECHBASE software to develop a reserve model and pit plan.

Harvest has calculated global mineral reserves of approximately 8.83 million tons at a grade of 0.035 opt gold equivalent per ton (0.013 cutoff). **Mineable ore reserves are estimated at 7.7 million tons at a grade of 0.030 opt gold and 2.08 opt silver (231,000 ounces of gold and 16 million ounces of silver in place).** Strip ratio is estimated at 3.37.

Gold recovery is estimated at over 80 percent and silver recovery is estimated at over 35 percent using conventional heap leaching. The resulting average recoverable gold equivalent grade is estimated at 0.034 ounces per ton and recoverable gold equivalent ounces are estimated at 260,000.

It is estimated that an additional 5 million tons can be developed on the property with additional drilling of untested areas of the mineralized trend. Nearby properties also hold the real potential for additional reserves.

Geology: The Commonwealth mineral deposit has been described as a low-sulfur, epithermal, bonanza type precious metal occurrence, modified and enriched by secondary weathering processes. Silver and gold mineralization occurs within a series of quartz veins, massive or sheeted, localized along and between the Main and North veins. All veins exhibit classical epithermal features including drusy quartz-lined vugs, crustification, comb and cockade textures. Gangue minerals include quartz, black and white calcite, adularia, montmorillonite, and sericite. Iron oxides are abundant along fractures in the mineralized zone, but the original sulfide content of the system is low. Minor copper oxides are found on some dumps, but is very rare. All mineralization has been oxidized to the maximum depth explored.

Metallurgy: Extensive tests on drill cuttings, consisting of a long series of bottle roll tests and numerous column tests, yielded average gold and silver recoveries of approximately 80 and 35 percent respectively. As of this writing, a long term silver recovery test is continuing. Cyanide consumption is estimated and less than one pound per ton. Lime consumption is estimated at less than three pounds per ton. A bulk sample is currently being tested by Kappes Cassiday in Reno.

History: The property was discovered in 1895 by John Pearce. Production during 1895 to 1927 from the original Commonwealth underground mine totaled approximately 122,000 ounces of gold and 13 million ounces of silver. The majority of production was from high grade, bonanza type epithermal gold/silver veins which occur in highly fractured and faulted Tertiary volcanic rocks.

There have been several generations of exploration and development drilling programs on the property which began in 1975. The companies involved since 1975 have included Platoro Mines, Bethex (Bethlehem Steel), Western States Minerals Corporation, Geo-Hendrick Exploration, Alpine Resources, Santa Fe Pacific Mining, Westland Minerals Exploration, Glamis Gold Corporation, Columbia Resources Inc., Pegasus Gold, and finally, Harvest Gold Corporation.

Harvest optioned the property in January of 1994. Harvest compiled all reserve information and used MineSoft, Inc.'s TECHBASE software to develop a reserve model and pit plan. Harvest drilled four holes to check potential high grade zones, expand possible reserves, and define a potential pit perimeter. Results compared favorably with previous drilling. Harvest also mined a bulk sample from underground workings for metallurgical testing at Kappes Cassiday in Reno.

Atlas Corporation optioned the property from Harvest in 1995. Atlas drilled 30 holes, performed metallurgical tests including long term silver recovery tests at various crushing sizes, performed extensive underground sampling, and performed an environmental "fatal flaw" review. Even though all of this work was completed with favorable results, Atlas' changed its business strategy and decided not to exercise its option.

Infrastructure: The warm climate of southern Arizona is ideal for year-round mining operations. The mine site is at approximately 4,500 feet above sea level. Site access is by a half mile of paved county road off of US Highway 191. Power and water are both available on site.

Recommended Development Program: A final feasibility stage of development is envisioned. The program would involve some drilling to fill small gaps in the existing drill hole data, permitting, and mine design. The program is estimated to cost approximately $500,000, and will require 9 to 12 months to complete. Mine construction and development for a 1.1 million ton per year operation is estimated at $7.5 million.

Permitting: Permitting a mining operation at the Commonwealth site is underway and is estimated to require an additional six to eight months. The major permit required is from the Arizona State Office of Water Quality. Harvest's environmental consultant, Errol Montgomery & Associates, Inc. of Tucson, writes, "... Based on information reviewed thus far and our knowledge of the Aquifer Protection Permit (APP) program, we do not foresee any substantial impediments to obtaining an APP for the Commonwealth Mine Project, especially if optimum Best Available Demonstrated Control Technology is used for construction of facilities..." Harvest believes it will receive the Air Quality Permit, under a variance, very soon.

Ownership: The property consists of 1020 acres of patented and unpatented mining claims (320 acres), and fee land (700 acres). All of the projected mining area is on patented mining claims. Harvest controls the property under a number of agreements, the details of which are available to interested parties. The important terms of the agreements that cover the mining area include a 3.52 percent NSR royalty which reduces to 1.76 percent when a total of $2.5 million has been paid. It is reduced again to 0.88 percent once a total of $3.25 million has been paid. Harvest is also obligated to pay a net profits royalty of 5 percent, escalating to 10 percent after Harvest has received two times its invested cost. There are other minimal obligations on the mining area, and agreements covering adjacent ground.

Terms: Harvest seeks a straight cash or combination of cash and free trading stock transaction. Harvest also is seeking a buyer for its large land position in Catamarca Province of Argentina (which includes 35 royalty interests). The Commonwealth Project and the Argentina property positions comprise essentially all of the assets of Harvest.

PHONE CALL

FOR Randy DATE 11/6 TIME 11:53 A.M. P.M.

M Clyde Bailey

OF Harvest Gold

PHONE 520-826-3175
AREA CODE NUMBER EXTENSION

MESSAGE

SIGNED L.

	PHONED
	RETURNED YOUR CALL
✓	PLEASE CALL
	WILL CALL AGAIN
	CAME TO SEE YOU
	WANTS TO SEE YOU

TOPS FORM 4003