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PRINTED: 08/08/2001

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: HAPPY JACK

ALTERNATE NAMES:

PIMA COUNTY MILS NUMBER: 843

LOCATION: TOWNSHIP 12 S RANGE 8 E SECTION 25 QUARTER SE
LATITUDE: N 32DEG 21MIN 11SEC LONGITUDE: W 111DEG 28MIN 34SEC
TOPO MAP NAME: SILVER BELL PEAK - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
CALCIUM LIMESTONE

BIBLIOGRAPHY:
ADMMR HAPPY JACK FILE

08/21/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: HAPPY JACK

ALTERNATE NAMES:

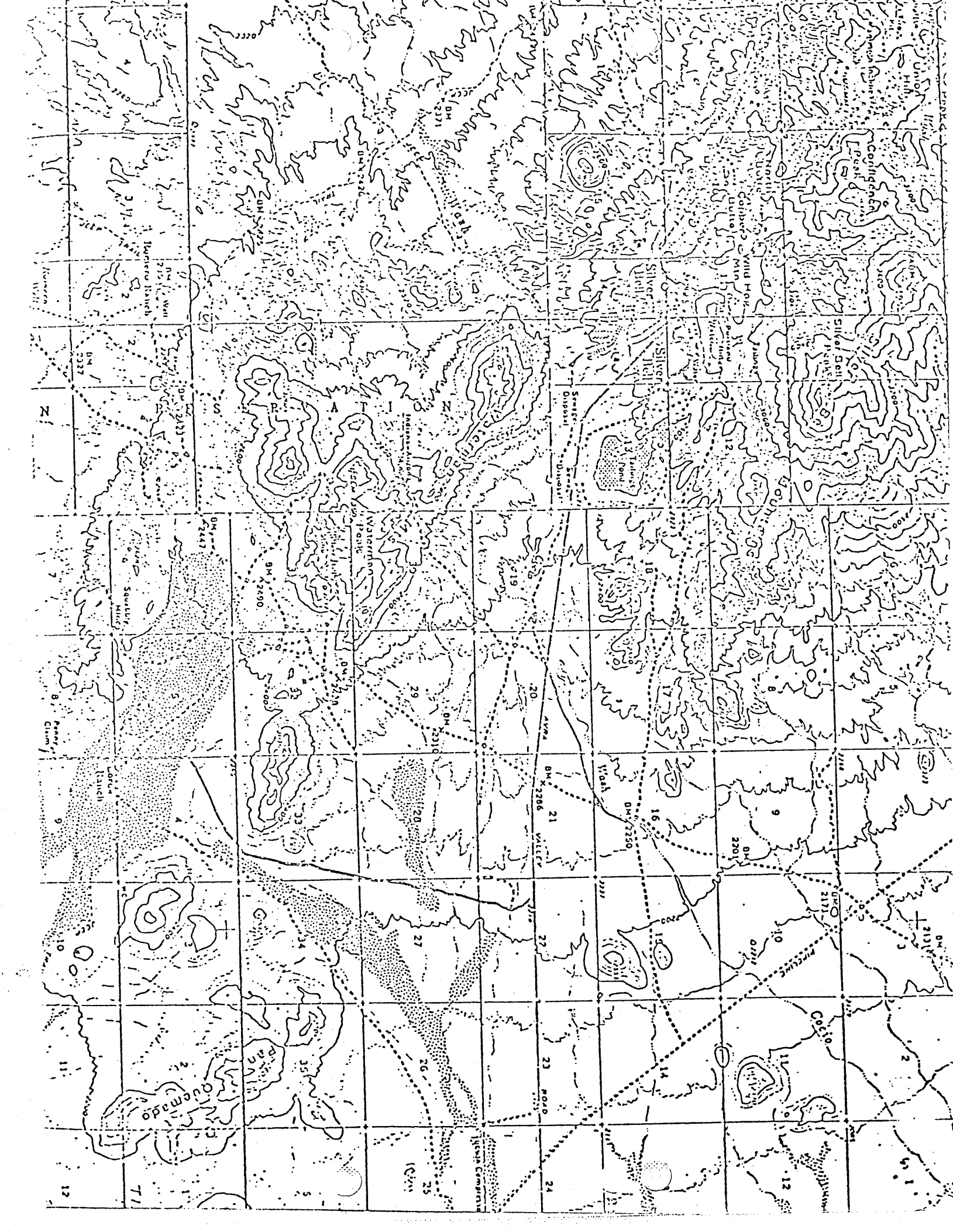
PIMA COUNTY MILS NUMBER: 843

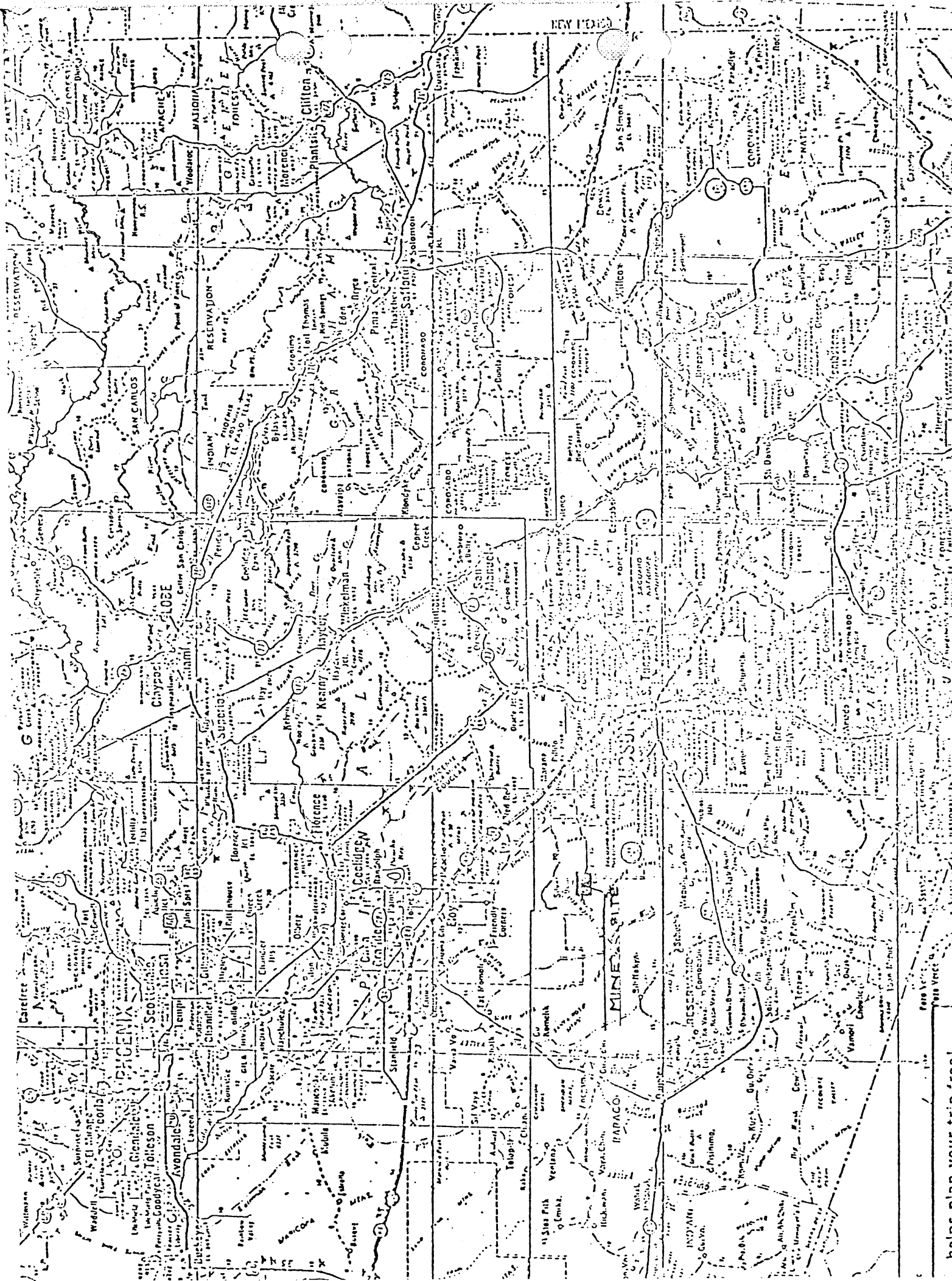
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VIS6.22

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Information from: Ross Smith
Company: Arizona Portland Cement Company
Address: P. O. Box 338
Rillito, AZ 85654
2. Phone: (602) 622-3503
3. Mine: Happy Jack
4. ADMMR Mine File: Happy Jack
5. County: Pima MILS Number: 843
6. Summary of information received, comments, etc.:

During a visit to the Arizona Portland Cement Company Plant, Quality Control Supervisor Ross Smith reported that over the past few years they occasionally purchased high calcium limestone from Harlow Jones' Happy Jack Mine.

The high calcium limestone from the Happy Jack was advantageous both in that it allowed use of high silica limestone from the company's own Twin Peaks Mine and its use extends the life of the Twin Peak Deposit.

Date: 2-19-92 Engineer: Ken A. Phillips

ARIZONA DEPARTMENT OF MINERAL RESOURCES
Mineral Building, Fairgrounds
Phoenix, Arizona

MILS #8473

N/c

1. Information from: Roy Jones
- Address: At Mine Site (Phone: 622-0354)
2. Mine: HAPPY JACK 3. No. of Claims - Patented 15
(Pima County) Unpatented 39
4. Location: Avra Valley Road towards Silver Bell; take dirt road SW to Indiana-
(Protracted) Arizona Mine
5. Sec 25 Tp 12S Range 8E 6. Mining District Waterman
7. Owner: Knox-Arizona Corp., c/o William A. Knox
8. Address: 8967 Ladue Rd., St. Louis, MO 63124
9. Operating Co.: Mine X-Cavation, Inc., c/o H. L. Jones
(Tucson phone 791-2467)
10. Address: 15311 W. Hardin Rd., Marana, AZ 85238; phone 682-5224
11. President: Harlow L. Jones 12. Gen. Mgr.: _____
13. Principal Metals: Limestone 14. No. Employed: _____
15. Mill, Type & Capacity: _____
16. Present Operations: (a) Down (b) Assessment work (c) Exploration
(d) Production (e) Rate 400 tpd.
17. New Work Planned: Chief buyer, Spreckels Sugar, shut down. Plant may re-open
in the spring and resume limestone purchase.
18. Misc. Notes: Mr. Roy Jones is the son of Harlow Jones. Roy is the caretaker of
the property.

The Happy Jack limestone quarry is just south of the Indiana-Arizona Mine
on the east side of a bluff. The quarry reportedly occurs on two patented
claims: Bicarbonate and Paddy Woods (two claims of a 15-claim patented block).

Mining began in late 1981 and shipping began in April 1982. The limestone,
assaying about 54% CaO, was crushed to 3-6 inches and trucked to the Spreckels
sugar beet refinery at Chandler, AZ. The original contract called for 20,000
tons and Mine X-Cavation apparently received \$20/ton, delivered. Some limestone
was also trucked to Arizona Portland Cement Co. at Rillito.

Date: January 3, 1983

Michael W. Greeley
(Signature) (Field Engineer)

ALA

Anthony Lane & Associates

Mining Consultants

P.O. Box 5843

Tucson, AZ 85703

Phone (602) 888-5248

INDUSTRIAL MINERAL EVALUATION

WATERMAN MOUNTAIN COMPLEX

WATERMAN MINING DISTRICT

Pima County, Arizona

April 4, 1983

Introduction

This evaluation of the industrial mineral reserves was requested by Harlow L. Jones, the Optionee-owner of the property. The evaluation consisted of on site examination of usable sections of limestone, slates and quartzites, together with sampling of materials. Review of existing sales agreements and settlements of sales was made.

Property Description and Location

The property consists of 20 patented lode mining claims and 39 unpatented lode mining claims. These claims encompass and flank the Waterman Mountains, which are located some 36 miles north-west of Tucson, Arizona. Tucson lies in the South Center Quadrant of the State of Arizona.

The claims lie specifically within Sections 19, 29, 30, 31 and 32, Township 12 South, Range 9 East and in Sections 24 and 25, Township 12 South, Range 8 East, G&SRB&M. The western portion of the patented claims lie within the Papago Indian Reservation, however, all rights are held by the patents.

The property is reached by paved road from Tucson, following Interstate 10 West to the Avra Valley Road. This paved road is followed westerly to the mine road turnoff, a distance of some 18 miles.

The vegetation is typical of the High Sonoran Desert with modera

to high temperatures seasonally. Year-round operations are normal.

Elevation at the mine site range from 2,500 feet to 3,800 feet above sea level.

Electric power is installed at the mine site.

Geology

Rock Types

The oldest rocks in the general area occupied by the claims is the Older Precambrian Pinal Schist. This has been intruded by granitic rocks and later by diabasic dikes, which may be post-Younger Precambrian in age.

Nonconformably overlying the eroded surface of the Pinal Schist and granites is the Younger Precambrian sedimentary sequence, which form the Apache Series and consist of quartzites, conglomerates, limestones and shales. The top of the Younger Precambrian is the Mescal limestone.

Unconformably overlying the Younger Precambrian sequence is a well developed Paleozoic sequence, which can be tabulated as follows:

	Permian)	
	Permo-Pennsylvanian)	Naco Group
	Pennsylvanian		Horquilla Formation
Lower	Mississippian		Escabrosa Limestone
Upper	Devonian		Martin Formation
Upper)	Cambrian	(Abrigo Formation
Middle)	Cambrian	(Troy Quartzite (Bolsa)

These Paleozoic beds are essentially all limestone and dolomites.

Unconformably overlying the Paleozoic sequence is a series of Cretaceous clastics generally of reddish color. These are unconformably followed by a series of Tertiary sediments and volcanics consisting of both intrusives and extrusives composed of rhyolites, porphyritic granites, dacites, granites and other related types. All older rocks are uncon-

formably overlain by Quaternary alluvium. Numerous disconformities and angular unconformities are present in the post-Paleozoic sequence of sediments.

On the Waterman Mountains property the Precambrian intrusives are exposed but have not been reached in the mine workings. Except for limited areas, most of the claims are underlain by Paleozoic limestones. It is quite likely that Younger Precambrian sequence is missing in the Waterman Mountains.

In the above sequence of "Tertiary" intrusives are included those intrusives of Laramide age, which include the granites, alaskites, dacites and related rocks.

Structure

The structure of the Waterman Mountains is controlled by folding and complex faulting. A highly eroded synclinal structure to the north and anticlinal structure to the south are complicated by crumpling and minor folding; drag along faults and warping are present. The general trend of the rocks is in a northwest-southeast direction, which is the direction of the axes of the major folds. The folds appear to plunge to the southeast.

Complex faulting is found throughout the Waterman Mountains. At least three major breaks occur. The faulting has been classified into (1) pre-mineral faults belonging to either (a) a steeply dipping northwest striking system of which the Indiana fracture is characteristic with its 1,400 feet of vertical displacement, and (b) an east to northeast trending system of which the Waterman fault is the best example with its horizontal displacement of 900 feet, although in general faults

in the above groups usually have about 100 foot displacement; and (2) post-mineral faults, which are high angle, northerly striking with 10 to 15 feet of displacement. The first group of faults are probably Laramide in age and the second group probably Late Tertiary in age. The more easterly bearing faults, such as the Waterman Fault, cut the north-westerly trending group of which the Indiana Fracture is characteristic.

Resulting from synclinal structure to the north and anticlinal structure to the south, a capping of "Escabrosa" Limestone (Mississippi) is present on the "Silver Hill" area and the "Burro Mine" area. The thickness of the strata is upwards of 250 feet covering an area of 3,000,000 square feet at the Silver Hill and 2,400,000 square feet at the Burro Mine.

This represents a tonnage of 67,500,000 tons, calculated at 20 cubic feet per ton. Allowing for disconformity, reserve calculations are discounted 15%, leaving a positive reserve of 57,375,000 tons.

This strata is calculated as proven material being exposed on three sides.

Based upon recent quarry development and material sales, this section is of major economic value for cement manufacture, food filling and processing, building block manufacture and landscaping.

Operational and Economic Factors

The physical and topographic setting of the limestone cap on both locations lends to a bench quarrying operation. This system allows for continued blasting of benches upwards, with mined material being pushed to stockpile.

The mined material is transported by mine truck, downhill to the crushing screening plant located on a flat area north-east of the mine. The material is either transferred from stockpile to market and/or crushed and sized for specific market specifications.

Costs - Based on 500 t.p.d.

Mining and Haulage plant	\$2.80	
Crushing screen	.70	
		<hr/>
Royalty	\$3.50	
	1.00	
		<hr/>
Total Direct Cost	\$4.50	
Price f.o.b. Plant	\$6.50	
		<hr/>
Profit Factor (B.T.)	\$2.00	per ton

Conclusions

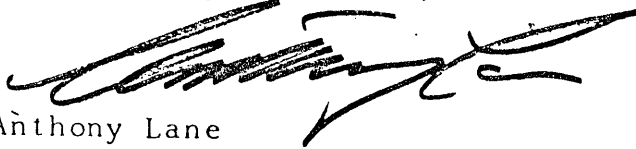
The industrial mineral potential of the Waterman Mountain Complex is unique in the following aspects.

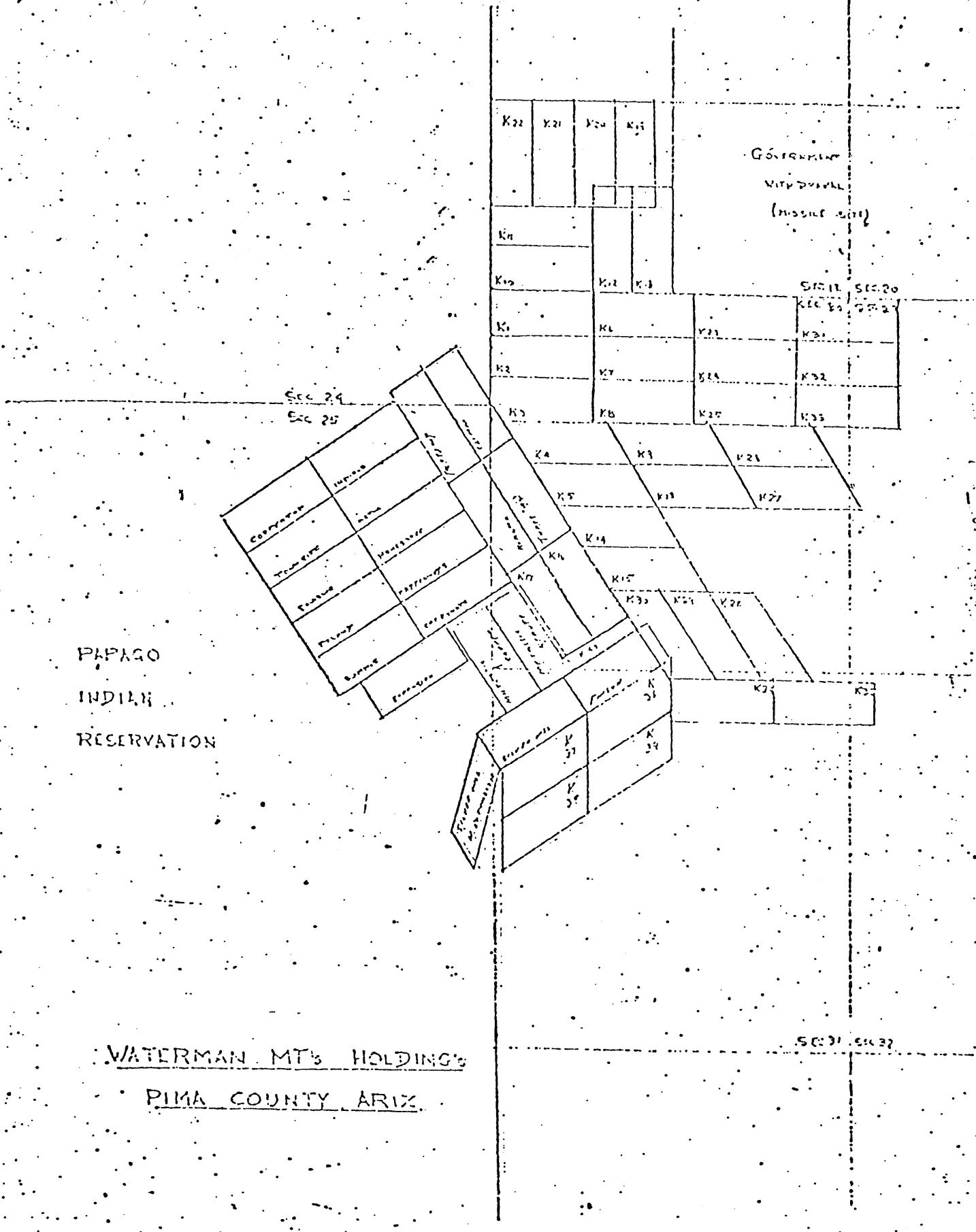
1. The availability of comparable limestone located on usable land is extremely limited in Southern Arizona.
2. The major competitor is Arizona Portland Cement whose plant and quarry is located at Rillito. Arizona Portland Cement has mined most of its usable reserves and is transporting comparable limestone from Twin Buttes, some 30 miles south of Tucson.
3. The purity of the limestone allows for sale as food fillers and food processing as well as flotation reagents.
4. There is sufficient reserve to justify the installation of a lime and/or cement plant on site.
5. The growth of Tucson is projected at 15% per annum for the next ten years.

6. The Central Arizona Project, Tucson Leg, is scheduled for 1983-1990, which will require maximum output of cement.

Therefore, based on the expansion of existing sales, without present processing, this is a sound economic venture. However, the economic factors are greatly expanded with cement and/or lime manufacturing on site.

Respectfully submitted,


Anthony Lane

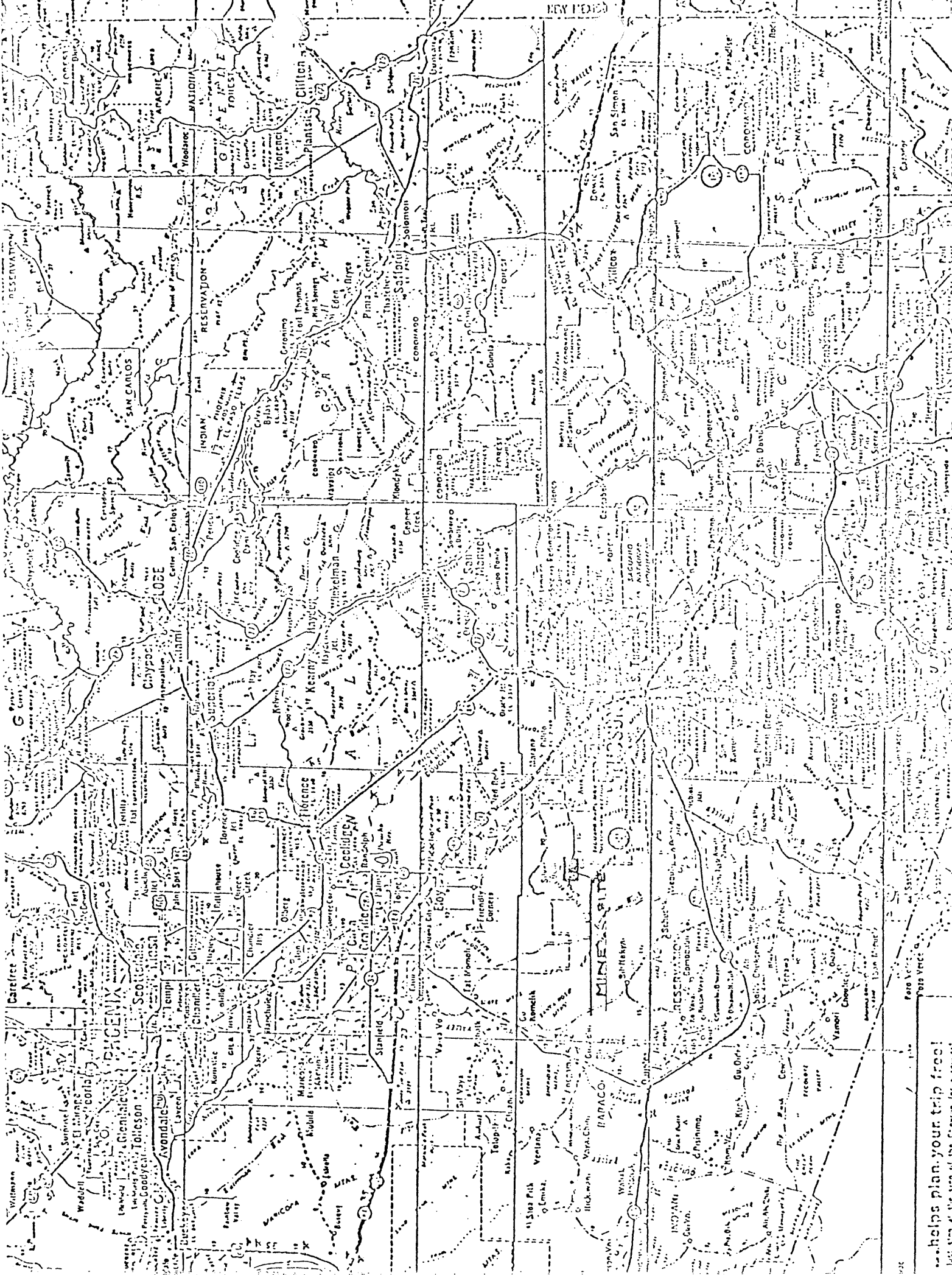


GOVERNMENT
MILITARY
(MISSILE SITE)

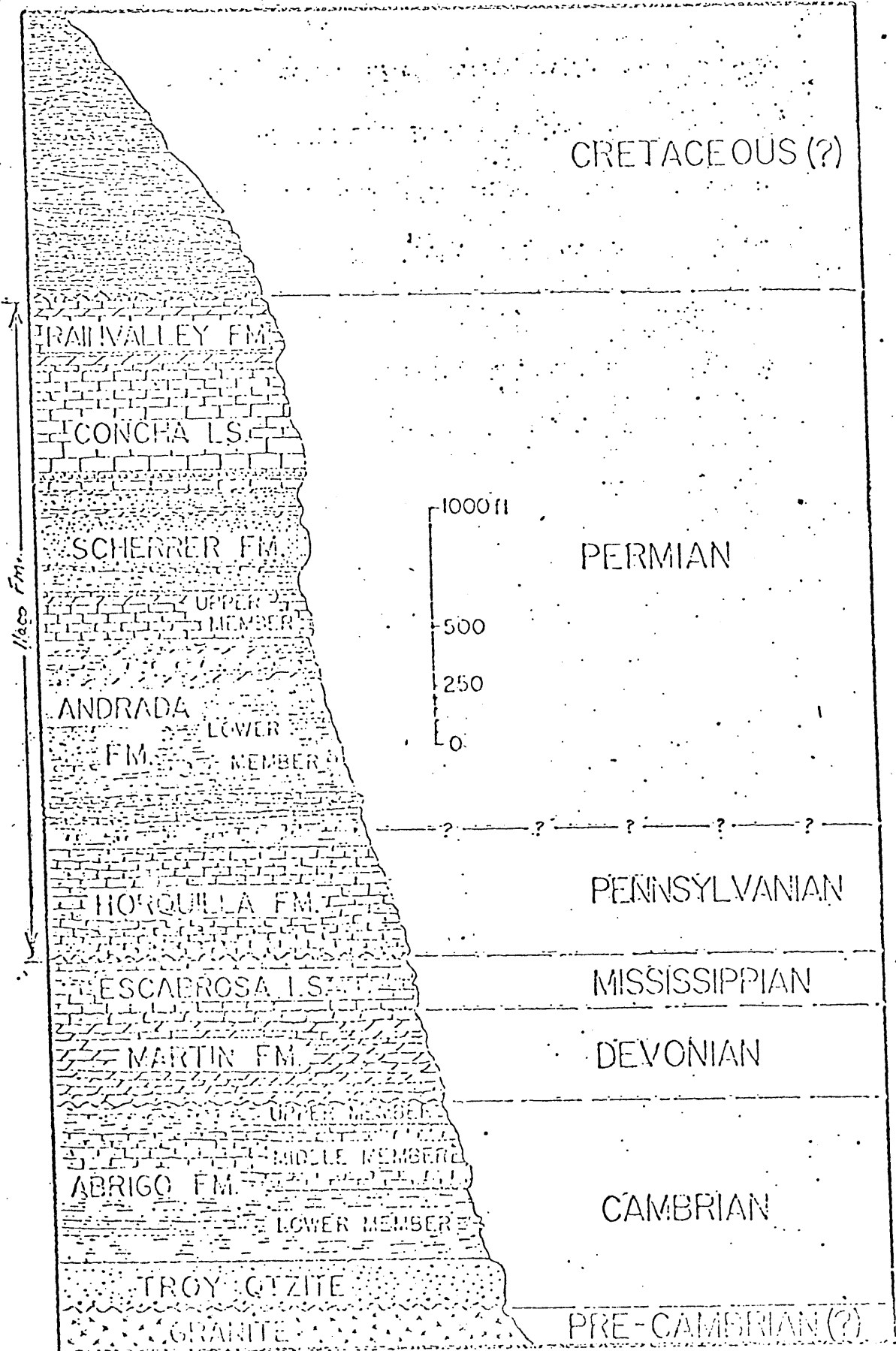
PAPAGO
INDIAN
RESERVATION

WATERMAN MT's HOLDING's
PIMA COUNTY ARIZ.

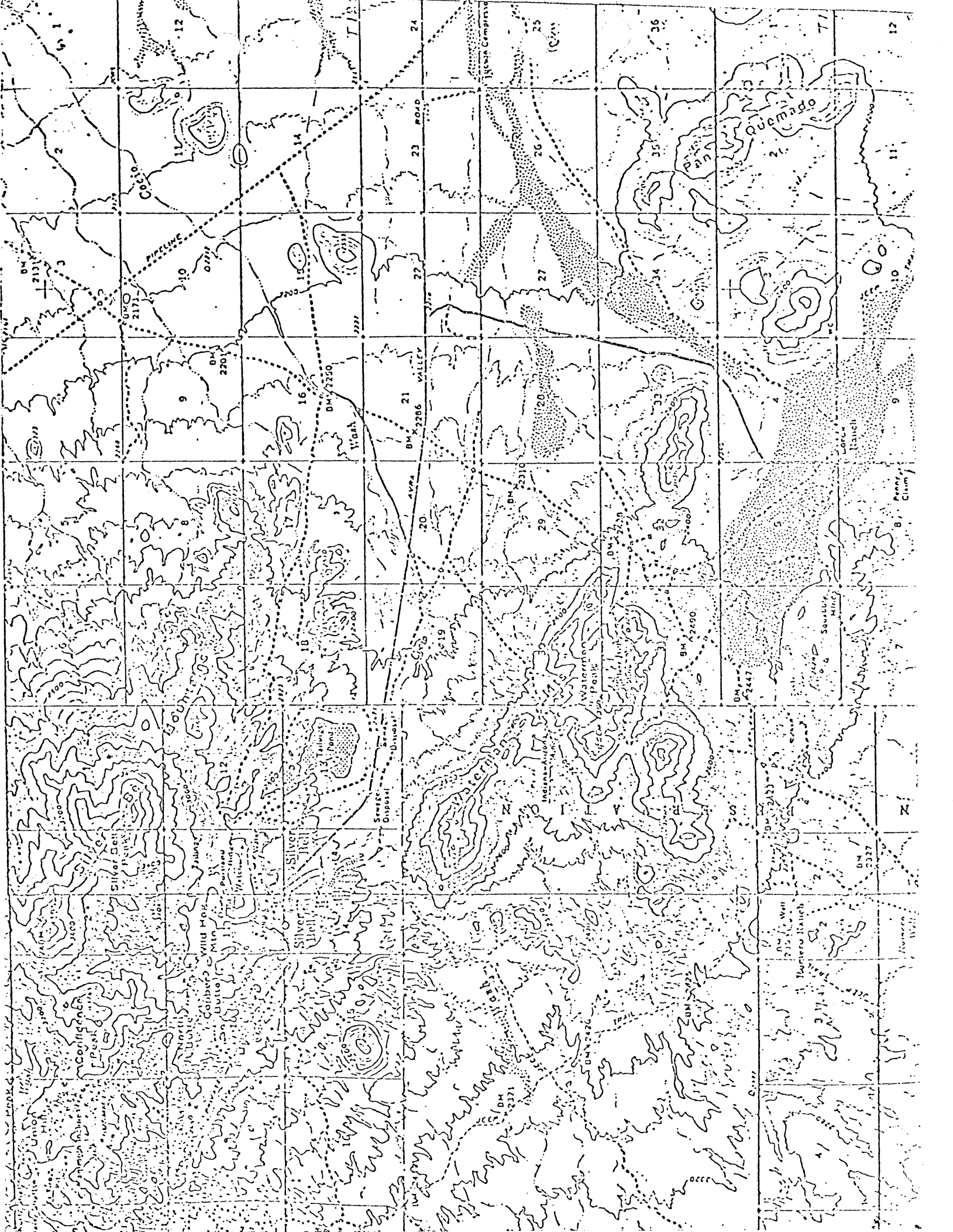
Scale 1"=20.5'



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Generalized Geologic Column
at the Waterman Mountains



ALANCO, LTD.

Anthony Lane, President

Education

B. Sc. - Geology
B. Sc. - Mining Engineering
Business Law - Minor
Loughborough College
Royal School of Mines

Professional Experience

1950 - 1951 British National Coal Board
Supervision 17 coal mines near Coalville,
Leicestershire

1951 - 1953 Anglo-Iranian Oil Co.
Staff Engineer - Aide to V.P. Administration

1954 - 1955 Dean Roland - Geologists, Denver, Colorado
Field Geologist - Uranium Exploration

1955 - 1957 Geophysical Engineering Co., Colorado Springs,
Colorado
Field Manager - Petroleum and Mineral
Geophysics - South-West

1957 - 1961 Yucca Mining Co. and Florida Manganese Co.,
Deming, New Mexico
General Manager - 500 T.P.D. Manganese - Operations

Formation of Alanco Ltd.

1961 Organized Anthony Lane & Associates
Associates - Consultants, followed by Alanco
Ltd. in 1970

Clientele

The Anaconda Company
American Metals (then Climax Molybdenum)
Utah International
Union Oil Company
Western Minerals Corporation
Venture Drilling Company
Knox-Arizona Corporation
B.S. & K. Mining Company
Anamax Mining Company

Special Projects

Exploration and Mine & Mill Development --
Maganese, Lead, Copper and Fluorspar - New Mexico
Exploration -- Copper - Southern New Mexico
Exploration and Mine & Mill Development --
Gold, Silver, Copper, Lead and Zinc - Arizona
Exploration -- Gold - Wyoming and Nevada
Exploration and Mine & Mill Development --
Tungsten and Gold - Utah
Metallurgy -- Precious Metals Extraction
Land Management -- Contractual
Claim Patenting -- Federal

AMSTAR CO. DRATIC
Spreckels Sugar Division
Woodland, California
December 11, 1981

Memorandum: Production Department Service
Limestone from Arizona

(Limestone requested by M.B. Gathercoal)

A few pieces of limerock were submitted for analyses. The sample was taken by Mike Gathercoal and Don Kolstad in November from a newly opened quarry near Marana, Arizona. The quarry area reportedly has been called "Happy Jack" or "H.L. Jones."

The limerock is a tan to grey color with generally very small crystal faces (less than 0.1 mm).

Analyses

% CaCO ₃ , permanganate titration	97.6
% MgCO ₃ , atomic absorption	0.4
% acid insolubles, gravimetric	1.8
% R ₂ O ₃ , gravimetric	0.2

A fist sized piece of the limerock was calcined 17 hours at 1000°C (1832°F). No decrepitation occurred. After calcining the rock has some noticeable cracks. The rock was cooled slightly and dropped about 3 feet to a concrete floor. The rock broke into eight pieces without producing a lot of fines. The eight pieces were quite resistant to further breakage.

Tests indicate the limestone is chemically very good. The cracks formed during calcining may result in some breakage in a vertical lime kiln.

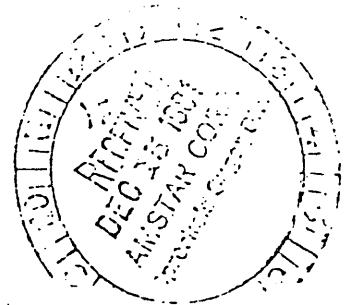
CENTRAL TESTING LABORATORY

M. Bolinder

M. Bolinder

MB:ah

cc: D. A. Lapins
J. A. Kolberg
F. G. Eis
J. E. Cooley
D. W. Kolstad
M. B. Gathercoal ✓
J. R. Roscoe



577

SE 1/4, T. 12 S., R. 8 E.
SILVER BELL DIST.

Sec. 24

Sec. 25

