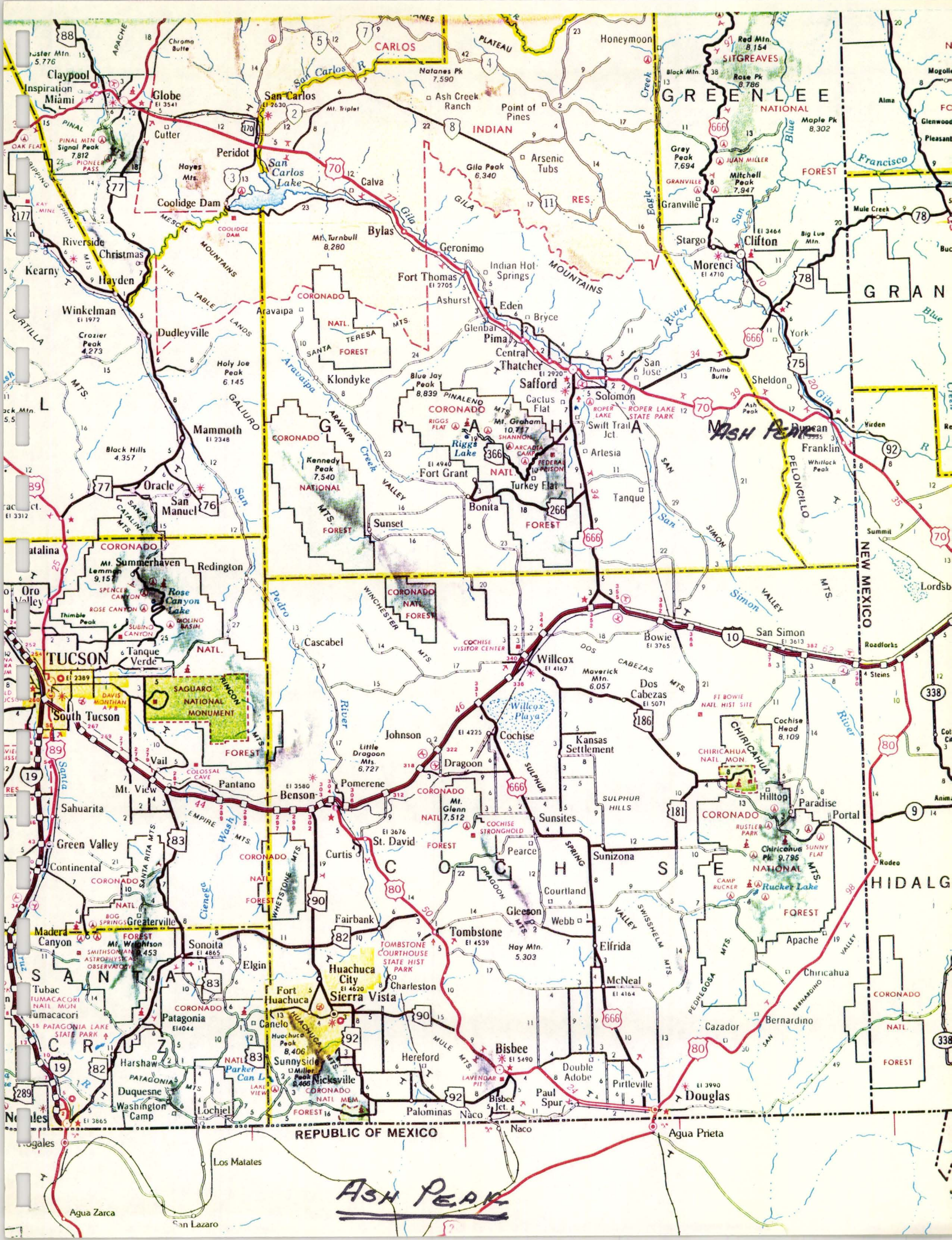
CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov



GREENLEE
GRAHAM
COCHISE
SANTA CRUZ
HIDALGO
NEW MEXICO
REPUBLIC OF MEXICO
SAN CARLOS INDIAN RES.
Globe
Miami
Claypool
Inspiration
San Carlos
Peridot
Cutter
Coolidge Dam
San Carlos Lake
Calva
Bylas
Geronimo
Fort Thomas
Indian Hot Springs
Ashurst
Eden
Bryce
Glenbar
Pima
Central
Thatcher
Safford
Solomon
San Jose
Cactus Flat
Swift Trail Jct.
Artesia
Tanque
Roper Lake State Park
Honeymoon
Clifton
Morenci
Stargo
Granville
York
Sheldon
Duncan
Franklin
Virden
Riverside
Christmas
Kearny
Hayden
Winkelman
Dudleyville
Aravaipa
Klondyke
Mammoth
Oracle
San Manuel
Redington
Summerhaven
Oro Valley
Tucson
South Tucson
Tanque Verde
Saguaro National Monument
Vail
Pantano
Mt. View
Sahuarita
Green Valley
Continental
Madera Canyon
Greaterville
Sonoita
Elgin
Patagonia
Tubac
Tumacacori
Nogales
Harshaw
Duquesne
Washington Camp
Lochiel
Cascabel
Benson
Pomerene
St. David
Curtis
Johnson
Dragoon
Cochise
Willcox
Willcox Playa
Bowie
San Simon
Dos Cabezas
Kansas Settlement
Sunsites
Pearce
Sunizona
Courtland
Gleeson
Webb
Elfrida
McNeal
Tombstone
Fairbank
Huachuca City
Fort Huachuca
Sierra Vista
Charleston
Hereford
Bisbee
Naco
Palominas
Double Adobe
Pirtleville
Douglas
Agua Prieta
Paul Spur
Bernardino
Cazador
Chiricahua
Apache
Portal
Paradise
Hilltop
Rodeo
Lordsburg
Steins
Roadforks
Summit
Bonita
Fort Grant
Sunset
Canelo
Sunnyside
Nicksville
Los Matates
Agua Zarca
San Lazaro
ASH PEAK

PAUL M. TURNEY
REGISTERED PROFESSIONAL ENGINEER

ASH PEAK MINING COMPANY, INC.

Tucson, Arizona

The Ash Peak Mining District is in Greenlee County, Arizona, approximately 12 miles west of Duncan, Arizona, 20 miles southwest of the Steeple Rock District of New Mexico and 50 miles by road south of Morenci, Arizona where Phelps Dodge Corporation maintains a large copper mining-milling-smelting complex.

Ash Peak Mining Company, Inc., incorporated in September 1979, is owned by Paul Turney and Lowell Patton and is the general partner in the limited partnership known as Shamrock Enterprises with Paul Turney and Lowell Patton as its limited partners.

Paul Turney, either individually or through Ash Peak Mining Company, Inc., has successfully mined and milled in the Ash Peak area since 1961 marketing Ash Peak Mine tailings as flux and lease/optioning the Ash Peak Mine to Phelps Dodge which is currently removing precious metal bearing siliceous fluxes from Ash Peak for use in their copper smelters.

Ash Peak also has designed, erected and tested a 50 ton per day carbon-in-pulp cyanide plant (86% complete) for the recovery of gold and silver from tailings. Ash Peak now desires to produce silver and gold bullion from the Ash Peak tailings at our existing carbon-in-pulp plant and to produce an upgraded flux for evaluation.

The attached data and pro forma indicate the completion and operation of the CIP plant on AP tails at $8.00 silver and $400 gold should be profitable, and allow Ash Peak to perform the necessary research and development to produce and evaluate beneficiated siliceous fluxes which should be a premium product for smelter uses.

Ash Peak proposes that a company be formed to operate the CIP plant, remove the bullion, and produce beneficiated fluxes.

Upon the completion of this phase, the decision would be made as to the installation of a concentrator to produce flux and bullion from mine-run ores.

Very truly yours,

P.M. Turney

PMT:sz

PAUL M. TURNEY
REGISTERED PROFESSIONAL ENGINEER

Operation of Ash Peak
Carbon-In-Pulp Plant -- Ash Peak Tailings

Improvement in metal prices has resulted in the recommendation that Ash Peak make minor modifications to the CIP Plant and operate the plant to remove the silver/gold bullion from the Ash Peak tailings.

Our best estimate of the tailings tonnage is 30,000 tons (Data available).

The assay value of the tailings are 2.51 ounces of silver per ton and 0.01 ounces of recoverable gold per ton. (Data available).

Our testing and pilot operations indicate a recovery of 1.6 ounces of silver and 0.01 ounces of gold per ton treated (details in files).

As of 9/3/82 - Silver price was $8.96/oz and gold $458.00/oz. The estimated value for the tailings at $8.00 silver and $400 gold is:

30,000 tons X 1.6 oz Ag = 48000 oz X 8	=	$384,000
30,000 tons X 0.01 oz Au = 300 oz X 400	=	120,000
Total Value	=	$504,000

Best available data indicates an $8/ton treatment cost

30000 ton X 8	=	$240,000
Gross Profit before taxes	=	$264,000

To obtain our 66 2/3% recovery at 1000 tons per month requires the expenditure of $33,000 as follows:

Stripper	$ 1000
Air lifts	1000
Winch	500
Carbon handling	1500
Tanker	12000
Classifier	4000
Pumps (2)	4000
Piping	5000
Electrical	4000
	$ 33000

COST DETAIL

Labor - Contract

2 @ 1000	=	2000
1 @ 750		750
1 @ 800		800
		3550 per month = $3.55/ton

Operating Expenses - per ton

Power	1.29
Water	1.00
KCN	.72
CaO	.10
Carbon	.25
Chemicals	.10
Fuel	1.00
	4.46

Total Direct Cost = $8.01/ton treated

PRO FORMA - Per Month - 30 months - 30,000 Tons

1000 tons/month X 1.6 Ag X $8 = $12,800
1000 tons/month X 0.01 Au X $400 = 4,000

		$500 Au $ 10 Ag	$500 Au $ 12 Ag
Gross	$16,800	$21,000	$24,200
Less Refining 5%	840	1,050	1,210
Net Bullion	$15,960/mo.	19,950	22,990
Operating Cost	- 8,000	- 8,000	- 8,000
	$ 7,960	$11,950	$14,990
Management	- 1,500	- 1,500	- 1,500
	$ 6,460	$10,450	$13,490

We also estimate two months operation at 8000 X 2 = $16,000. A total of $50,000 (49,000) is required to place CIP Plant in operation at 1000 ton/month.

An investment of $50,000 is required.

We believe this investment qualifies as research and development as we are beneficiating PMBSF (previous metal bearing silica flux) for testing.

Our CIP Plant represents an investment of $230,000 (±33,000 new investment) or a total of $263,000.

Plant	$263,000	- 100,000 note
Bullion	264,000	
TOTAL	$527,000	- 100,000 = $400,000

Suggest $50,000 be invested in $10,000 units

Very truly yours,

P.M. Turney

A FORMAT FOR A SMALL MINING OPERATION

Preface

1. The mining, milling, and marketing of ores from small to medium sized mines has been essentially non-existent for the past fifty years. We know of very few successful operations of less than 500 TPD. This condition is diametrically opposed to mining conditions prior to 1920 where a large proportion of our non-ferrous metals were obtained from small independent operations.

The reasons for the disappearance of the small mine are:

a) Equipment investment and standardizing of equipment to minimize costs and obtain continuous low cost production required large ore bodies to justify the expenditures necessary.

b) Large ore bodies were required to carry the technical overhead to maintain high efficiency production.

c) A tendency in many instances of the small mine to be the province of the technically unqualified who were without sufficient financial resources, or who spent their monies unwisely, thus foredooming their project to failure. These failures, in large part, led to condemnation of the smaller operations as economically unsuitable (a judgement, in many instances, not justified).

The current increase in price of our minerals, interest in protecting the environment, and the need for our mineral materials in the world economy, makes a favorable condition for investigating and installing plants at some of our smaller mines.

The reliability and versatility of equipment has increased to the point that economics in production can be achieved by unit equipment rather than duplications of equipment as required previously. (Plants can be smaller and still be profitable.) Reliable recovery methods have increased many fold, and treating the material mined as a possible source of several products and uses is an advantage that must not be over looked from both economics and environmental acceptability.

With reliability of equipment and a choice of recovery methods, a successful operation can be installed on a small property.

Technical aid is available at our mining colleges, Bureau of Mines, State agencies, and private laboratories -- it remains to effectively use these resources and to make decisions based upon the data supplied.

Financial capability will not be difficult to acquire if acquisition, testing, plant design, and economic forecasts are adequate. This requires money and time, but, cannot be omitted with any expectation of success.

Success of a small mining operation will be assured if ore reserves and mining and milling methods are adequately determined before making an investment, and if adequate funds are provided.

It is perhaps unique to the mining industry that there is no such thing as a partially completed mine. A shaft one thousand feet deep is of no use if it stops ten feet short of the ore body.

A profitable small mine depends largely on ingenious design, minute attention to detail, and versatility in management. A small operation cannot carry a formal organization - one or at most two technical people must handle all operations with the judicious use of fee or contract personnel for bookkeeping, transportation etc..

PROPOSED OPERATION

Funds for a small operation must be carefully expended for maximum results. Generally, operations will be confined to four areas:

1. Waste materials ----- Tailings, slags, and other rejected materials offer advantages as the tonnage and grade can be accurately determined, development cost is less, utilities are usually available, and application of recent metallurgical advances may make re-treatment economic. Examples of such operations are the tailings plant at Pachuca, Mexico, my shipment of tailings from Ash Peak to the Morenci Smelter for use

as a diluent in roasting, and several tailings re-treatment projects in Arizona now under consideration.

2. Small properties ----- Areas where there has been activity in the past may contain a property, or properties, which contain sufficient tonnage to justify a concentrator, particularly if production can be marketed under favorable terms. Acquisition of properties in areas of known activity sometimes increase in value as improvements in price and metallurgy make lower grade ores attractive.

3. Special materials ----- Large mining, milling, smelting operations require many materials; flux, clay, coke, mold wash, hot patch, etc.. A well operated small plant can produce these materials profitably at a cost distinctly lower than a large company. The advent of new smelters and processes of a different type will require many different materials and fluxes. Material that can be produced and marketed profitably.

4. Unproven areas ----- A small company is disadvantaged in competing for large ore bodies against large operators. There may be, however, specific instances and areas where a small company can acquire and operate a property profitably in a new area while gaining a presence in that area.

In general, the proposed field of operations is the supplying of materials and ores required as accessory items in large operations; the re-treatment and re-claiming of waste material; and the recovery of mineral from properties too small to be mined on a large scale.

Our method of operation will be to investigate properties of potential interest as follows:

1. Preliminary investigation
2. Determination of title
3. Acquisition of title on option basis
4. Evaluate reserves and determine treatment
5. Obtain committments as to markets
6. Prepare flowsheet, cost, and proforma for operation
7. Prepare economic feasability
8. Decision as to -----

a. Making necessary investment to operate
b. Seek further capital
c. Sell property to others.

Prepared by
Paul M. Turney
April 24, 1974

PMT:bj

INVESTMENT SCHEDULE

MINES OTHER THAN ASH PEAK

Shamrock Ash Peak will mill ores from other mines at cost plus a multiplier of one (providing the ores are amenable) up to a saleable value of $50.00 per ton. Saleable values in excess of 50.00/ton will be subject to a 15% charge by Shamrock Ash Peak.

The mining company will receive the saleable value of the metals produced less Shamrock Ash Peak charges. Gross profit to the mining company is saleable value less SAP charges - less mining costs.

As a criteria for determining the mine's potential, the gross profit for a small precious metal property should represent 25% of the funds invested in developing and equipping the mine and reserves should be five years minimum except in special cases.

Example

The Imperial/Jim Crow prospect reports a possible assay of 8 ounces silver and 0.07 ounces gold --

Recovery of 65% by flotation and 65% by cyanidation is reported.

Saleable metal recovered at 5.00 silver and 200.00 gold

Silver 8 X 0.65 = 5.2 X 5 = $26.00

2.8 X 0.65 = 1.82 X 5 = 9.10

Gold 0.07 X 0.65 = .0455
X200 = 9.10

.0245 X .65 = .0159 X 200 = 3.18

$47.38 Net Saleable

47.38 - (8.32x2) = $30.74/ton Mine Settlement

With modern equipment - Two men should drill and muck 15 ton/day

$$\frac{2 \times \$80 \times 3 \text{ multiplier}}{15} = \$32.00 \text{ Per Ton Mine Cost}$$

Loss per ton = ($1.26)

The mine to be profitable must produce a gross profit of $8 - $10 per ton, which in the case of the Imperial/Jim Crow can be managed by a $10 per ton increase in saleable metal, a reduction in milling cost, or by a reduction in mining costs.

A property that produces a $10.00 per ton gross profit at 100 ton per day would produce $252,000 G. P. per year at 25% -

Equalling an investment of 252,000/.25 = $1,008,000 - dollars that could be invested to produce 126,000 tons of proven ore with a recoverable value of $58.00 per ton.

Shamrock Ash Peak takes the position that there are some properties that would satisfy these requirements but that it is better to supply efficient processing facilities and allow others to develop prospects to the point where they become attractive milling ventures.

Shamrock Ash Peak believes there are a number of such properties that justify consideration and that it would be prudent to investigate these properties in the near future.

PMT:bj
9-7-78

6-10-81

EXHIBIT A. RESERVES
ASH PEAK TAILINGS

VETA MINES – 1936-38 – PRODUCED
173,200 TONS TAILINGS – 2.5 OZ SILVER

PM TURNEY SHIPPED
<1 000±> TONS± – DOUGLAS SMELTER 1963
<70 000±> TONS – MORENCI SMELTER 1967-69
<9000±> TONS – MORENCI SMELTER – 1980-81
<20000> TONS – ESTIMATED – EROSION
<100000> TONS

CALCULATED TONNAGE TAILINGS REMAINING
173,200 – 100,000 = 73200/2 = 36600 TONS

MEASUREMENTS MADE IN NOVEMBER 1976 BY P.M. TURNEY AND (SEPARATELY) BY H CLYDE DAVIS – INDICATED 20050 TONS CLEAN TAILING AT 20 C.F./TON PLUS 10000 TONS OF DIRTY TAILINGS.

THIS REPRESENTS *REMAINING TAILINGS (1981) OF (20050 – 9000) + 10000 = 21050 TONS

* DURING THE REMOVAL OF THE 9000 TONS IN 1980-81 – ADDITIONAL TAILINGS WERE DISCOVERED (DEEPER)

TAILINGS TONNAGE IS NOT EXACT BUT SHOULD BE –

36600 T @ 2.5 OZ AG TO
21050 T @ 2.5 OZ AG

Production

Company	Tons	Gold Total Oz.	Gold Oz/Ton	Silver Total Oz.	Silver Oz/Ton
Veta Mines Inc.					
Mill	173,382	4,404	.025	1,212,693	7.0
Mill Tails	173,200	1,732	.01	433,000	2.5
Calculated Mill Heads	173,382	6,136		1,645,693	9.5
Commerce Dump Direct Shipping Ore	6,551	193	.029	50,074	7.6
Inspiration Consolidated Copper					
Direct Shipping Ore	123,393	4,388	.035	1,139,201	9.2
Total and Average	303,226	10,717	.035	2,834,968	9.3

Base metal production is minor and only the Veta Mines concentrates were assayed. Records show a total production from 173,282 tons of ore of 55,000 pounds of copper or .02%, and 118,000 pounds of lead or .03%.

Respectfully submitted,

A. George Setter, E.M.

Kd 100.

ASH PEAK TAILINGS
DUNCAN, ARIZONA

EASILY OBTAINABLE RESERVES - TAILINGS

TONNAGES BY H. CLYDE DAVIS
ASSAYS BY SKYLINE LAB.
(ATOMIC ABSORBTION METHOD)
(SILVER & ALUMINA - ACCURATE
(SILICA MAY BE LOW & IS BEING CHECKED
[AVERAGED 2% LOW]

LOT No.	TONNAGE	gm	% ALUMINA	% SILICA	OUNCES SILVER
G	1000	340	2.5	84.0	2.22
J-2	3500	1195	3.2	83.0	2.38
I-D-1	1000	340	2.5	84.0	3.18
B	300	100	2.7	80.0	2.94
A	2000	680	4.9	78.0	2.74
D-2	1250	425	3.4	80.0	2.96
E	5000	1700	3.0	80.5	2.64
~~D-1~~	~~1250~~		~~9.1~~	~~79.0~~	~~1.47~~
F	1000	340	2.5	79.0	2.80
J-1	3500	1195	2.5	82.0	2.28
H	1500	510	3.0	81.0	1.92
		6825 = 15[illegible]			
AVER.	21300 TONS		3.44%	80.7%	2.46 OZ

DELETING D-1 AS A BAD SAMPLE

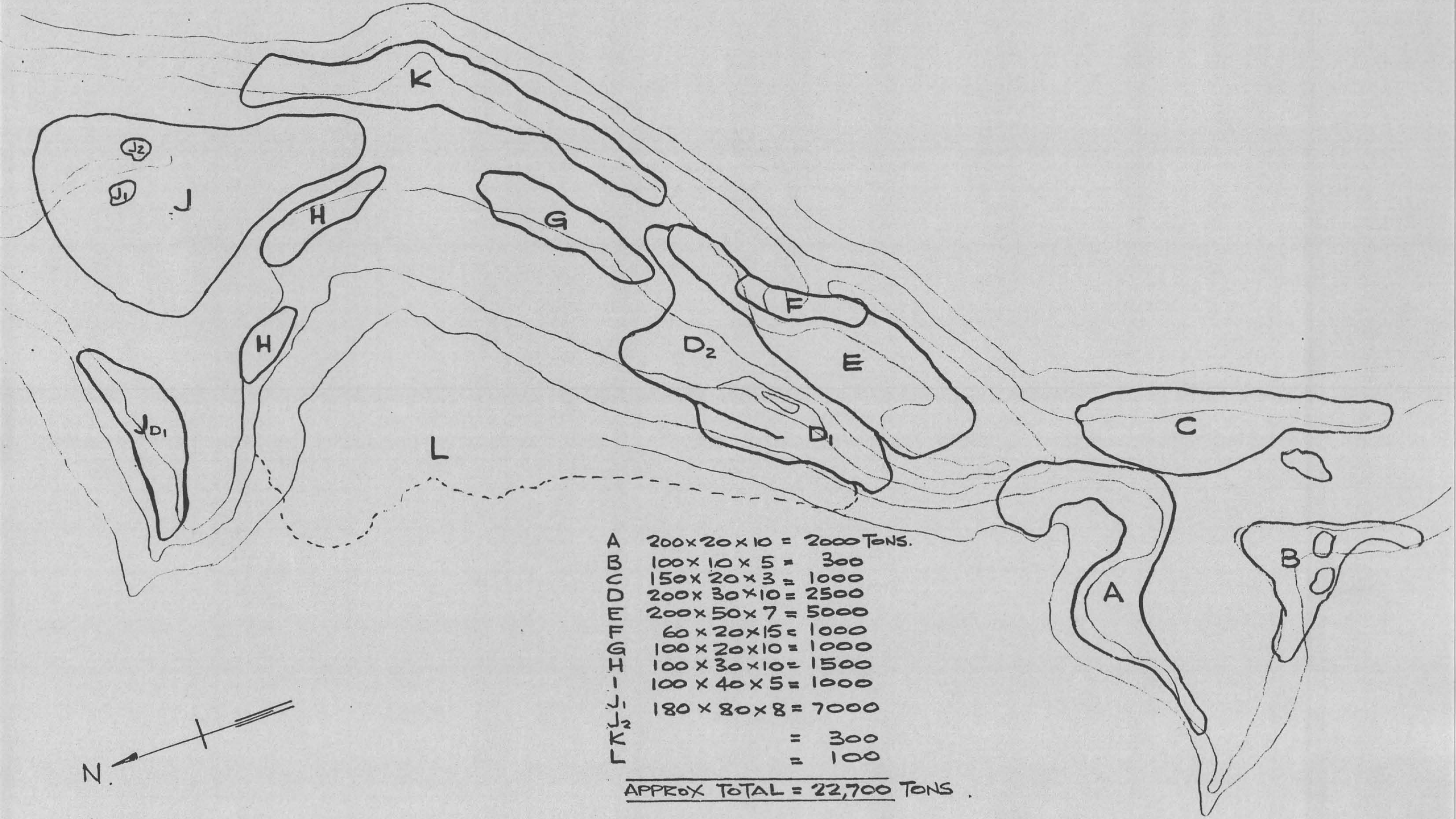
AVERAGE - 20050 TONS 3.08% 81.22% 2.53 OZ
ESTIMATED - ADDITIONAL 10000 TONS AVAILABLE

SHAMROCK HAS -
2.53 X 20050 = 50652 OUNCES SILVER
SMELTER WILL PAY = (2.53 - 0.5) X 20050
= 41,102.5 X $4.295 = $176,535.23

VALUE OF SILICA AS FLUX OR HOT PATC[H]
NEGOTIABLE.

OMIT

11/6/72



A	200 × 20 × 10 =	2000 TONS.
B	100 × 10 × 5 =	300
C	150 × 20 × 3 =	1000
D	200 × 30 × 10 =	2500
E	200 × 50 × 7 =	5000
F	60 × 20 × 15 =	1000
G	100 × 20 × 10 =	1000
H	100 × 30 × 10 =	1500
I	100 × 40 × 5 =	1000
J_1 J_2	180 × 80 × 8 =	7000
K	=	300
L	=	100

APPROX TOTAL = 22,700 TONS.

SHAMROCK TAILINGS DUNCAN ARIZON

H.C. DAVIS P.I.D. SCALE:- 1" = 50'-0.

ASH PEAK
FLOTATION TESTS

November 26, 1978

Contents:

- o Charcoal in Pulp -- Cyanidation Tests*
- o Cyanide Tailings Flotation Tests
- o Fatty Acid Flotation Tests

* Cyanide treatment of feed for flotation tests

prepared by: J.J. Cape

CHARCOAL IN PULP -- CYANIDATION TESTS
Nov. 10, 1978

Objective:

Prepare 2000 grams of flotation feed each from four different charcoal in pulp cyanidation runs. Each run to have varying pH control; calcium oxide, sodium hydroxide, ammonia, and natural alkaline influnce from the ore. These flotation feeds were to be prepared under such varying conditions to test the effects of cyanidation upon subsequent flotation of the cyanide tails.

Procedure:

Eight samples, 1000 grams each, were tumbled in 1 gallon jugs for 40 hours. Charcoal was removed after 20 hours and replaced with a new charge of charcoal. Samples were run the full 40 hours without adjustment of pH or cyanide level. The control and degree of perfection for these tests was not critical as recovery of the silver was not critical. As mentioned before, the objective was only to create a cyanide tailing for subsequent flotation tests. Pertinent data relative to the test conditions and assay results are tabulated as follows:

Sample No.	1A	1B	2A	2B	3A	3B	4A	4B
pH Control	CaO	CaO	Na(OH)	Na(OH)	NH_3	NH_3	None	None
Charcoal #1(gr)	3.87	3.93	3.65	3.45	3.90	3.55	3.15	3.70
Charcoal #2(gr)	1.85	0.12**	1.71	1.74	1.82	1.81	2.03	1.75
pH Control(#/T)	1.0	1.0	0.4	0.6	3.8*	3.8*	-0-	-0-
NaCN (#/T)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Pulp % Solids	50	50	50	50	50	50	50	50
Beginning pH	10.4	10.4	10.9	10.4	10.4	10.4	9.1	9.1
20 Hr. pH	10.1	10.2	10.0	10.3	10.3	10.2	8.9	8.9
Silver (oz/T)								
Charcoal #1	122	164	192	233	180	212	226	189
Charcoal #2	266	340	319	290	283	406	248	291
Tailings	0.90	0.70	0.80	0.50	0.50	0.90	0.60	0.50
Approx. Recovery (%) ***	57	67	62	76	76	57	71	76

* 6.5 ml of 29% solution

** Unexplained except fine charcoal was evident in tails

*** Estimated recovery based upon a head grade of 2.1 oz/T

Conclusions:

Although the objective of this test was to produce a feed for flotation tests, which was accomplished, it is interesting to note that pH control agents and other cyanidation control aspects do not appear to be super critical. In fact, the natural test with no agent added showed the better recovery.

CYANIDE TAILINGS FLOTATION TESTS

Nov. 10, 1978

Objectives:

Test the effect of cyanidation chemicals, especially lime, upon calcite flotation performance. Silver recovery is not an objective of this test.

Procedure:

Run bench scale flotation tests on cyanide tails using a standard flotation procedure. This standard procedure selected to be a test by Mr. S. Rudy labeled Ore No. 2465 Test No. 2.. One each of the nominal 1000 gram cyanide test tails samples was selected as flotation feed plus a parallel uncyanided feed. These 5 tests were all processed in the same manner using the same reagents. Data sheets for all tests are attached indicating conditioning times etc. It should be noted that feed samples were not rinsed of cyanide solution but conditioned "as is" and then fresh water was added in the flotation step.

Results & Conclusions:

The following summary tabulation illustrates that cyanidation does not appear to have any significant effect on flotation. As can be seen the silica recovery on sample 4A was upset this is most likely due to pH conditions. In fact further investigation may reveal pH to have a critical effect upon this particular flotation performance. In conclusion it is evident that the cyanidation tails can be floated for high calcium minerals with little problem.

Although not a part of this test, Sample 2B, showed the best results utilizing a different suite of reagents. This test is part of the next section of this report but is tabulated with this series for comparison of results.

Sample No.	2465	1A	2A	2B	3A	4A	6A
Tails Wt. gr.	--	750	708	504	653	289	746
Con. Wt. gr.	--	67	89	84	89	473	195
total	--	817	797	588	742	762	941
Tails Wt. %	76.3	91.8	88.8	85.7	88.0	37.9	79.3
Con. Wt. %	23.7	8.2	11.2	14.3	12.0	62.1	20.7
Tails % SiO_2	87.0	84.5	84.6	98.2	91.3	89.2	86.5
Tails % CaO	1.7	3.8	2.2	1.4	3.0	1.2	1.3
Con. % SiO_2	58.8	37.0	39.1	36.4	46.9	76.4	53.4
Con. % CaO	17.3	31.2	17.8	12.3	25.1	8.1	12.8
Tails Ag oz/T	1.50	0.35	0.40	0.70	0.65	1.05	2.05
Con. Ag oz/T	4.45	0.30	0.25	0.20	0.25	0.40	4.25
Head Ag oz/T	2.20	0.90*	0.80*	0.50	0.50	0.60	--

Note: Test details on data sheets that follow.

* Head Ag values inconsistant with tails and con. values

(S. RUDY TEST)

UNIVERSITY OF ARIZONA

ARIZONA BUREAU OF MINES

ORE TESTING SERVICE

Ore No. 2465 Test No. 2

Conditions and Reagents

Point of Addition	Conditions: Time Mins.	% Solids	pH	Reagents Pounds Per Ton: Oleic Acid	R-801	Fuel Oil
.D. Condition	5	60	--	1.0	0.5	0.1
Flotation	10	35	7.9	--	--	--

Remarks: No desliming. Conditioning done in float cell.

Metallurgical Products

Product	Tons in 100 Tons Feed	Assays: SiO_2	CaO	Ag	% of Total: SiO_2	CaO	Ag
Conc.	23.66	58.80	17.25	4.45	17.3	75.9	47.9
Tails	76.34	87.00	1.70	1.50	82.7	24.1	52.1
Head	100	80.3	5.38	2.20	100	100	100

Remarks:

Flotation Test No. 1 A

Notebook Reference
Project No. Ash Peak
Date NOV. 10, 1978

Sample: 1A - Cyanide Tails - CaO pH control in Cyanide test.

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore							
	Time Min	% Solids	pH S or F	Oleic Acid	R 801	Fuel Oil					
CONDITION	5	60	—	1.0	0.5	0.1					
FLOAT	10	30	9.5	—	—	—					

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
Con	67	8.2	37.0	31.2	0.30			
tails	750	91.8	84.5	3.8	0.35			
Head	817	100.0			0.90			

Observations: • No Desliming

Flotation Test No. 2 A

Notebook Reference
Project No. Ash Peak
Date Nov. 10, 1978

Sample: 2A - Cyanide tails - Na(OH) pH control in Cyanide test

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore						
	Time Min	% Solids	pH S or F	Oleic Acid	R 801	Fuel Oil				
CONDITION	5	60	—	1.0	0.5	0.1				
FLOAT	10	30	9.5	—	—	—				

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
TAILS	708	88.8	84.6	2.2	0.40			
CON	89	11.2	39.1	17.8	0.25			
HEAD	797	100.0			0.80			

Observations: • No Desliming

Flotation Test No. 3 A

Notebook Reference
Project No. Ash Peak
Date NOV. 10, 1978

Sample: 3A - Cyanide tails - NH_3 pH control in cyanide test.

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore							
	Time Min	% Solids	pH S or F	Oleic Acid	R 801	Fuel Oil					
CONDITION	5	60	—	1.0	0.5	0.1					
FLOAT	5	30	9.5	—	—	—					

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
TAILS	653	88.0	91.3	3.0	0.65			
CON.	89	12.0	46.9	25.1	0.25			
HEAD	742	100.0			0.50			

Observations:
- Float complete at 5 minutes
- No Desliming

Flotation Test No. 4 A

Notebook Reference
Project No. Ash Peak
Date Nov. 10, 1978

Sample: 4A - Cyanide Tails - No pH control in cyanide Test.

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore							
	Time Min	% Solids	pH S or F	Oleic Acid	R 801	Fuel Oil					
CONDITION	5	60	—	1.0	0.5	0.1					
FLOAT	8	30	8.5	—	—	—					

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
TAILS	289	37.9	89.2	1.2	1.05			
CON.	473	62.1	76.4	8.1	0.40			
HEAD	762	100.0			0.60			

Observations:
- Float complete at 8 minutes
- No Desliming

Flotation Test No. 6 A

Notebook Reference
Project No. Ash Peak
Date Nov. 10, 1978

Sample: 6A - Raw ore Feed

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore							
	Time Min	% Solids	pH S or F	Oleic Acid	R 801	Fuel 0:1					
CONDITION	5	60	---	1.0	0.5	0.1					
FLOAT	10	30	8-8.5	—	—	—					

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
TAILS	746	79.3	86.5	1.3	2.05			
CON.	195	20.7	53.4	12.8	4.25			
HEAD	941	100.0			—			

Observations: • No Desliming

FATTY ACID FLOTATION TESTS

Nov. 10, 1978

Objectives:

Investigate the possibility of removing calcium from the ore and in so doing remove adequate silver to permit cyanidation of only this concentrate. Silica tails would then be a final product requiring no cyanidation. The silica tails as such should show silver values in the range of 0.40 to 0.70 oz/ton.

Procedure:

Bench scale tests on both cyanide tails and raw feed utilizing fatty acid and iron and silver mineral collectors. Sample 2B was cyanide tailings conditioned with residual cyanide solution present. Sample 6B was raw ore feed with no cyanidation.

Results & Conclusions:

As can be seen by the following tabulation the silver did not appreciably concentrate with the calcium float, in fact the 2B test on cyanide tailings, the silver tended to go to the silica tailings. These two tests cannot be considered conclusive as an exhaustive amount of research could well prove a certain combination of reagents which could possibly produce a silica tailings equivalent to cyanide tailings of say 0.50 oz/ton silver. To do such testing would first require some mineralogy work to determine where the silver is tied up and what mineral must be floated to concentrate the silver.

Sample No.	2B	6B
Tails wt. (gr)	504	384
Con wt. (gr)	84	516
total	588	900
Tails wt. (%)	85.7	42.7
Con. wt.. (%)	14.3	57.3
Tails (% SiO_2)	98.9	89.3
Tails (% CaO)	1.4	1.4
Con. (% SiO_2)	36.4	76.5
Con. (CaO)	12.3	6.5
Tails Ag (oz/ton)	0.70	1.40
Con. Ag.(oz/ton)	0.20	2.50
Head Ag (oz/ton)	0.50	--

Note: - Test details on data sheets that follow.

Flotation Test No. 2 B

Notebook Reference
Project No. Ash Peak
Date Nov. 10, 1978

Sample: 2 B--- Feed for This Test is cyanide Tails - Na(OH) pH w/cyanide test

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore							
	Time Min	% Solids	pH S or F	PAMAK 1	R 801	Fuel 0:1					
CONDITION	5	60	—	1.0	0.5	0.1					
FLOAT	10	30	9.5	—	—	—					

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
TAILS	504	85.7	98.9	1.4	0.70			
CON	84	14.3	36.4	12.3	0.20			
HEAD	588	100.0			0.50			

Observations: • Charcoal in Tails (very fine)
• No Desliming

Flotation Test No. 6 B

Notebook Reference
Project No. Ash Peak
Date Nov. 10, 1978

Sample: 6B --- Raw ore Feed

Purpose of Test:

	Conditions			Reagents - Pounds per Ton of Ore							
	Time Min	% Solids	pH S or F	FA-1	R 801	Fuel Oil	242	404			
CONDITION	5	60	—	1.0	0.5	0.1	0.25	1.0			
FLOAT		30	8-8.5								

Test Notes:

Product	Weight Grams	Weight (%)	Chemical Analysis			Per Cent Distribution		
			SiO_2	CaO	Ag			
TAILS	384	42.7	89.3	1.4	1.40			
CON.	516	57.3	76.5	6.5	2.50			
HEAD.	900	100.0			—			

Observations: • No Desliming

August 16, 1978

SAMPLE--ASH PEAK TAILING

The sample was cyanided with minus 10-mesh charcoal for 20 hours and charcoal removed. Another charge of charcoal was added and cyanided in a revolving bottle for 24 hours. One pound of lime per ton and one pound of Sodium cyanide were added at the start of leaching. Ore to solution ratio was 1 to 1.2. Results are given in the following table:

	Weight Percent	Assay Oz./Ton		Distribution Silver
		Oz./Gold	Oz./Silver	
Head	100.00	0.02	2.2	100.0
Charcoal #1	0.16	0.73	515.5	37.5
Charcoal #2	0.16	0.18	375.5	27.3
Tailing	100.00	Trace	0.6	27.3
Tailing solution	120.0	-o-	0.15*	7.9

*Calculated

The total silver recovery in charcoal #1 and #2 was 64.8 percent.

Geo. Roseveare

GEO. ROSEVEARE,
Metallurgical Consultant

PAUL M. TURNEY
REGISTERED PROFESSIONAL ENGINEER
3715 HASH KNIFE
TUCSON, ARIZONA 85715

PHONE (602) 749-3573

EDUCATION

University of Arizona - BS Mining & Metallurgy 1942

N. W. Missouri State - AB Chemistry 1938

Graduate work in Geology and Mill Design 1943

PROFESSIONAL AFFILIATIONS

American Institute of Mining & Metallurgical Engineers

National Association of Professional Engineers

Panel of Experts, Metallurgical Engineering - United Nations

REGISTRATIONS

State of Arizona No. 2420

State of Florida No. 11583

State of New Mexico No. 4923

State of North Carolina No. 4588

PROFESSIONAL PUBLICATIONS

"The Copper Smelter and Environmental Pollution" in Western Miner, October 1972 and B. C. Professional Engineer, November, 1972.

"The Third Angle of Pollution" Pay Dirt, October, 1972.

PERSONAL

Age 59 Health Excellent 6' 190# Married 1 daughter home

MAJOR FIELDS OF INTEREST

Investigation aad development of mineral resources; design and construction of plants to produce substantial returns on investment.

SUMMARY OF EXPERIENCE

Over 30 years' experience in mining and metallurgical engineering, primarily in the design and operation of plants to recover and process mineral ores. Served as general superintendent, research engineer, consulting engineer, project manager, and chief engineer. Accustomed to handling all phases of mining and metallurgical operations from initial investigations through economic evaluations, flowsheet development, detailed design, plant construction, start-up and successful operation.

Experienced with phosphate mining and beneficiation, sponge iron plants, silica plants and handling systems, iron ore mining and beneficiation, coal preparation plants, and many non-ferrous metallic ores. Investigated orebodies and made economic studies to recover tungsten, silver, lead, copper, potash, and silica. Designed, built, and started-up a silver parting plant, cadmium plant, indium plant, copper sulfate plant, fluosilicic acid plant, and other metallurgical plants.

COMPANIES AND POSITION

Pullman Torkelson Company, Manager of Engineering, Tucson office

Responsible for design of various engineering projects, business development, and liason with the Salt Lake City office. Upon closure of the Tucson office bacame consultant for Pullman to maintain business development in the Southwest and aid in development of metallurgical processes.

Concurrent with the Pullman contract, I maintain a consulting practice. Current projects include zinc processing in Mexico; processing of non-ferrous minerals and waste foundry sands in Alabama; the preparation of silica slurries for reverberatory furnaces in Arizona; and the processing of magnetite for non-ferrous sulphide removal.

Holmes & Narver, Inc. Manager, Mining & Metallurgy

Responsible for mining and metallurgical projects in the Arizona and New Mexico area, which included a firm bid on 1000 tpd copper concentrator and solvent extraction-electro winning proposals.

Rust Engineering, Metallurgical Consultant

Responsible for study, design, and completion of engineering for both neu construction and modernization projects. Field studies, recommendations, supervise flowsheet development, specifications, equipment, follow project through engineering design to start-up and operation.

Texas Gulf, Lee Creek operation, Chief Engineer

Supervised engineering and construction of a major phosphate complex; responsible for flowsheet, material balance, preliminary layouts, and estimates of silica beneficiation plant.

Armour Rockland Mine, Ft. Mead, Florida, Chief Engineer & Project Mgr.

Responsible for major expansion of large phosphate complex; performed engineering and management of a 2,000,000 tpy mine and beneficiation project.

Wellman-Lord, Inc., Project Manager

Responsible for management of a 2,000,000 tpy phosphate beneficiation complex.

Phelps Dodge Corp., Engineer

Designed two sponge iron plants, reverberatory furnace, two silica slurry handling systems, copper leach and precipitation plant, 18,000 tpd conveyor transport system, and pelletizing plant; conducted studies of tailings disposal systems and a 50,000 tpd mine and mill.

Empresa Metalurgica, Mexico, General Manager

Designed, built and operated three plants for recovery of tungsten and copper; did exploratory work in mineral areas of Sonora, Mexico; at request of Mexican government, designed a 10,000 tpd plant for Fomento Minera.

Kaiser Engineers, Senior Engineer

Responsible for layout, design, and start-up of 10,000 tpd iron ore mine and beneficiation plant; layout of coal preparation plant. Proposal layouts for nickel and copper porphyry hydro project in Australia.

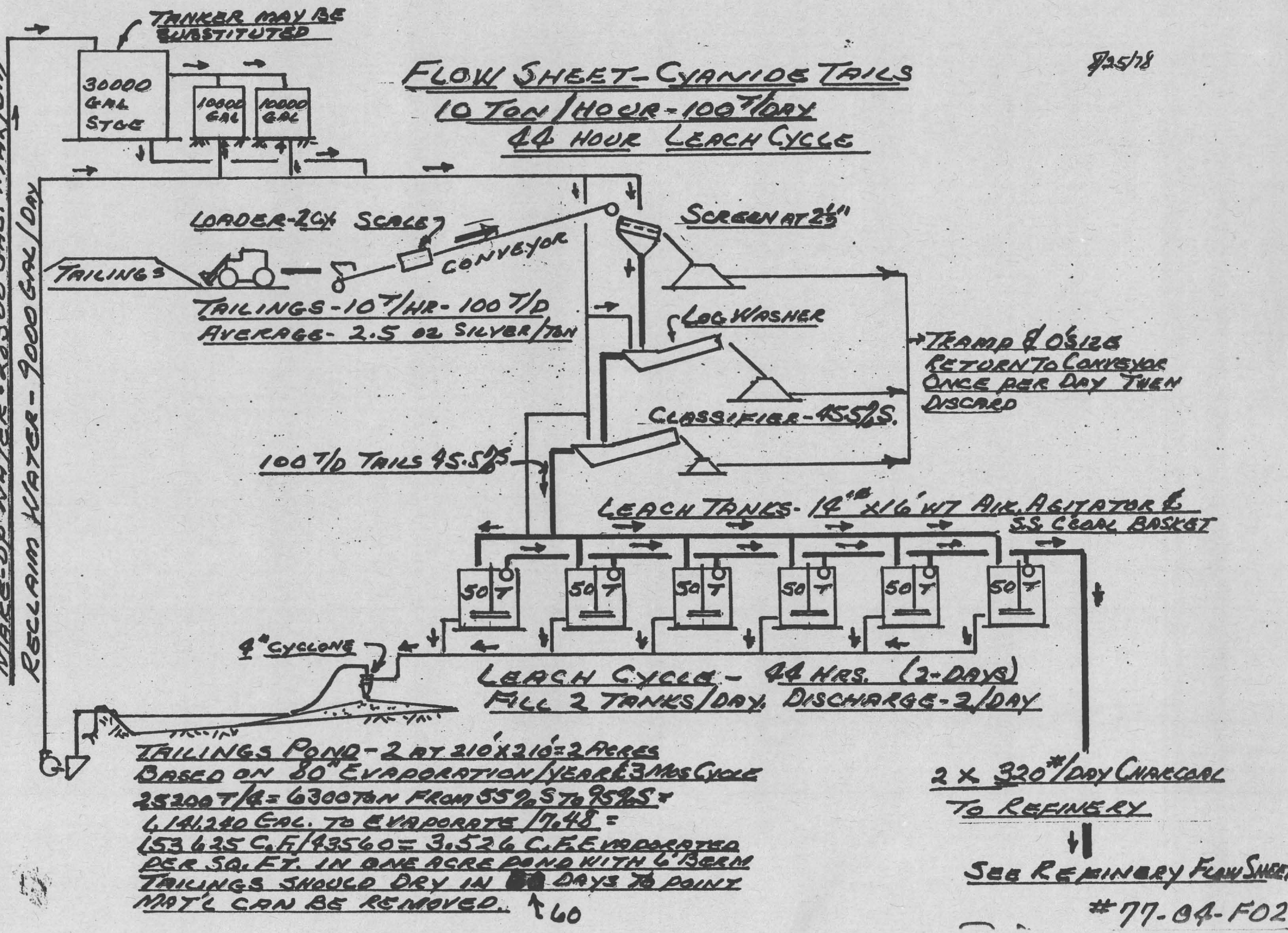
Cerro de Pasco Corp., La Oroya, Peru, Research Engineer

Designed, built, and started-up a silver parting plant, cadmium plant, fluosilicic acid plant, anode spacing maching, roaster dust handling system, and pelletizing system.

Professional References Doctor H. Clyde Davis, Director of Mineral Development, Brigham Young University, Provo, Utah
Mr. Ed Hardin, Chief Engineer, Rust Engineering Company, Birmingham, Alabama

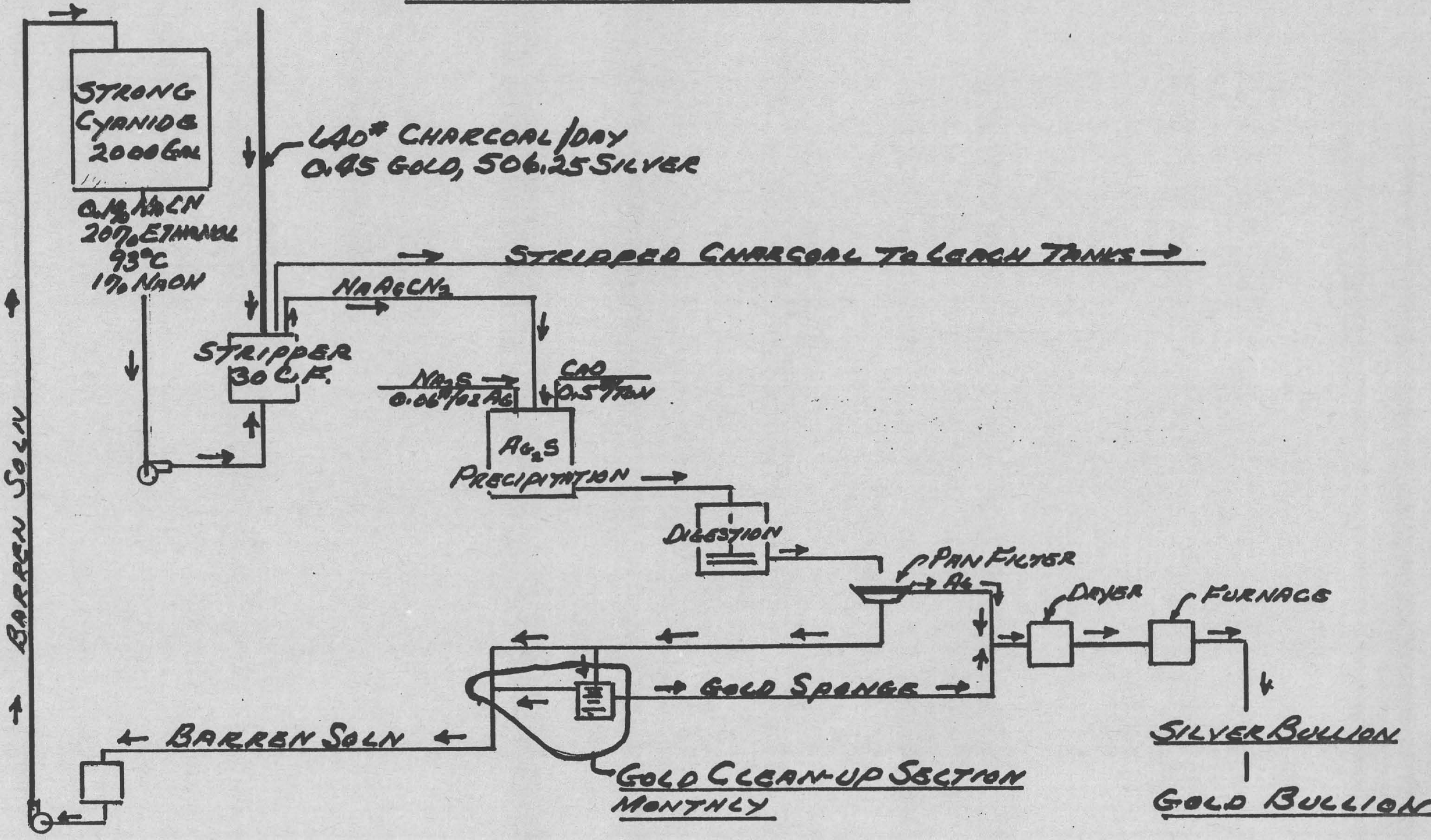
Bank References First State Bank, Forest City, Missouri
Great Western Bank, Tanque Verde/Sabino Canyon Branch, Tucson, Az. 85715
Home Federal Savings & Loan, Tucson, Az.

PMT:bj
6-27-77


FLOW SHEET - CYANIDE TAILS
10 TON / HOUR - 100 T/DAY
44 HOUR LEACH CYCLE
9/25/78
TANKER MAY BE SUBSTITUTED
30000 GAL STGE
10000 GAL
10000 GAL
MAKE-UP WATER - 28500 GAL. MAX/DAY
RECLAIM WATER - 9000 GAL/DAY
LOADER - 2CY
SCALE
CONVEYOR
TAILINGS
TAILINGS - 10 T/HR - 100 T/D
AVERAGE - 2.5 OZ SILVER/TON
SCREEN AT 2½"
LOG WASHER
CLASSIFIER - 45%S.
TRAMP & O'SIZE
RETURN TO CONVEYOR
ONCE PER DAY THEN
DISCARD
100 T/D TAILS 45.5%S
LEACH TANKS - 14' Ø X 16' W/ AIR AGITATOR & S.S. COAL BASKET
50 T
50 T
50 T
50 T
50 T
50 T
4" CYCLONE
LEACH CYCLE - 44 HRS. (2-DAYS)
FILL 2 TANKS/DAY. DISCHARGE - 2/DAY
2 X 320#/DAY CHARCOAL
TO REFINERY
SEE REFINERY FLOW SHEET
TAILINGS POND - 2 AT 210' X 210' = 2 ACRES
BASED ON 80" EVAPORATION/YEAR & 3 MOS CYCLE
25200 T/4 = 6300 TON FROM 55% S TO 95% S =
6,141,240 GAL. TO EVAPORATE / 7.48 =
153,625 C.F. / 43560 = 3.526 C.F. EVAPORATED
PER SQ. FT. IN ONE ACRE POND WITH 6' BERM
TAILINGS SHOULD DRY IN [redacted] DAYS TO POINT
MAT'L CAN BE REMOVED.
60
#77-04-F02

8/28/78

REFINERY FLOW SHEET

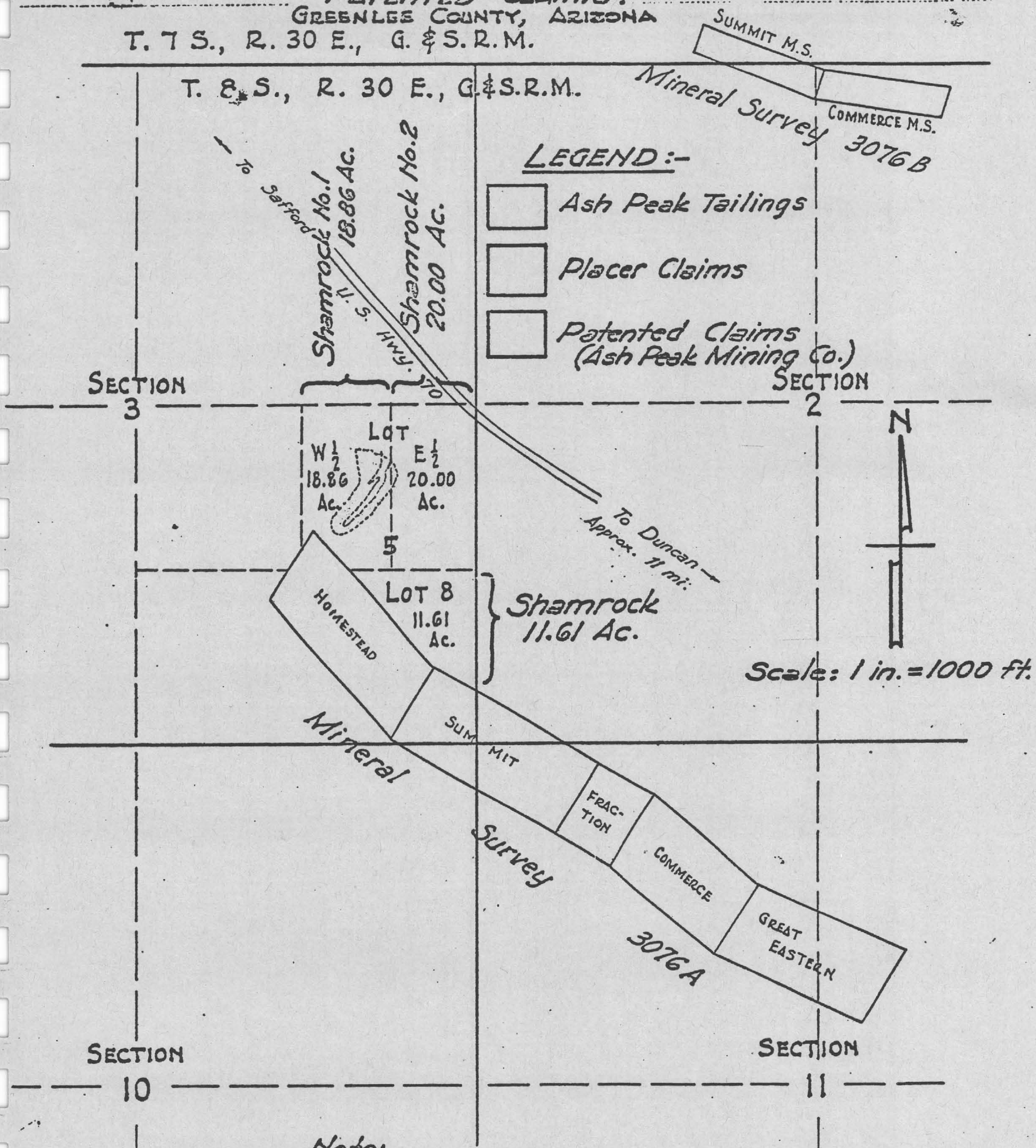


#77-04-F03

BY J.Q. DATE 11-3-63 SUBJECT ASH PEAK TAILINGS, PLACER LOCATIONS, & PATENTED CLAIMS: SHEET NO. 1 OF 1

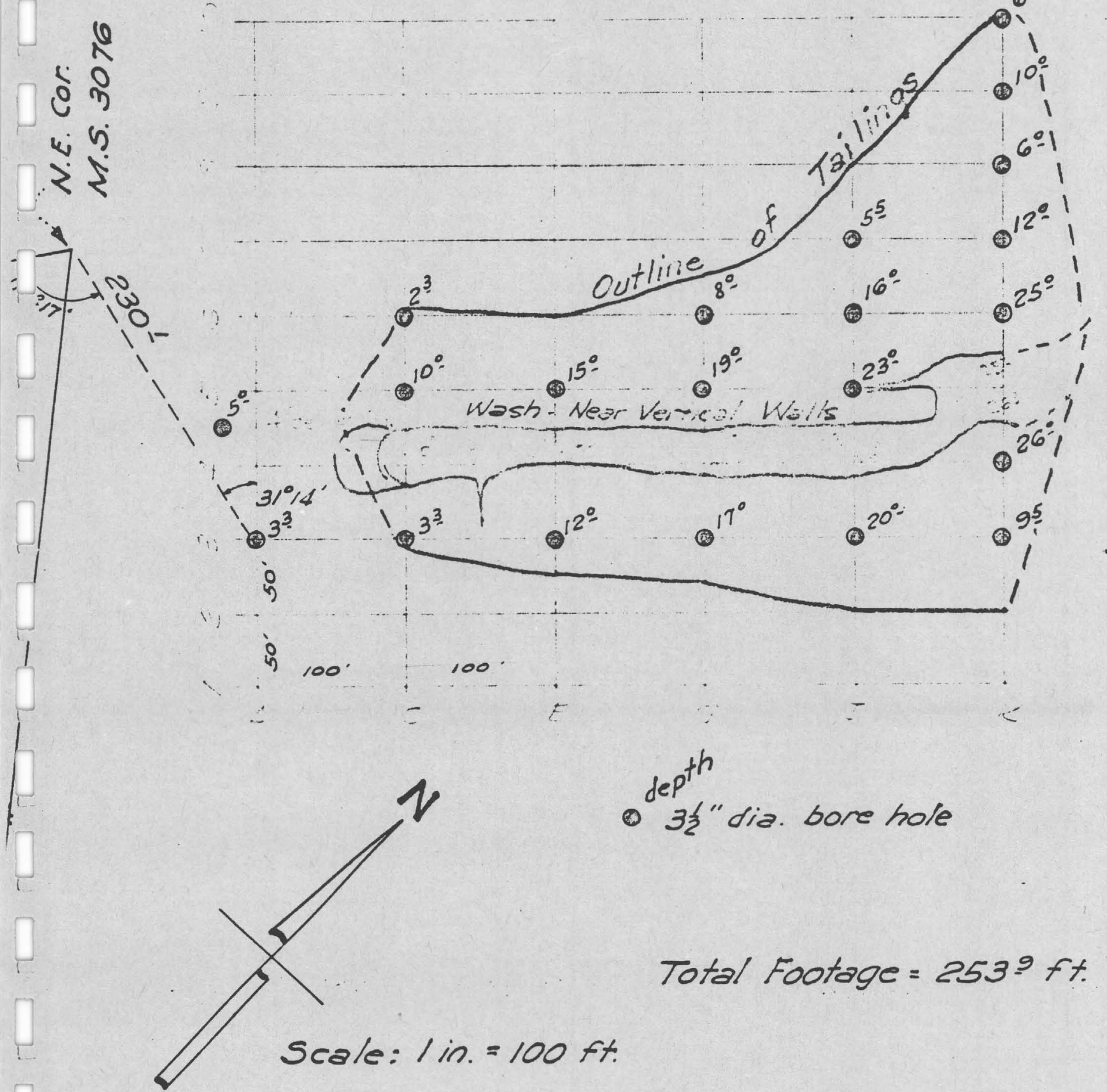
CHKD. BY ...... DATE ...... JOB NO. P.M. TURNEY

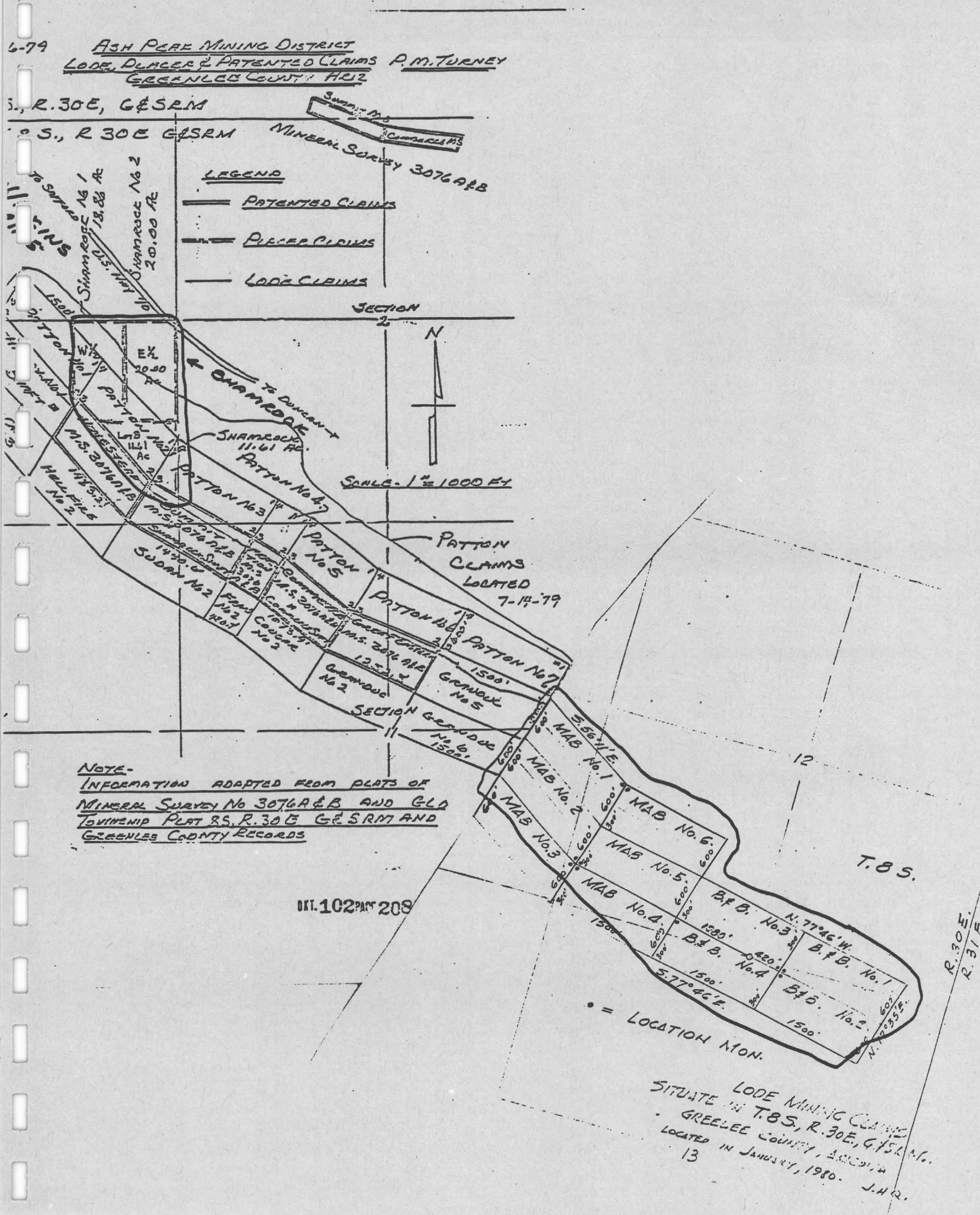
GREENLEE COUNTY, ARIZONA



Note:-
Information adapted from plats of Mineral Survey No. 3076A & B, and G.L.O. Township Plat 8 S., R. 30 E., G & S.R.M., and Greenlee County Records.

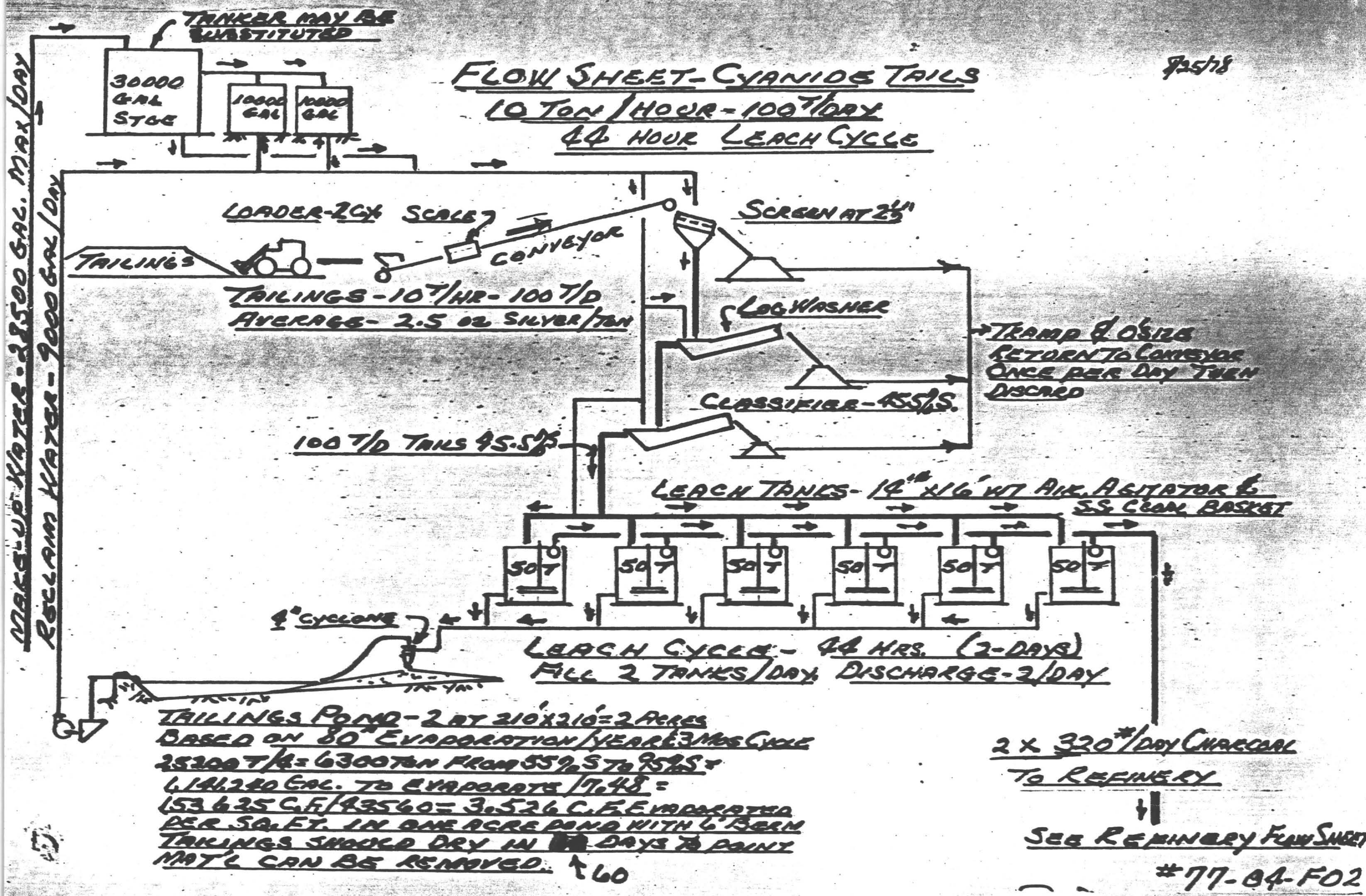
BY JQ DATE 7-15-63 SUBJECT 3½" DIA BORE HOLES SHEET NO. 1 OF 1
CHKD. BY DATE ASH PEAK TAILINGS JOB NO.





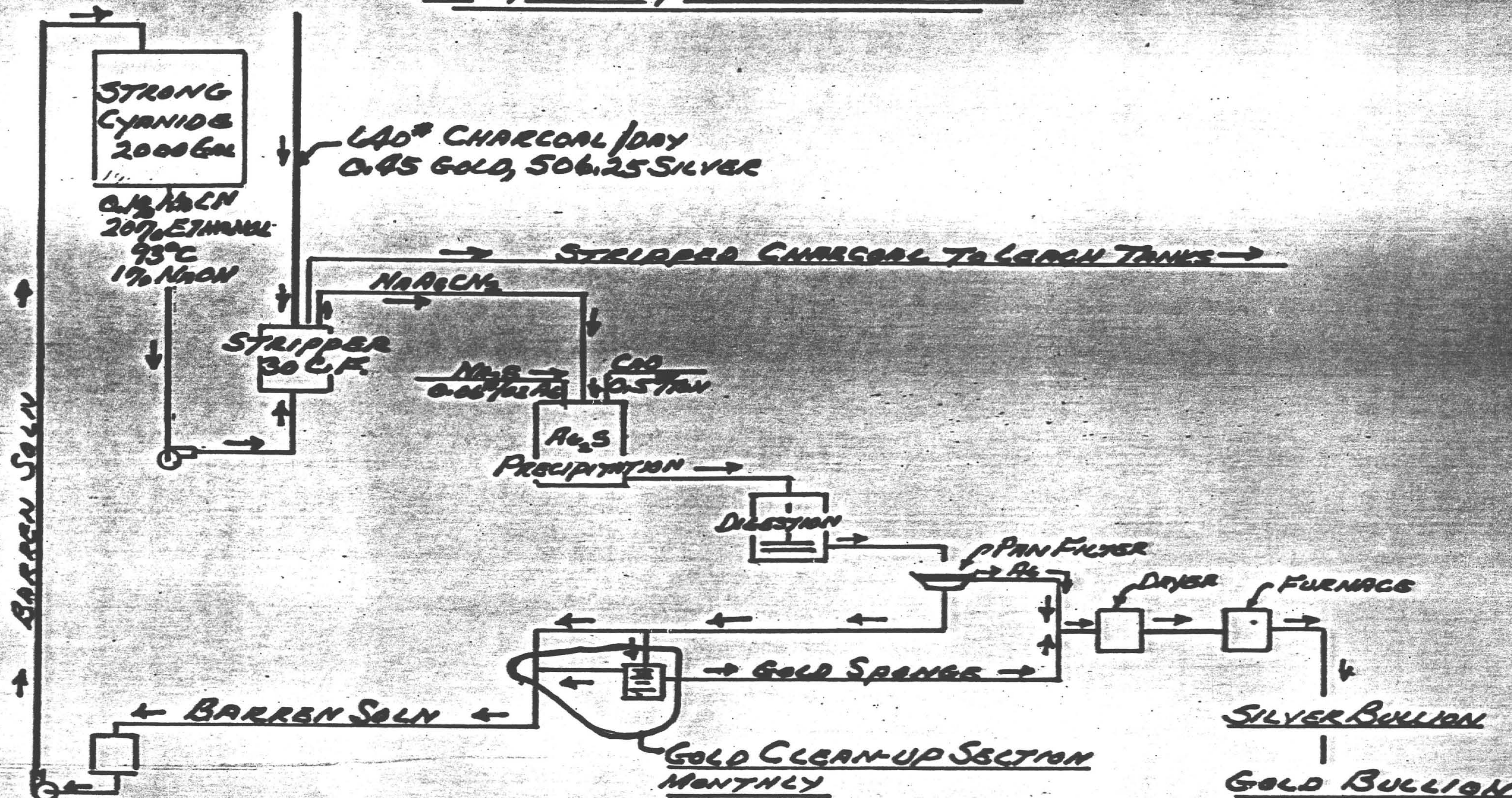
BKT. 102 PAGE 208

13


FLOW SHEET - CYANIDE TAILS
10 TON / HOUR - 100 T/DAY
44 HOUR LEACH CYCLE
9/25/78
MAKE-UP WATER - 28500 GAL. MAX/DAY
RECLAIM WATER - 9000 GAL/DAY
TANKER MAY BE SUBSTITUTED
30000 GAL STGE
1000 GAL
1000 GAL
LOADER - 2CY
SCALE
CONVEYOR
TAILINGS
TAILINGS - 10 T/HR - 100 T/D
AVERAGE - 2.5 OZ SILVER/TON
SCREEN AT 2½"
LOG WASHER
TRAMP & O'SIZE
RETURN TO CONVEYOR
ONCE PER DAY THEN
DISCARD
CLASSIFIER - 45% S.
100 T/D TAILS 45.5% S
LEACH TANKS - 14' X 16' HT AIR AGITATOR & S.S. COAL BASKET
50 T
50 T
50 T
50 T
50 T
50 T
4" CYCLONE
LEACH CYCLE - 44 HRS. (2-DAYS)
FILL 2 TANKS/DAY, DISCHARGE - 2/DAY
TAILINGS POND - 2 AT 210' X 210' = 2 ACRES
BASED ON 80" EVAPORATION/YEAR & 3 MOS CYCLE
25200 T/4 = 6300 TON FROM 55% S TO 95% S =
1,141,240 GAL. TO EVAPORATE / 7.48 =
153,635 C.F. / 43560 = 3.526 C.F. EVAPORATED
PER SQ. FT. IN ONE ACRE POND WITH 6' BERM
TAILINGS SHOULD DRY IN [redacted] DAYS TO POINT
MAT'L CAN BE REMOVED. ↑60
2 X 320#/DAY CHARCOAL
TO REFINERY
SEE REFINERY FLOW SHEET
#77-84-F02

REFINERY FLOW SHEET

8/28/78



#77-04-F03