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Return to C. Fair

Carlota Oxide Cu Prospect
Gila Co., Ariz
R. E. Muritz

4-0004-04

GEOLOGIC and ENGINEERING
REPORT
of the

CARLOTA OXIDE COPPER MINE

Gila County, Arizona

with

PROPOSAL and PLANS
for
MINE OPERATION and LEACHING
to
PRODUCE CEMENT COPPER

Prepared by

Richard E. Mieritz, P. E.
Mining Consultant
Phoenix, Arizona

March 28, 1966

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Richard E. Mieritz
MINING CONSULTANT

GEOLOGY
EXPLORATION
EVALUATION
FEASIBILITY
OPERATION

March 28, 1966

CARLOTA OXIDE COPPER MINE

Gila County, Arizona

INTRODUCTION:

This Geological and Engineering report on the Carlota Mine, Gila County, Arizona has been prepared to present basic data, analysis, design and information to justify and qualify conclusions and plans leading to an integrated operation of the mine through production of the marketable product, cement copper, utilizing the sulphuric acid leaching technique and copper precipitation technique by iron (tin cans or sponge iron) replacement.

CONCLUSIONS:

As a result of much field examination and study of the property, personal completion of laboratory and field leach-precipitate test work, the writer forwards the following conclusions:

(1)- Limited underground development and existing geologic conditions indicate the Carlota Mine has a potential of some 1,500,000 tons of 2% or better oxide copper ore of which 10,000 tons are available from the dumps, 50,000 tons 2% copper ore as developed (leveling pit bottom to the lowest present pit elevation); 500,000 tons indicated to a depth slightly below the lowest adit level and about 950,000 tons "inferred" geologically and by existing report of "zone" intersection by the crosscut at the 400 foot shaft bottom. Sampling of dumps indicates 1.98% copper--sampling of Pit Floor indicates 2.65% copper. (see Photos).

(2)- The mineralized zone thus considered should average a sensible 2% copper. Previous crude ore shipments approximated 19,000 tons or better with copper content from 3.6 to 10.6%; 43% SiO_2; 15% Al_2O_3 and 5% Fe.

(3)- Laboratory test work indicates 70% extraction of copper in 2 hours and that 90-95% extraction could be obtained in 24 hours.

(4)- Financial requirements are estimated at $250,000.00 as exploration, Plant construction and moderate working capital.

(5)- Production of the Carlota Mine can be geared to a daily capacity 300 to 400 tons of 2% copper ore or about 5½ tons (11,000)(pounds) of cement copper at

90% copper extraction.

(6)- Total production costs are extimated at 13¢ per pound of cement copper produced.

(7)- Based on quoted copper price of 36¢, the net revenue received from the smelter would be about 30.4¢ per pound copper after smelter charges and deducts. If under contract to the Smelter at this time, an additional 1.06¢ per pound of copper would be paid.

(8)- Based on conclusions (6) and (7), the original financial requirement for exploration and plant construction could be recovered in 17 months after start of drilling.

PROJECT PROCEDURE:

Mine capacity design and Leach Plant design for a five year operation must be predicated on the average grade or average content of the "ore block" as defined from the surface (present pit level), to the lower Adit level. Diamond drilling a minimum of two holes, or maximum of three holes, will provide the necessary information to obtain the average weighted copper content for the "ore block".

Utilizing this information, Plant and Mine could then be designed for capacities to economically produce the salable product, cement copper.

The above outlined drilling and evaluation phase will require about six weeks to complete at a cost not to exceed $20,000.00.

After completion of the above phase, the property could be placed into production. Although subject to revision, the indicated production program dictates mining ore at a daily rate of 400 tons, leaching the ore at a daily capacity of 300 plus tons utilizing sulphuric acid, precipitating the copper by iron replacement and marketing the 75 to 85% cement copper product at a daily rate of up to 5½ tons.

As successful operation continues, divert small funds to delimit the ore zone to Pinto Creek level and lower to prove or disprove the 950,000 ton reserve now classed as "inferred" ore.

PROPERTY and LOCATION:

The Carlota Mine is located in Sec. 36 of T.1 N., R.13 E., Gila and Salt River Base and Meridian, Gila County, Arizona, 5 airline miles west of Miami, site of the Inspiration Copper Co. smelter, (see Index Map). A nine mile graveled rancher type road and 3 miles of U. S. Highway 60-70-80 connect the property with the smelter and supplies.

Six unpatented lode mining claims, some being fractions, comprise the property which is now completely surrounded by claims of the Miami Copper Corp., who, until a few years ago , had been drilling the old Cactus Ore Body, ¼ mile distant to the east-southeast of Carlota. One Miami Copper drill hole is just about 10 feet east of the Carlota property line. (see Claim Map).

The Brewery claim, first of the five was located in 1892, then the Clipper in 1906 followed by the Thomas Jefferson, Old Abe, a fraction in 1939, the Blue Jay Fraction, a fraction, in 1942 and the Vat Claim in 1959.

HISTORY and PRODUCTION:

To date, in excess of 19,000 tons of high alumina (14-15%) crude oxide copper ore has been produced from the underground workings and from the open pit,(see General Surface Map). The 3 to 10% copper ore from veins within the ore zone were mined by the original owner and lessees from discovery to year 1958. Smelters will not now accept the crude ore because of the high alumina content.

Three attempts to leach the ore proved both successful and unsuccessful. The first attempt was small tonnage (25 tons) vat leaching, (see photo showing concrete vats). The second attempt was "heap" leaching the dumps. The third attempt was low tonnage "sand" leaching--crushing to sand size. In all attempts the successful feature is that cement copper was produced even under the most inadequate means and the product sold to the smelter; the unsuccessful feature being that each attempt was carried forward on too small a basis and underfinanced, or "poor-boyed".

FACILITIES:

The two utilities of concern for operation of this property by the recommended method are a water supply and electric power. Water is in ample supply as indicated by the presence of Miami Copper Companys' well adjoining the Carlota property and Carlotas' own dug well. Water stands at 14 feet in the dug well. A good supply of water was encountered at 100 feet in the drilled well. A water well within Carlotas' boundary must be drilled.

Electric power is within a mile of the property, however, extension of this line to the Carlota may not be feasible because of the present limited power carrying capacity. The Cottonwood power line is about 1¼ miles distant. If both these sources are not available, a diesel-electric generator unit must be purchased to provide power for the crushers, rolls and pumps for the operation.

Truck-auto travel is possible over the graveled rancher type

road to the property.

GEOLOGY and MINERALIZATION:

Rocks in the area include Pre-Cambrian Pinal Schist, Devonian Limestone and Tertiary Dacite flows and early Tertiary (?) Diabase intrusives.

Four periods of strong faulting have occurred, which, to say the least, has created considerable "block" fragmentation and thus caused abundant passage ways for mineral deposition.

Copper mineralization in the district (Globe-Miami) is generally considered associated with the diabase intrusives and this is the case at Carlota.

The Kelly fault traverses the Carlota property in a N.70° W. direction and dips 65° N. and is the identical structure in part resposible for the Cactus Ore Body--a low grade sulphide copper deposit at depth--immediately east-southeast of Carlota.

Recurrent faulting has broken and shattered the Kelly fault itself as well as a footwall zone. Copper oxide mineralization as chrysocolla, malachite and tenorite fills the numerous paper thin fractures and ¼ to ½ inch openings of the fault and diabase in the zone--mineralization is not as disseminations. Alteration is quite pronounced in the zone of mineralization but is not in evidence in that portion forming the hanging wall of the zone.

Complete "in-place" oxidation to form the copper minerals has taken place--little migration downward,--since no evidence of copper or iron sulphides or derivatives of same were detected in the ore zone that is open to examination nor in material on dump of the deep shaft.

ORE RESERVES:

Ore reserves include 10,000 tons of 1.98% copper in the two dumps at the east end of the Pit; 50,000 tons of about 2% copper ore as would be developed by levelling the pit bottom to the lowest present pit elevation at the bin; 500,000 tons of similar grade as"indicated" ore from the lowest pit elevation to a depth of 35 feet below the lower adit level and 950,000 tons as "inferred" ore of similar grade down to an elevation of 3317 feet, the bottom of the 400 foot vertical shaft.

A constant ore zone width of 120 feet and length of 300 feet were used to determine the volumes of concern. A cubic foot factor of 12 was used for conversion to tons.

The accepted assumed grade for all classes of ore is 2% copper content and this is used in all calculations of operational

equipment and production costs.

Two, possibly three, drill holes must be drilled initially to provide copper content information required for detailed design of plant capacity and economic operation schedules. The target of these holes would be the penetration of the ore zone at approximately the 3600 foot elevation. About 1000 feet of drilling will be required and the cost of same should approximate $19,000 for the contract drilling and extras as casing, reaming, etc, as well as professional supervision, sampling and assaying. Barring extreme delays, a six week period for drilling must be considered.

A breakdown and distribution of the $19,000.00 will approach the following figures:

Contract drill price,	$7.50/ft.	$ 7,500.00
Sampling and assaying	$4.00/ft.	$ 4,000.00
Supervision and expenses		$ 3,500.00
Extras--drilling		$ 4,000.00
	Total	$19,000.00

PLAN of OPERATION:

Following completion of detailed mine and plant design which will produce up to 5½ tons cement copper per day, mining preparation and plant construction could begin.

Mining can be completed by open pit method using front end loader and trucks to transport the ore the short half mile distance to the proposed mill location. Ore would be mined at a rate to provide seven days supply of ore in a six day, or if possible, during a five day week.

Ore would be dry crushed to approximately -¼ inch by primary crushers and rolls, stored in fine ore bins and conveyed to the 350 (?) ton capacity leach tanks. (see Leach Plant Layout Map). This tonnage would be processed each 24 hours, seven days a week. The time cycle involved will consume three days for loading the vat, leaching, washing and unloading and disposal of the tails. The detailed engineering of operation, time cycle, design, etc, will not be discribed in this report in as much as some factors of design or equipment may change when in actual operation to provide better efficiency or perhaps availability of equipment, etc.

Assume the mining of 400 tons per day, leaching 325 tons per day and producing up to 5½ tons cement copper per day, the following employees would be required:

Mine--One shift per day--six day week	
Driller--powderman	1
Drill helpers, utility	2
Front end loader oper.	1
Truck drivers	2
	6

Crush--One shift per day --sid day week		
Crusher operator, part time Leach helper	1	
		1
Leaching and Precipitation		
Leach Oper., one each shift	3	
Vat Loader, unloader-days only	2	
Precipitation tank Oper.-days	1	
		6
Miscellaneous-Days only		
Mechanic-electrician, days	1	
Extra-Sunday operation	2	
		3
Total labor required		16
Manager (Mine Eng., assayer, etc.)		1
		17

ESTIMATED FINANCIAL REQUIREMENTS:

Operation of the Carlota property requires four major steps, two of which, mining and crushing, require what might be termed expensive equipment expenditures, however, such equipment is currently a "drug" on the market and is a good opportunity for buying good, little used, reconditioned equipment. Such equipment also provides a great saving and more often than not, provides excellent, un-interrupted, repair free service for long periods of time.

Equipping and operation of the Carlota Mine is not planned on large company "ideas" but planned on an efficient, cost saving profit making program utilizing the better equipment, etc at a minimum cost.

The following estimated costs therefor reflect prices quoted the writer by several suppliers of used equipment as well as some construction contract prices, the latter being reduced by a certain percent considered as the contractors profit.

Mining		
1 Compressor	$ 6,000	
1 Drill (20-25 ft. holes)	$ 3,200	
Steel, bits, airline	$ 1,500	
1 Front end loader	$10,000	
2- 10 ton capacity trucks	$15,000	
Misc. and extras	$ 5,000	
		$ 40,700
Crushing		
1-24"x48" Crusher, Mtr.	$12,000	
1-15"x24" " "	$ 4,500	
1-Set rolls "	$ 1,500	
2-Ore Bins	$ 4,000	
Screens, conveyors, etc	$ 6,000	
Foundations, install., cover	$10,000	
Misc. and extras	$ 5,000	
		$ 46,500

Leaching		
3-Concrete Vats or wood tanks	$12,000	
Piping, fittings, etc	$ 4,000	
Valves, pumps, motors	$10,000	
Installation	$15,000	
Tanks, (water, acid, sol.)	$ 5,000	
Tail Removal truck or other equipment	$ 7,000	
Misc. and extras	$ 8,000	
		$ 62,000
Cement Precipitation		
4-Wood tanks, launders	$ 5,000	
Pumps, pipes, etc	$ 4,000	
Installation	$ 4,000	
		$ 13,000
Miscellaneous		
Diesel generator set	$10,000	
Installation	$ 2,000	
Water Supply, well and pump	$ 7,500	
		$ 19,500
TOTAL, equipment-construction		$181,000
Drilling Cost		$ 19,000
Working Capital		$ 50,000
TOTAL FINANCIAL REQUIREMENT		$250,000

Approximately $100,000 of the above figure is considered as outright purchase of movable and re-usable equipment. It is the writers opinion that only 50% of the original price be paid at time of purchase in order to bring about assurance of satisfaction of equipment from the supplier. Much of the equipment is available on lease-purchase arrangements. This route may be taken if management should deem it advisable as an advantgge for tax purposes.

ESTIMATED PRODUCTION COSTS:

The major items of concern in production expenses are: labor, supervision, blasting powder, fuel, acid, tin cans or spnnge iron. All these items have been taken into detailed consideration by the writer in presenting the following general cost figures. Same are based on a 35 pound cement copper per ton of crude ore mined.

For simplification, labor costs, fuel costs, etc, are lump sum calculated and not separately listed as mining, crushing, etc.

	Cost/lb. copper 35lbs/ton ore.
Supervision	0.4 cents
Labor; 16 men, Insurance, FICA, etc.	2.9 cents
Acid: 3 lbs/ lb. copper	3.6 cents

Iron: (tin cans or sponge iron)	3.2 cents
Fuel, diesel, gasolene, oil	1.0 cents
Powder, blasting	0.5 cents
Smelter hauls	0.2 cents
Repair parts	0.3 cents
Misc., assaying, chemicals, etc.	0.5 cents
TOTAL COST to produce 1 pound cement copper	12,6 cents

It is difficult to obtain detailed leaching costs from major companies, however, all authorities are in agreement that a 11 to 15 cent production cost range is acceptable, therefor, the estimated cost is reasonable.

ESTIMATED PROFIT and PAYOUT:

Smelters indicate net smelter return (before truck or haulage charges--accounted for in operating costs) on quoted price of 36¢ copper would be about 30.4¢ per pound of copper. A gross profit of 17.4¢ per pound of cement copper produced is thus indicated.

Mining and treating 500,000 tons of ore over a 5 year period indicates a gross profit (after operating expenses but before taxes and royalties) of $3,045,000 for the period; $609,000 per year or $50,700 per month. If under contract to a Copper Smelter, 1.06¢ /pound copper can be added to the "realized" profit previously indicated. These figures then become respectively, $3,150,000 for 5 years, $630,000 per year and $52,500 per month.

TIME ELEMENTS:

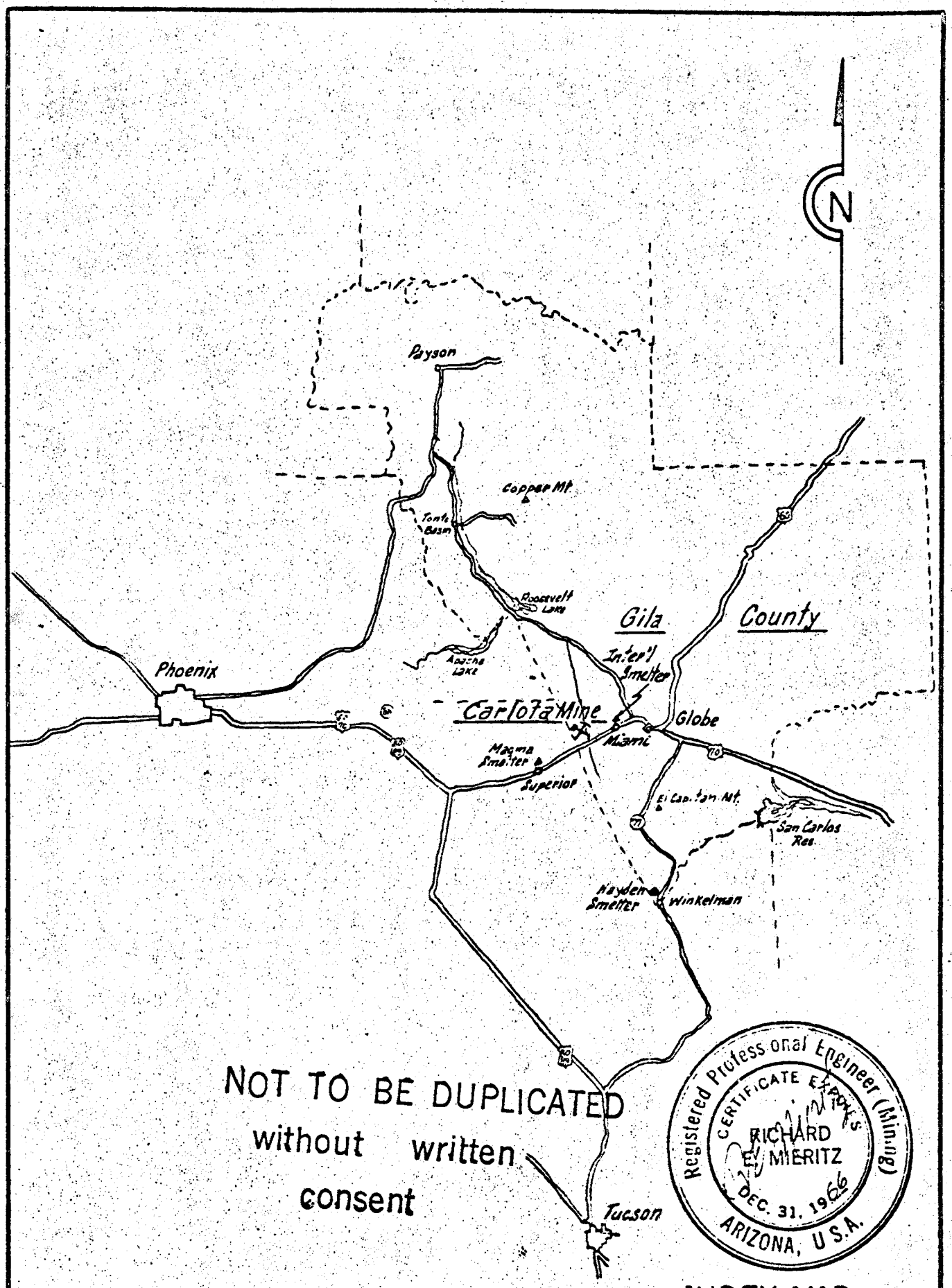
The actual time element involved to return the financial requirement would consume time for drilling, construction and installation of leach plant, mine preparation and trial period of intermittent production to establish economic plant capacities and coordination. The estimated time for the various phases are:

Drilling, two or three holes	1½ months
Mill Construction, Mine Preparation	4 months
Mill--Trial production	1 month
Return of Financial Requirement	8 months
Safety factor, delay of equipment, climatic conditions, etc.	2½ months
TOTAL TIME FOR RETURN OF CAPITAL INVESTMENT	17 months

Respectfully submitted,

Richard E. Mieritz

Richard E. Mieritz, P.E.
Mining Consultant
Phoenix, Arizona



INDEX MAP
PORTION of ARIZONA

SCALE
1 INCH = ± 21 MI.

MARCH, 1966 R.E. MIERITZ

Section E-B'

1st Lr. 3780
2nd Lr. 3740
3rd Lr. 3700
Lower Adit Level 3610 Lr. 3650
Dacite Diabase
Pinto Creek Lower
Kelly Fault
Possible Foot wall of mineralization
Inspection and Ventilation Shaft 3511
3900
3800
3700
3600
3500

THOMAS JEFFERSON (unpat.)
RIO PINTO - SUR. 3838
Dacite Diabase
Limestone
OPEN PIT
Adit 3600 ft Elev 3511
Adit Inclined Shaft
Ore bin
Shop-Lab.
Kelly Fault
Cabin
BREWERY (unpat.)
VAT (unpat.)
CLIPPER (unpat.)
OLD ABE (unpat.)
Water at 180'
Well (N. Ami) 300 ft. to 100 gpm.
Well
HOBO - SUR. 2676
Churn drill hole (Miami Copper)
Dry Wall
Cabin
Garage
Churn Drill Hole (Miami Copper)
B.M. x
Dacite
Pinto Creek
PINE TREE - SUR. 2864
Trail Joliet
Diabase
Churn Drill Hole (Miami Copper)
To Miami
MAYFLOWER-SUR. 3837 (LUCKY CHARLIE SUR. 2525)
CHARLIE NO. 2 - SUR. 2525
BLUE JAY - SUR. 3837
Churn Drill Hole
Dry Well
Pinto Creek
Churn Drill Hole

Section A-A'

4000
3900
3800
3700
3600
Pit
Crest of Pit
Toe of Pit
Edge of Pit
Bench
Bench
Adit 3600
Possible Footwall of mineralization
Kelly Fault

N

LEGEND

- Carlota Claim lines.
- Other Claim lines.
- Oxide copper stony fractures
- Diabase.
- Dacite.
- Pinal Schist.
- Limestone.
- Fault.

Registered Professional Engineer (Mining)
CERTIFICATE EXPIRES
RICHARD E. MIERITZ
DEC. 31, 1966
ARIZONA, U.S.A.

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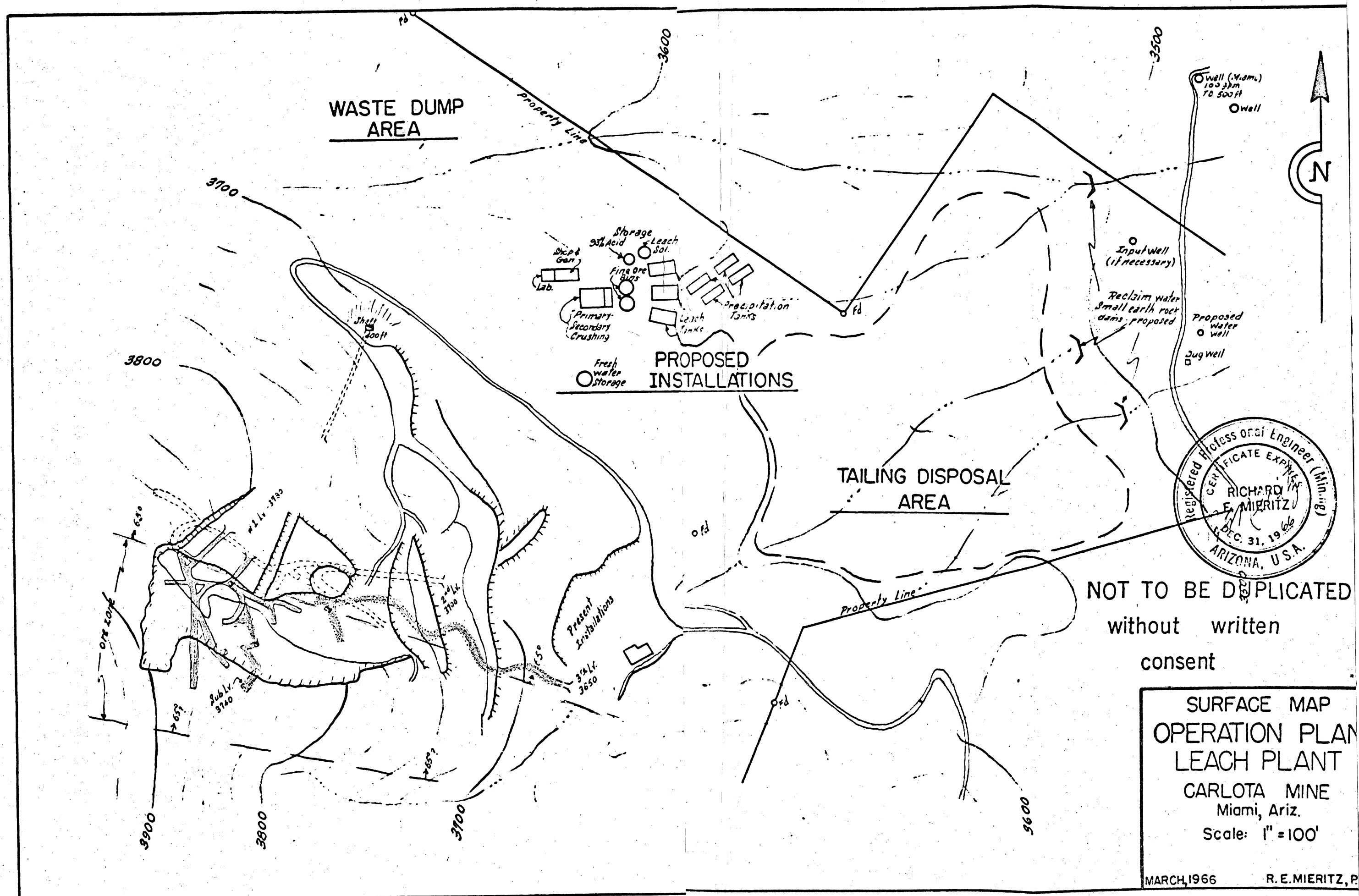
GENERAL SURFACE MAP
CARLOTA MINE
GLOBE MINING DISTRICT
Gila County, Arizona

Scale: 1" = 100' - hor., vert. C.I. = 25'

R. E. Mieritz, P.E.
CONSULTING MINING ENGINEER
PHOENIX, ARIZONA

MARCH, 1966


WASTE DUMP AREA
Property Line
3600
3500
3700
3800
3900
Well (Miami) 100 gpm TO 500 ft
Well
N
Storage
93% Acid
Leach Sol.
Shop & Gen
Lab.
Fine Ore Bins
Primary-Secondary Crushing
Leach Tanks
Precipitation Tanks
Fresh water Storage
PROPOSED INSTALLATIONS
Input Well (if necessary)
Reclaim water Small earth rock dams proposed
Proposed water well
Dug Well
Shaft 400 ft
TAILING DISPOSAL AREA
Present Installations
Property Line
Ore Zone
Sub Lv. 3740
2nd Lv. 3700
3rd Lv. 3650
65°
Registered Professional Engineer (Mining)
CERTIFICATE EXPIRES
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ARIZONA, U.S.A.
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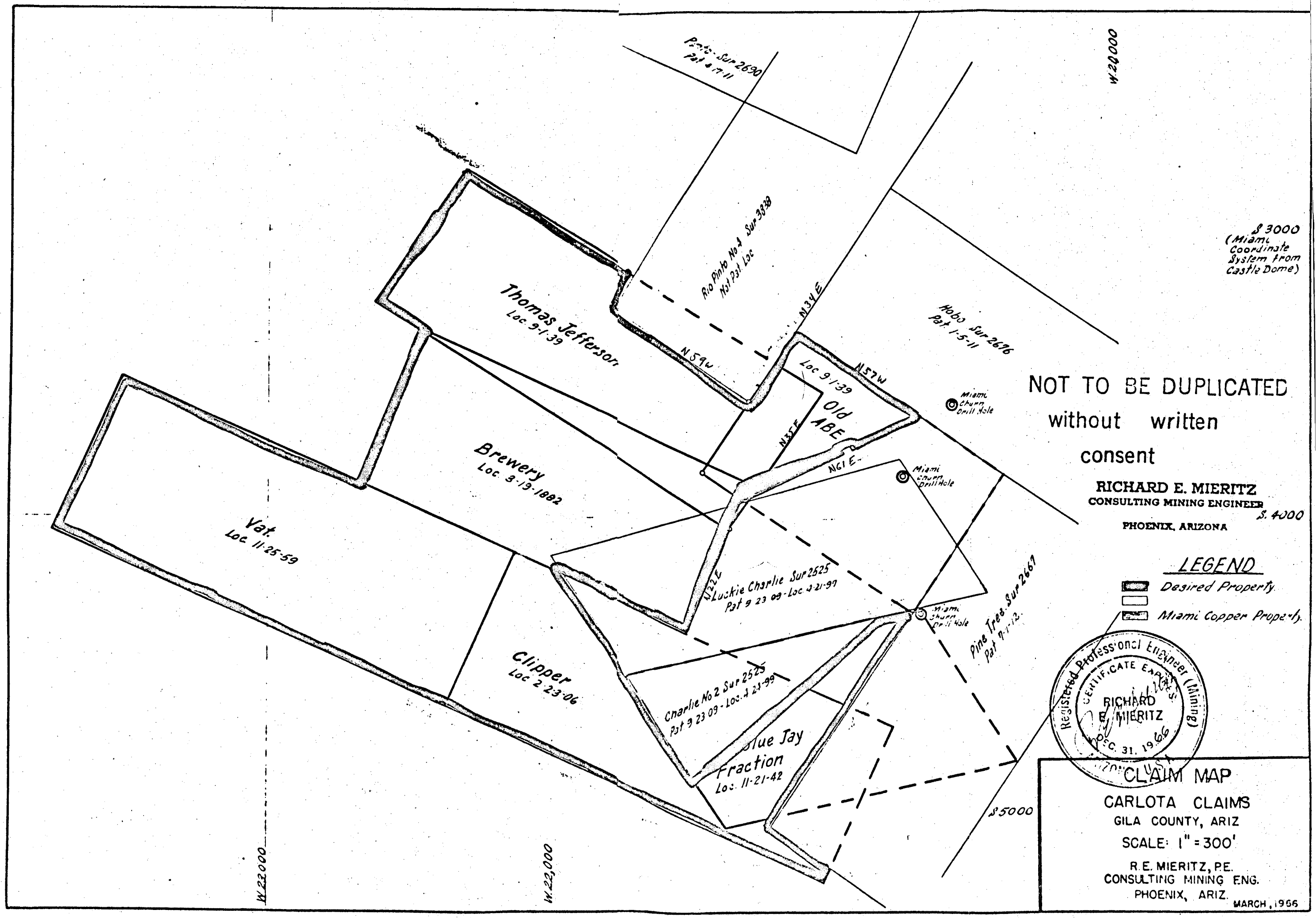
SURFACE MAP
OPERATION PLAN
LEACH PLANT
CARLOTA MINE
Miami, Ariz.
Scale: 1" = 100'
MARCH, 1966
R. E. MIERITZ, P.



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CONSULTING MINING ENGINEER
PHOENIX, ARIZONA

LEGEND

- Desired Property
- Miami Copper Property

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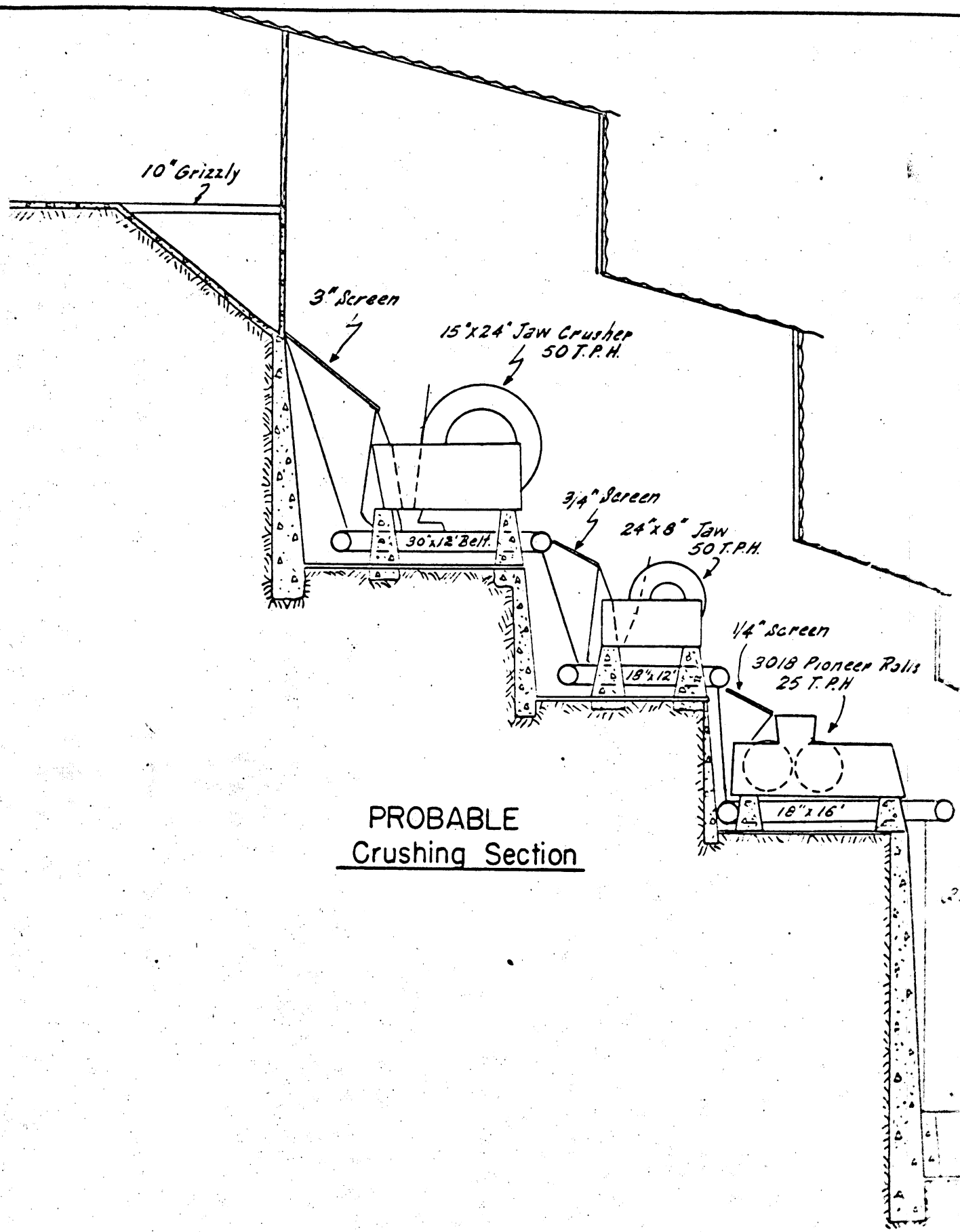
RICHARD E. MIERITZ
DEC. 31, 1966

CLAIM MAP

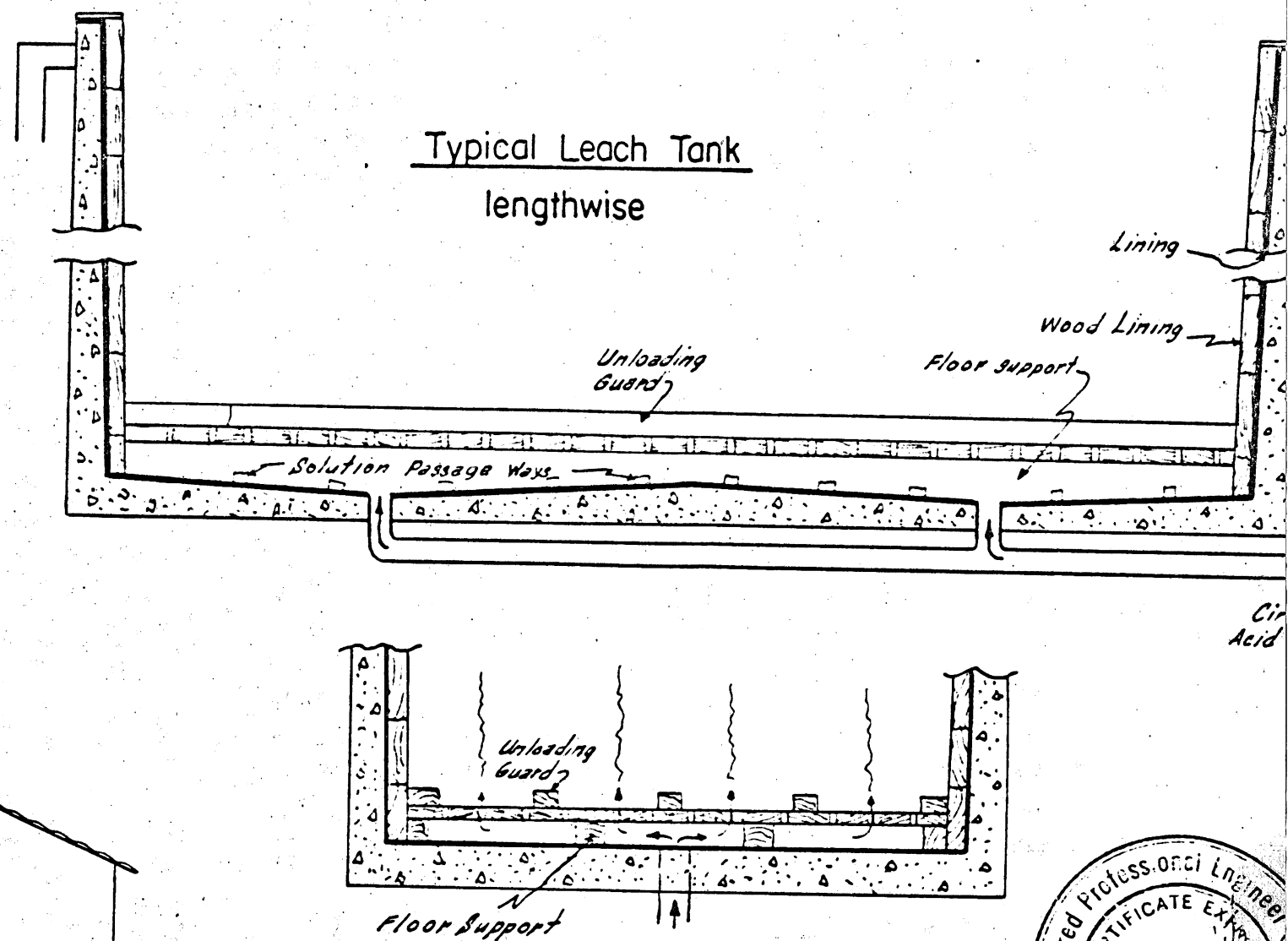
CARLOTA CLAIMS
GILA COUNTY, ARIZ
SCALE: 1" = 300'

R.E. MIERITZ, P.E.
CONSULTING MINING ENG.
PHOENIX, ARIZ.

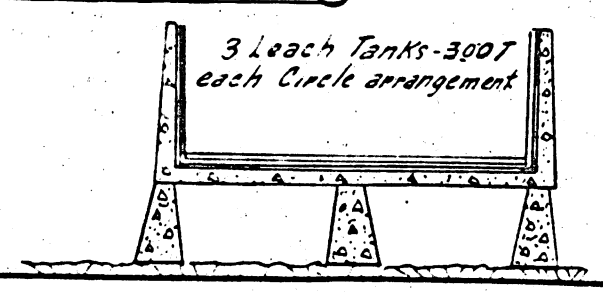
MARCH, 1956



PROBABLE
Crushing Section



CROSS-SECTION
across width



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LEACH PLANT LA
(Diagramatic)

MARCH, 1966

R.E MIE

GEOLOGIC and ENGINEERING

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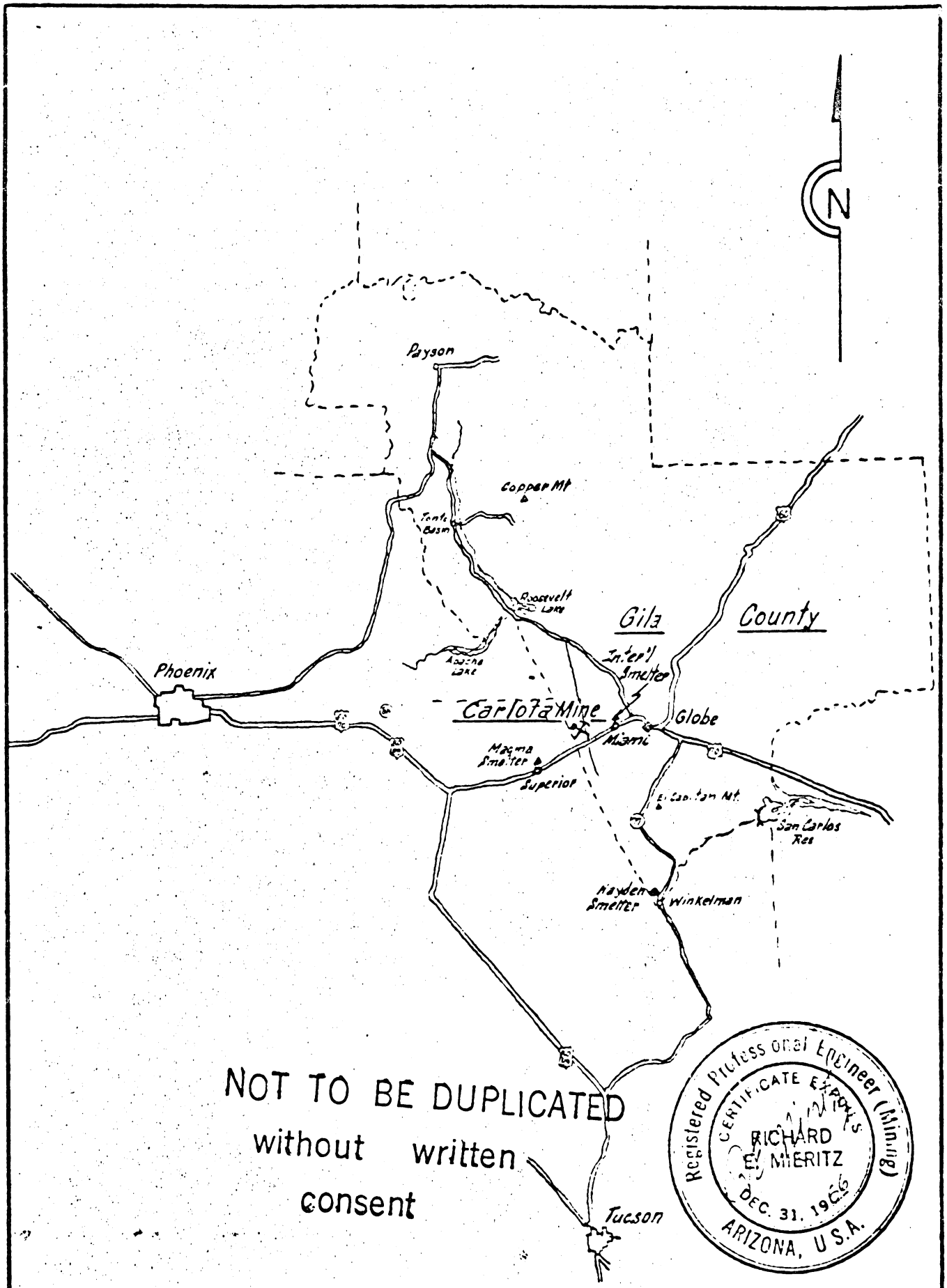

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EVALUATION
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As a result of much field examination and study of the property, personal completion of laboratory and field leach-precipitate test work, the writer forwards the following conclusions:

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Utilizing this information, Plant and Mine could then be designed for capacities to economically produce the salable product, cement copper.

The above outlined drilling and evaluation phase will require about six weeks to complete at a cost not to exceed $20,000.00.

After completion of the above phase, the property could be placed into production. Although subject to revision, the indicated production program dictates mining ore at a daily rate of 400 tons, leaching the ore at a daily capacity of 300 plus tons utilizing sulphuric acid, precipitating the copper by iron replacement and marketing the 75 to 85% cement copper product at a daily rate of up to 5½ tons.

As successful operation continues, divert small funds to delimit the ore zone to Pinto Creek level and lower to prove or disprove the 950,000 ton reserve now classed as "inferred" ore.

PROPERTY and LOCATION:

The Carlota Mine is located in Sec. 36 of T.1 N., R.13 E., Gila and Salt River Base and Meridian, Gila County, Arizona, 5 airline miles west of Miami, site of the Inspiration Copper Co. smelter, (see Index Map). A nine mile graveled rancher type road and 3 miles of U. S. Highway 60-70-80 connect the property with the smelter and supplies.

Six unpatented lode mining claims, some being fractions, comprise the property which is now completely surrounded by claims of the Miami Copper Corp., who, until a few years ago , had been drilling the old Cactus Ore Body, ¼ mile distant to the east-southeast of Carlota. One Miami Copper drill hole is just about 10 feet east of the Carlota property line. (see Claim Map).

The Brewery claim, first of the five was located in 1892, then the Clipper in 1906 followed by the Thomas Jefferson, Old Abe, a fraction in 1939, the Blue Jay Fraction, a fraction, in 1942 and the Vat Claim in 1959.

HISTORY and PRODUCTION:

To date, in excess of 19,000 tons of high alumina (14-15%) crude oxide copper ore has been produced from the underground workings and from the open pit,(see General Surface Map). The 3 to 10% copper ore from veins within the ore zone were mined by the original owner and lessees from discovery to year 1958. Smelters will not now accept the crude ore because of the high alumina content.

Three attempts to leach the ore proved both successful and unsuccessful. The first attempt was small tonnage (25 tons) vat leaching, (see photo showing concrete vats). The second attempt was "heap" leaching the dumps. The third attempt was low tonnage "sand" leaching--crushing to sand size. In all attempts the successful feature is that cement copper was produced even under the most inadequate means and the product sold to the smelter; the unsuccessful feature being that each attempt was carried forward on too small a basis and underfinanced, or "poor-boyed".

FACILITIES:

The two utilities of concern for operation of this property by the recommended method are a water supply and electric power. Water is in ample supply as indicated by the presence of Miami Copper Companys' well adjoining the Carlota property and Carlotas' own dug well. Water stands at 14 feet in the dug well. A good supply of water was encountered at 100 feet in the drilled well. A water well within Carlotas' boundary must be drilled.

Electric power is within a mile of the property, however, extension of this line to the Carlota may not be feasible because of the present limited power carrying capacity. The Cottonwood power line is about 1¼ miles distant. If both these sources are not available, a diesel-electric generator unit must be purchased to provide power for the crushers, rolls and pumps for the operation.

Truck-auto travel is possible over the graveled rancher type

road to the property.

GEOLOGY and MINERALIZATION:

Rocks in the area include Pre-Cambrian Pinal Schist, Devonian Limestone and Tertiary Dacite flows and early Tertiary (?) Diabase intrusives.

Four periods of strong faulting have occurred, which, to say the least, has created considerable "block" fragmentation and thus caused abundant passage ways for mineral deposition.

Copper mineralization in the district (Globe-Miami) is generally considered associated with the diabase intrusives and this is the case at Carlota.

The Kelly fault traverses the Carlota property in a N.70° W. direction and dips 65° N. and is the identical structure in part resposible for the Cactus Ore Body--a low grade sulphide copper deposit at depth--immediately east-southeast of Carlota.

Recurrent faulting has broken and shattered the Kelly fault itself as well as a footwall zone. Copper oxide mineralization as chrysocolla, malachite and tenorite fills the numerous paper thin fractures and ¼ to ½ inch openings of the fault and diabase in the zone--mineralization is not as disseminations. Alteration is quite pronounced in the zone of mineralization but is not in evidence in that portion forming the hanging wall of the zone.

Complete "in-place" oxidation to form the copper minerals has taken place--little migration downward,--since no evidence of copper or iron sulphides or derivatives of same were detected in the ore zone that is open to examination nor in material on dump of the deep shaft.

ORE RESERVES:

Ore reserves include 10,000 tons of 1.98% copper in the two dumps at the east end of the Pit; 50,000 tons of about 2% copper ore as would be developed by levelling the pit bottom to the lowest present pit elevation at the bin; 500,000 tons of similar grade as"indicated" ore from the lowest pit elevation to a depth of 35 feet below the lower adit level and 950,000 tons as "inferred" ore of similar grade down to an elevation of 3317 feet, the bottom of the 400 foot vertical shaft.

A constant ore zone width of 120 feet and length of 300 feet were used to determine the volumes of concern. A cubic foot factor of 12 was used for conversion to tons.

The accepted assumed grade for all classes of ore is 2% copper content and this is used in all calculations of operational

equipment and production costs.

Two, possibly three, drill holes must be drilled initially to provide copper content information required for detailed design of plant capacity and economic operation schedules. The target of these holes would be the penetration of the ore zone at approximately the 3600 foot elevation. About 1000 feet of drilling will be required and the cost of same should approximate $19,000 for the contract drilling and extras as casing, reaming, etc, as well as professional supervision, sampling and assaying. Barring extreme delays, a six week period for drilling must be considered.

A breakdown and distribution of the $19,000.00 will approach the following figures:

Contract drill price,	$7.50/ft.	$ 7,500.00
Sampling and assaying	$4.00/ft.	$ 4,000.00
Supervision and expenses		$ 3,500.00
Extras--drilling		$ 4,000.00
	Total	$19,000.00

PLAN of OPERATION:

Following completion of detailed mine and plant design which will produce up to 5½ tons cement copper per day, mining preparation and plant construction could begin.

Mining can be completed by open pit method using front end loader and trucks to transport the ore the short half mile distance to the proposed mill location. Ore would be mined at a rate to provide seven days supply of ore in a six day, or if possible, during a five day week.

Ore would be dry crushed to approximately -¼ inch by primary crushers and rolls, stored in fine ore bins and conveyed to the 350 (?) ton capacity leach tanks. (see Leach Plant Layout Map). This tonnage would be processed each 24 hours, seven days a week. The time cycle involved will consume three days for loading the vat, leaching, washing and unloading and disposal of the tails. The detailed engineering of operation, time cycle, design, etc, will not be discribed in this report in as much as some factors of design or equipment may change when in actual operation to provide better efficiency or perhaps availability of equipment, etc.

Assume the mining of 400 tons per day, leaching 325 tons per day and producing up to 5½ tons cement copper per day, the following employees would be required:

Mine--One shift per day--six day week	
Driller--powderman	1
Drill helpers, utility	2
Front end loader oper.	1
Truck drivers	2
	6

Crush--One shift per day --sid day week		
Crusher operator, part time Leach helper	1	
		1
Leaching and Precipitation		
Leach Oper., one each shift	3	
Vat Loader, unloader-days only	2	
Precipitation tank Oper.-days	1	
		6
Miscellaneous-Days only		
Mechanic-electrician, days	1	
Extra-Sunday operation	2	
		3
Total labor required		16
Manager (Mine Eng., assayer, etc.)		1
		17

ESTIMATED FINANCIAL REQUIREMENTS:

Operation of the Carlota property requires four major steps, two of which, mining and crushing, require what might be termed expensive equipment expenditures, however, such equipment is currently a "drug" on the market and is a good opportunity for buying good, little used, reconditioned equipment. Such equipment also provides a great saving and more often than not, provides excellent, un-interrupted, repair free service for long periods of time.

Equipping and operation of the Carlota Mine is not planned on large company "ideas" but planned on an efficient, cost saving profit making program utilizing the better equipment, etc at a minimum cost.

The following estimated costs therefor reflect prices quoted the writer by several suppliers of used equipment as well as some construction contract prices, the latter being reduced by a certain percent considered as the contractors profit.

Mining		
1 Compressor	$ 6,000	
1 Drill (20-25 ft. holes)	$ 3,200	
Steel, bits, airline	$ 1,500	
1 Front end loader	$10,000	
2- 10 ton capacity trucks	$15,000	
Misc. and extras	$ 5,000	
		$ 40,700
Crushing		
1-24"x48" Crusher, Mtr.	$12,000	
1-15"x24" " "	$ 4,500	
1-Set rolls "	$ 1,500	
2-Ore Bins	$ 4,000	
Screens, conveyors, etc	$ 6,000	
Foundations, install., cover	$10,000	
Misc. and extras	$ 5,000	
		$ 46,500

Leaching		
3-Concrete Vats or wood tanks	$12,000	
Piping, fittings, etc	$ 4,000	
Valves, pumps, motors	$10,000	
Installation	[illegible]	
[illegible]	[illegible]	
Tail Removal truck or other equipment	$ 7,000	
Misc. and extras	$ 8,000	
		$ 62,000
Cement Precipitation		
4-Wood tanks, launders	$ 5,000	
Pumps, pipes, etc	$ 4,000	
Installation	$ 4,000	
		$ 13,000
Miscellaneous		
Diesel generator set	$10,000	
Installation	$ 2,000	
Water Supply, well and pump	$ 7,500	
		$ 19,500
TOTAL, equipment-construction		$181,000
Drilling Cost		$ 19,000
Working Capital		$ 50,000
TOTAL FINANCIAL REQUIREMENT		$250,000

Approximately $100,000 of the above figure is considered as outright purchase of movable and re-usable equipment. It is the writers opinion that only 50% of the original price be paid at time of purchase in order to bring about assurance of satisfaction of equipment from the supplier. Much of the equipment is available on lease-purchase arrangements. This route may be taken if management should deem it advisable as an advantgge for tax purposes.

ESTIMATED PRODUCTION COSTS:

The major items of concern in production expenses are: labor, supervision, blasting powder, fuel, acid, tin cans or spnnge iron. All these items have been taken into detailed consideration by the writer in presenting the following general cost figures. Same are based on a 35 pound cement copper per ton of crude ore mined.

For simplification, labor costs, fuel costs, etc, are lump sum calculated and not separately listed as mining, crushing, etc.

	Cost/lb. copper 35lbs/ton ore.
Supervision	0.4 cents
Labor; 16 men, Insurance, FICA, etc.	2.9 cents
Acid: 3 lbs/ lb. copper	3.6 cents

Iron: (tin cans or sponge iron)	3.2 cents
Fuel, diesel, gasolene, oil	1.0 cents
Powder, blasting	0.5 cents
Smelter hauls	0.2 cents
Repair parts	0.3 cents
Misc., assaying, chemicals, etc.	0.5 cents
TOTAL COST to produce 1 pound cement copper	12,6 cents

It is difficult to obtain detailed leaching costs from major companies, however, all authorities are in agreement that a 11 to 15 cent production cost range is acceptable, therefor, the estimated cost is reasonable.

ESTIMATED PROFIT and PAYOUT:

Smelters indicate net smelter return (before truck or haulage charges--accounted for in operating costs) on quoted price of 36¢ copper would be about 30.4¢ per pound of copper. A gross profit of 17.4¢ per pound of cement copper produced is thus indicated.

Mining and treating 500,000 tons of ore over a 5 year period indicates a gross profit (after operating expenses but before taxes and royalties) of $3,045,000 for the period; $609,000 per year or $50,700 per month. If under contract to a Copper Smelter, 1.06¢ /pound copper can be added to the "realized" profit previously indicated. These figures then become respectively, $3,150,000 for 5 years, $630,000 per year and $52,500 per month.

TIME ELEMENTS:

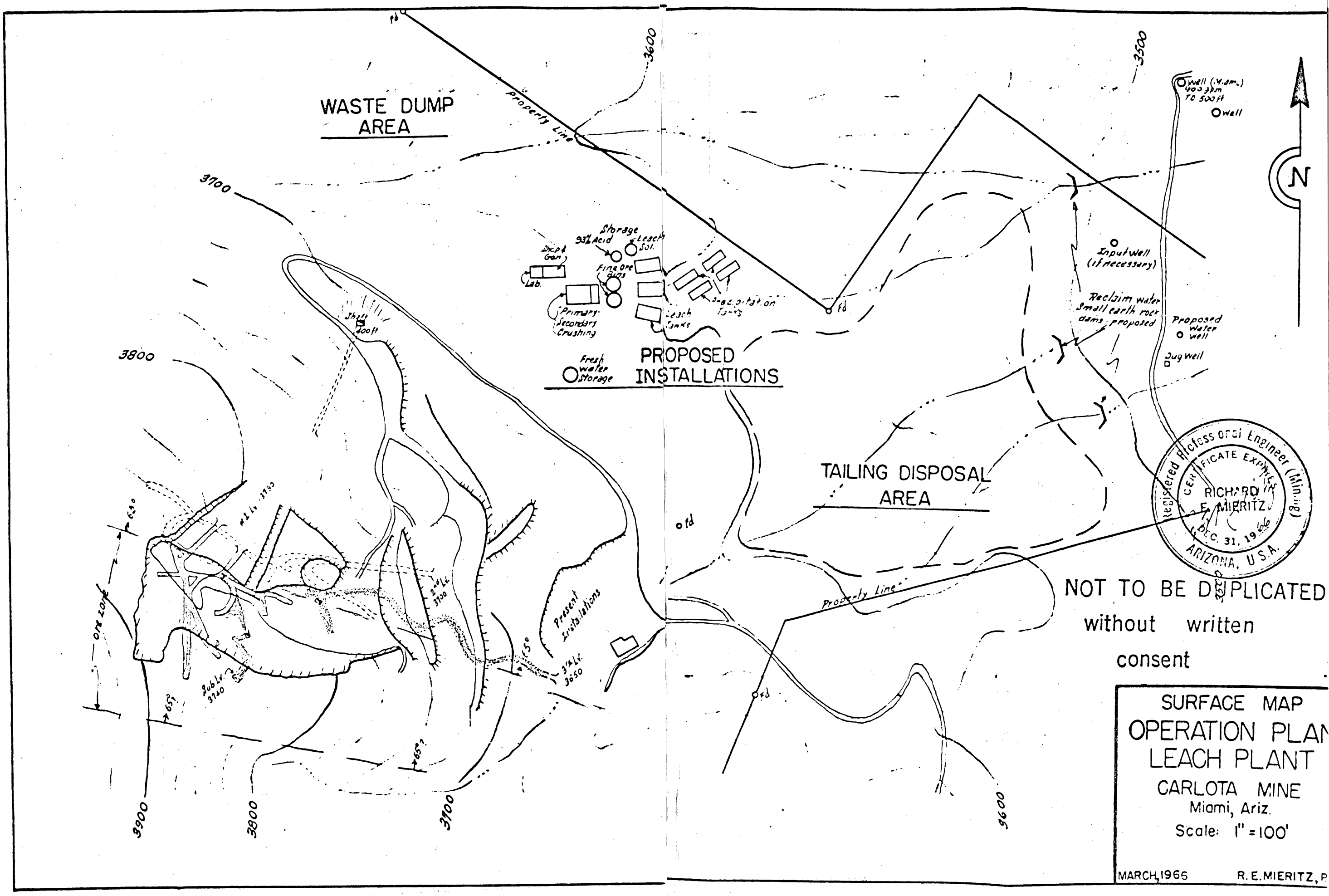
The actual time element involved to return the financial requirement would consume time for drilling, construction and installation of leach plant, mine preparation and trial period of intermittent production to establish economic plant capacities and coordination. The estimated time for the various phases are:

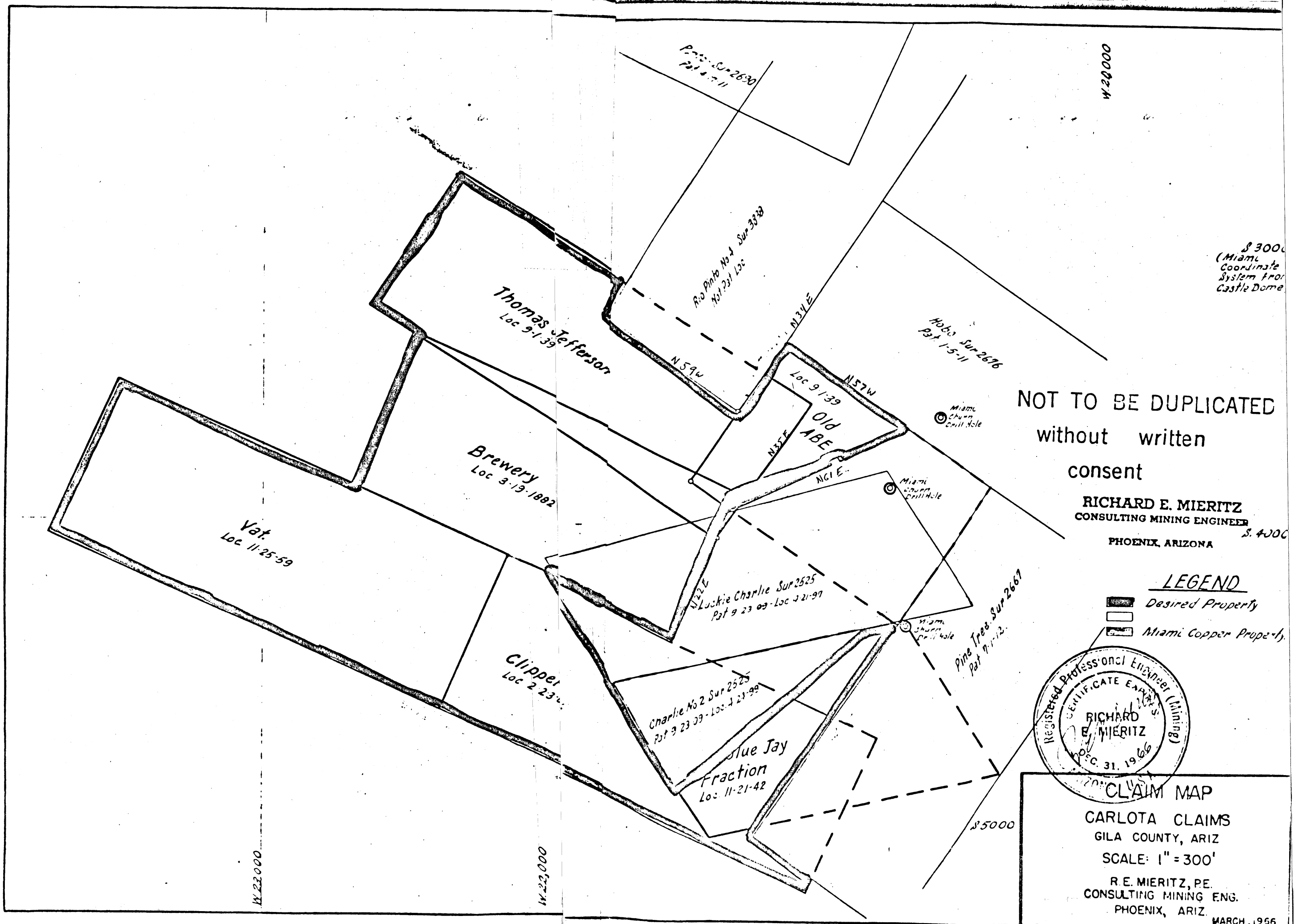
Drilling, two or three holes	1½ months
Mill Construction, Mine Preparation	4 months
Mill--Trial production	1 month
Return of Financial Requirement	8 months
Safety factor, delay of equipment, climatic conditions, etc.	2½ months
TOTAL TIME FOR RETURN OF CAPITAL INVESTMENT	17 months.

Respectfully submitted,

Richard E. Mieritz

Richard E. Mieritz, P.E.
Mining Consultant
Phoenix, Arizona


WASTE DUMP AREA
Property Line
3600
3500
3700
3800
3900
Well (Miami) 400 gpm TD 500 ft
Well
N
Storage
93% Acid
Leach Sol.
Shop & Gen
Lab.
Fine Ore Bins
Primary-Secondary Crushing
Leach Tanks
Precipitation Tanks
Fresh water Storage
PROPOSED INSTALLATIONS
Input Well (if necessary)
Reclaim water Small earth rock dams proposed
Proposed Water well
Dug Well
Shaft 400 ft
TAILING DISPOSAL AREA
Present Installations
Property Line
Ore Zone
Sub Lv. 3740
2nd Lv. 3700
3rd Lv. 3650
Registered Professional Engineer (Mining)
CERTIFICATE EXPIRES
RICHARD E. MIERITZ
DEC. 31, 1966
ARIZONA, U.S.A.
NOT TO BE DUPLICATED without written consent
SURFACE MAP
OPERATION PLAN
LEACH PLANT
CARLOTA MINE
Miami, Ariz.
Scale: 1" = 100'
MARCH, 1966
R. E. MIERITZ, P



Thomas Jefferson
Loc 9-1-39
Brewery
Loc 3-19-1882
Vat.
Loc 11-25-59
Clipper
Loc 2-23-
Old ABE
Loc 9-1-39
Rio Pinto No 4 Sur 3338
Not Pat Loc
Hobo Sur 2676
Pat 1-5-11
Luckie Charlie Sur 2525
Pat 9-23-09 - Loc 4-21-97
Charlie No 2 Sur 2525
Pat 9-23-09 - Loc 4-21-99
Blue Jay Fraction
Loc 11-21-42
Pine Tree Sur 2667
Pat 7-1-12
N 59 W
N 34 E
N 57 W
N 35 E
N 61 E
N 22 E
W 20000
W 22000
W 22,000
S 3000
(Miami Coordinate System from Castle Dome)
S 4000
S 5000
Miami Churn Drill Hole
NOT TO BE DUPLICATED
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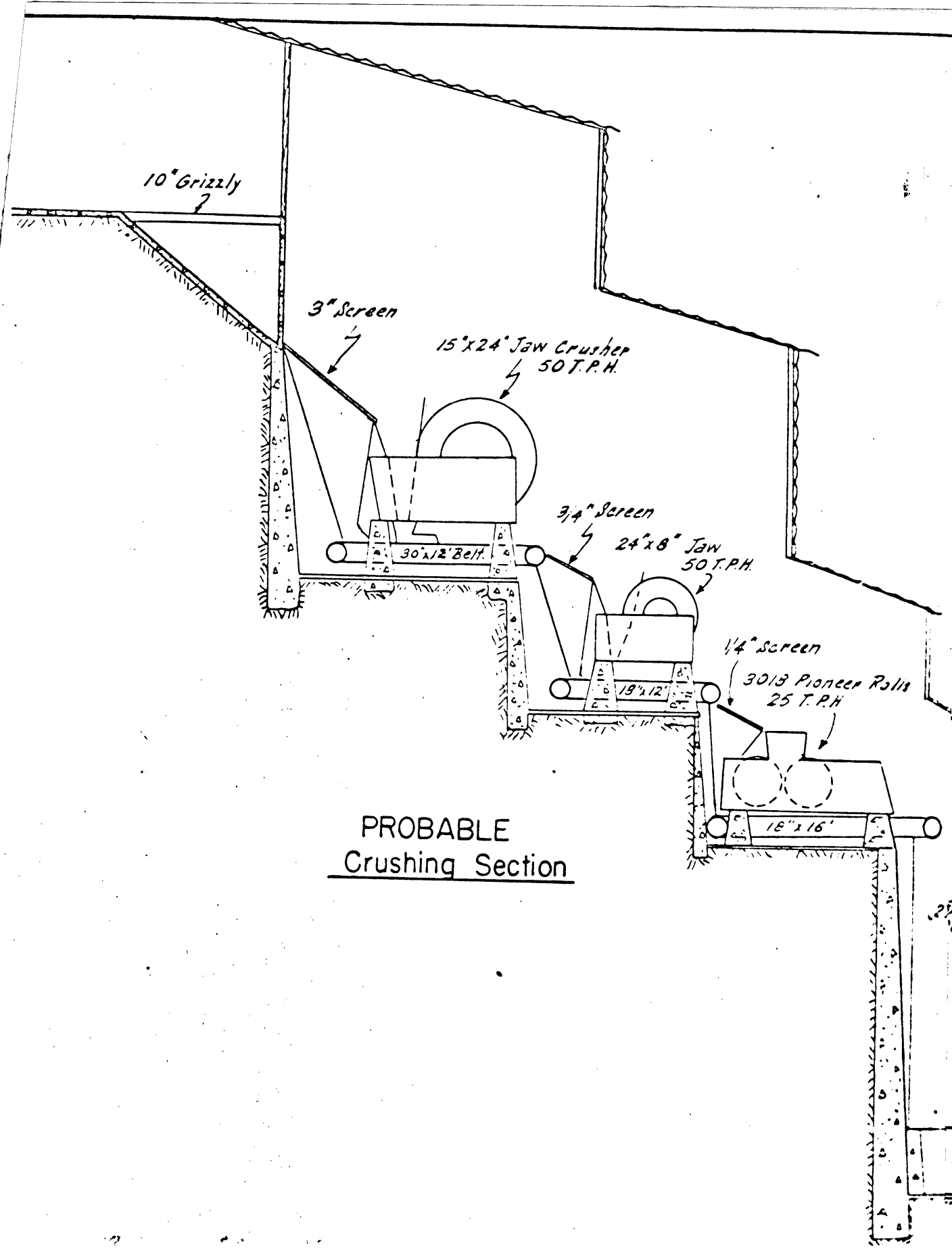
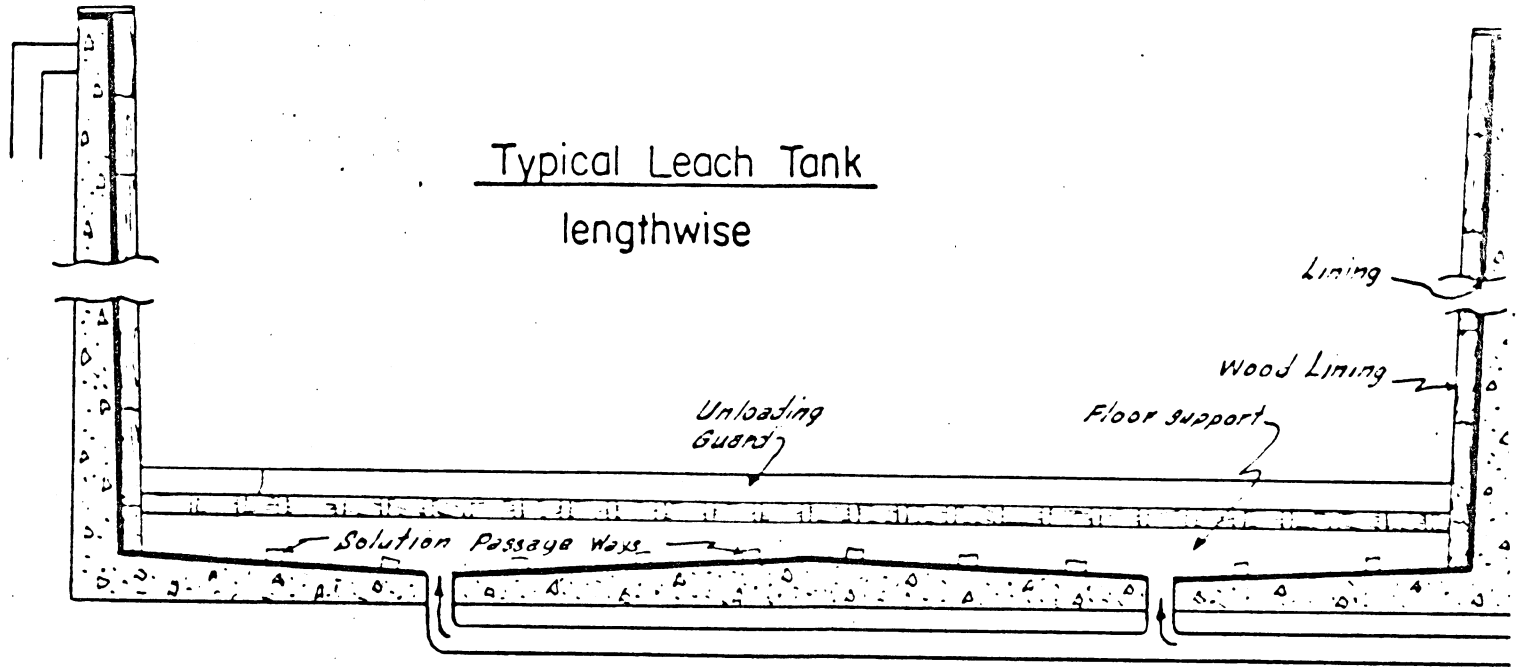
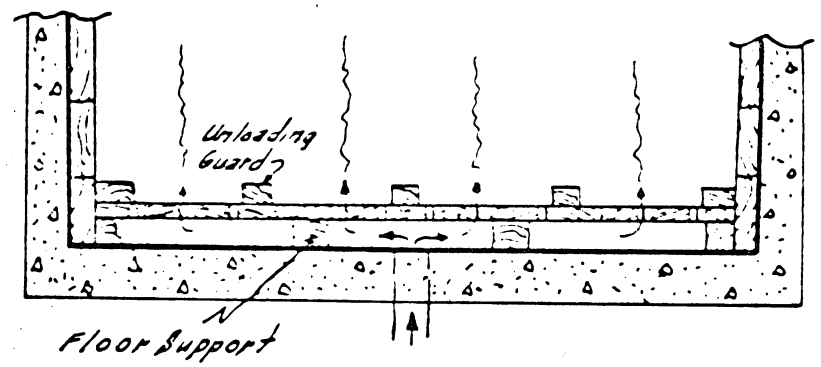
consent
RICHARD E. MIERITZ
CONSULTING MINING ENGINEER
PHOENIX, ARIZONA
LEGEND
Desired Property
Miami Copper Property
Registered Professional Engineer (Mining)
CERTIFICATE EXPIRES
RICHARD E. MIERITZ
DEC. 31, 1966
CLAIM MAP
CARLOTA CLAIMS
GILA COUNTY, ARIZ
SCALE: 1" = 300'
R.E. MIERITZ, P.E.
CONSULTING MINING ENG.
PHOENIX, ARIZ.
MARCH, 1966

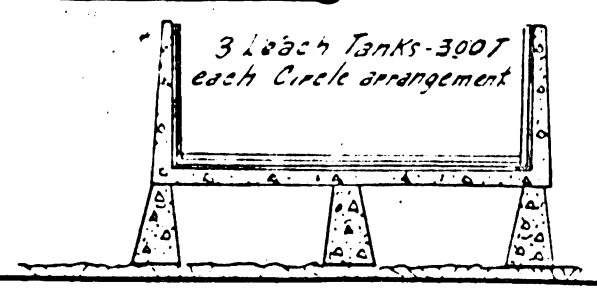


PROBABLE
Crushing Section





CROSS-SECTION
across width



Registered Professional Engineer
CERTIFICATE EXPIRES
RICHARD
E. MIERITZ
DEC. 31, 1966
ARIZONA, U.S.A.

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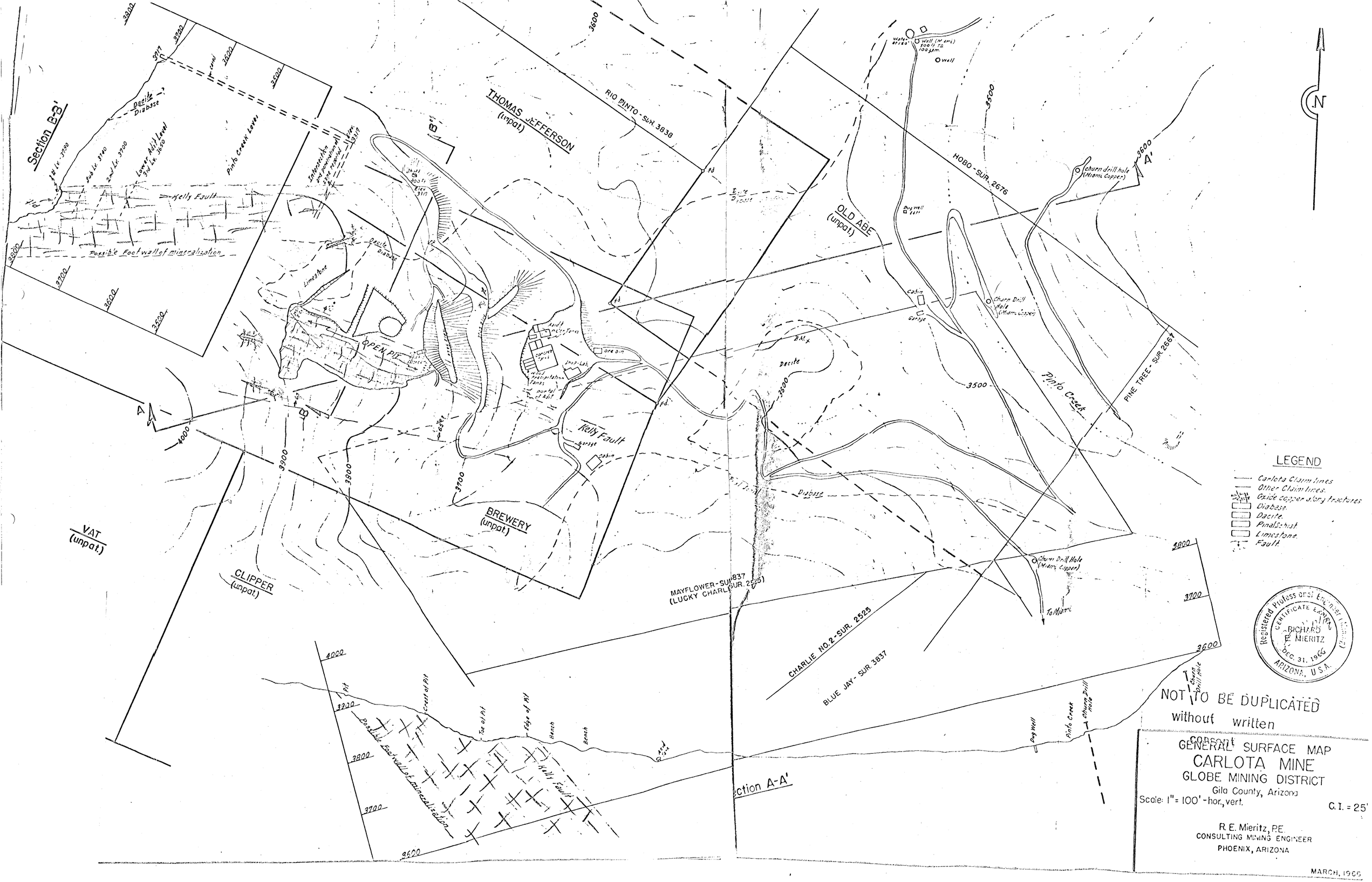
LEACH PLANT LA
(Diagramatic)

MARCH, 1966

R E MIE



Section B-B'
Dacite
Diabase
Lower Adit Level
Pinto Creek Lavas
Kelly Fault
Possible Footwall of mineralization
Limestone
OPEN PIT
THOMAS JEFFERSON
(unpat.)
RIO PINTO - SUR. 3838
OLD ABE
(unpat.)
HOBO - SUR. 2676
churn drill hole
(Miami Copper)
Churn Drill Hole
(Miami Copper)
Pinto Creek
PINE TREE - SUR. 2667
Kelly Fault
BREWERY
(unpat.)
VAT
(unpat.)
CLIPPER
(unpat.)
MAYFLOWER - SUR. 3837
(LUCKY CHARLIE SUR. 2525)
CHARLIE NO. 2 - SUR. 2525
BLUE JAY - SUR. 3837
Churn Drill Hole
(Miami Copper)
To Miami
Dacite
Diabase
Pit
Crest of Pit
Toe of Pit
Edge of Pit
Bench
Bench
Possible Footwall of mineralization
Kelly Fault
Dug Well
Pinto Creek
Churn Drill Hole
Section A-A'
N
LEGEND
Carlota Claim lines
Other Claim lines.
Oxide copper along fractures
Diabase.
Dacite.
Pinal Schist
Limestone.
Fault
Registered Professional Engineer
CERTIFICATE EXPIRES
RICHARD E. MIERITZ
DEC. 31, 1966
ARIZONA, U.S.A.
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GENERAL SURFACE MAP
CARLOTA MINE
GLOBE MINING DISTRICT
Gila County, Arizona
Scale: 1" = 100' - hor., vert.
C.I. = 25'
R. E. Mieritz, P.E.
CONSULTING MINING ENGINEER
PHOENIX, ARIZONA
MARCH, 1966

Northern Miner
July 25, 1974