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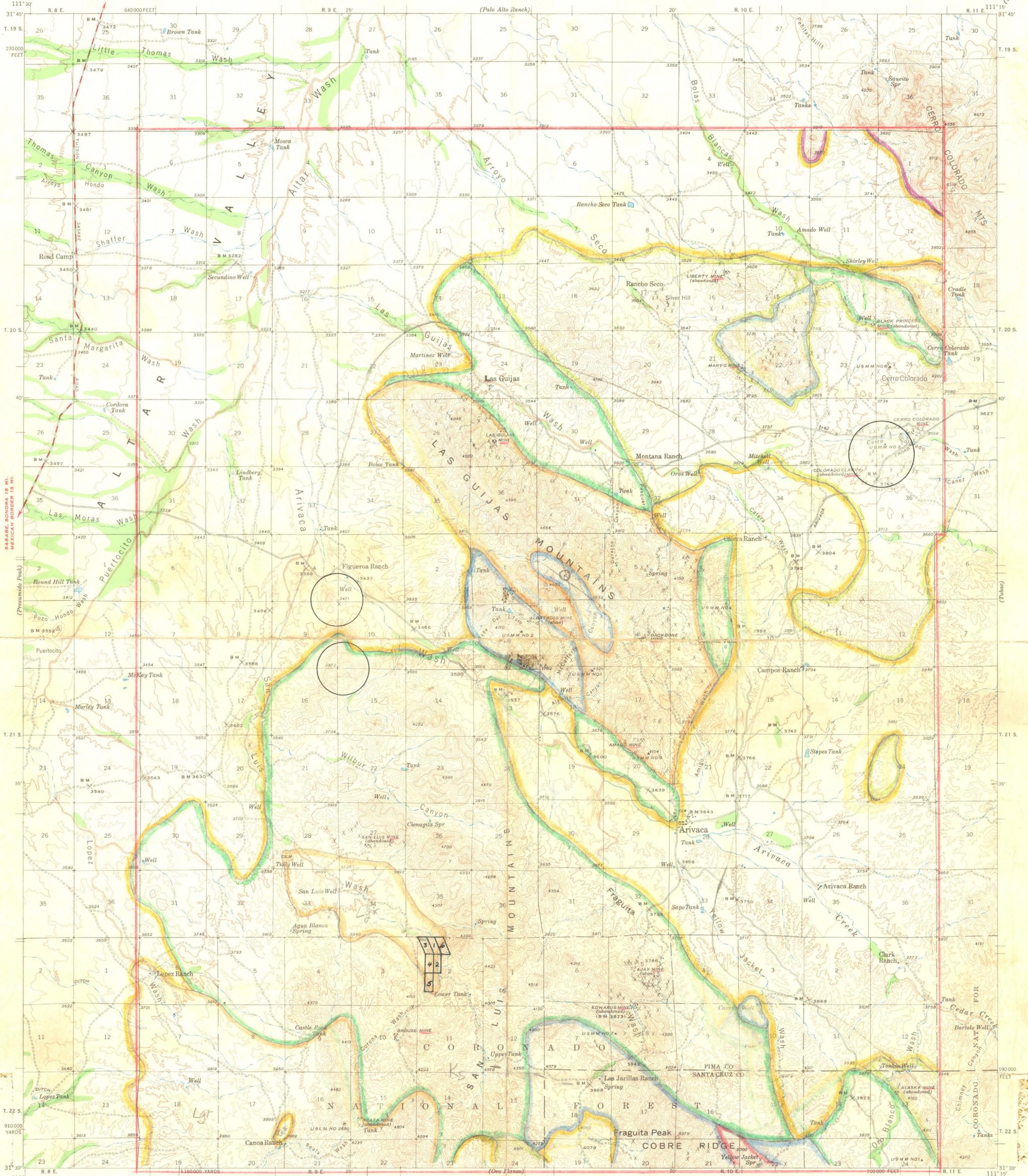
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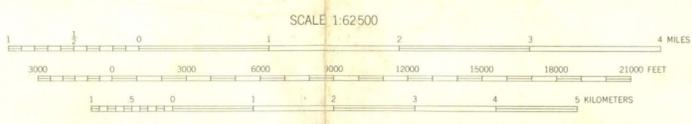
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Topography by S. C. Kain Surveyed in 1940-41

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1941



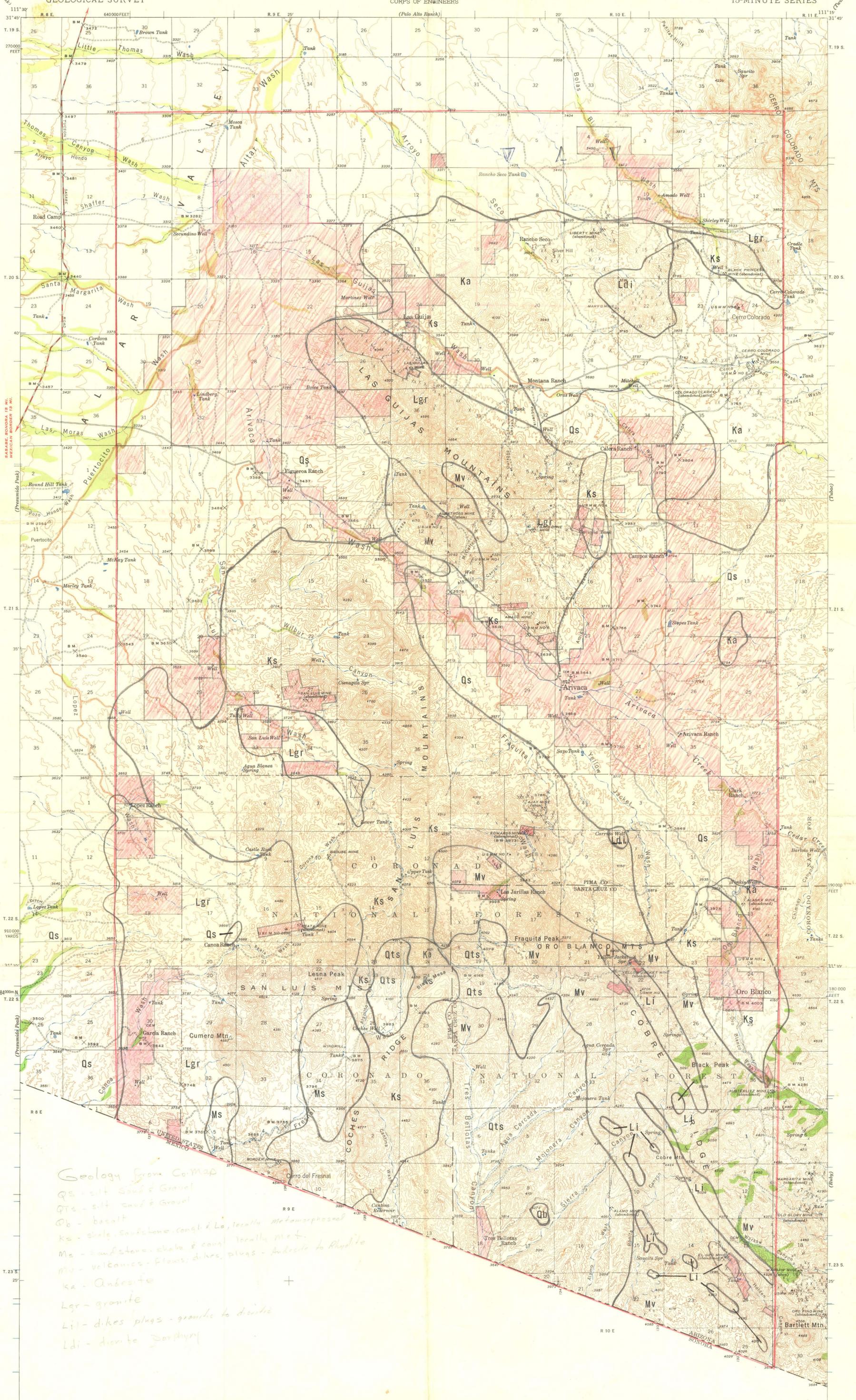
Contour interval 50 feet
Datum is mean sea level

● INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1969
Sections lines in T. 22 S., R. 11 E. are omitted because of insufficient data
Polyconic projection. 1927 North American datum
5000 yard grid based on U. S. zone system F
10000 foot grid based on Arizona (Central) rectangular coordinate system

Shields

ROAD CLASSIFICATION
Heavy-duty ——— 4 LANE 16 LANE Light-duty ———
Medium-duty - - - 4 LANE 16 LANE Unimproved dirt
□ U. S. Route ○ State Route

ARIVACA, ARIZ.
N3130-W11115/15
1941



Geology from Co. map
 Qs - silt sand & gravel
 Qts - silt sand & gravel
 Ob - basalt
 Ka - shale, sandstone, congl. & ls, locally metamorphosed
 Ms - sandstone, shale & congl. locally Met.
 Mv - volcanics - flows, dikes, plugs - Andesite to Rhyolite
 Ka - Andesite
 Lgr - granite
 Li - dikes plugs - granite to diorite
 Ldi - diorite gabbro



COLUMBIAN COLLEGE OF DESIGN
Datum: is mean sea level

1941
OTHER!

FOR SALE BY U. S. GEOLOGICAL SURVEY, FEDERAL CENTER, DENVER, COLORADO OR WASHINGTON 25, D. C.



EXPLANATION

Shaded Areas designate patented or leased land

GEOLOGY

- Qs -- Silt, Sand, and Gravel
- Qts-- Silt, Sand, and Gravel
- Qb -- Basalt
- Ks -- Shale, Sandstone, Conglomerate and Limestone, Locally metamorphosed
- Ms -- Sandstone, Shale and Conglomerate locally metamorphosed
- Mv -- Volcanic Rocks, Flows, Dikes, and Plugs of Andesite to Rhyolitic Composition
- Ka -- Andesite
- Lgr-- Granite
- Li -- Dikes and Plugs Granitic to Dioritic in comp.
- Ldi-- Diorite Porphyry

Geology as taken from Geologic Map of Pima and Santa Cruz Counties, Arizona
Arizona Bureau of Mines, University of Arizona 1960

HEINRICHS GEOEXPLORATION COMPANY POST OFFICE BOX 5671, TUCSON, ARIZONA, 85703 Phone: 602/623-0578 Cable: GEOEX, Tucson geophysical engineers vancouver sydney	
ARIVACA AND ORO BLANCO QUADRANGLE MAPS SHOWING PATENTED AND LEASED LAND AND GEOLOGY for North American Mines	
March 18, 1971	Geoex Job #615

100 000
FEET

31° 15'
111° 30'

640 000 FEET

25'

20'

INTERIOR—GEOLOGICAL SURVEY WASHINGTON, D. C.—1961
MR 6263

476000m.E.

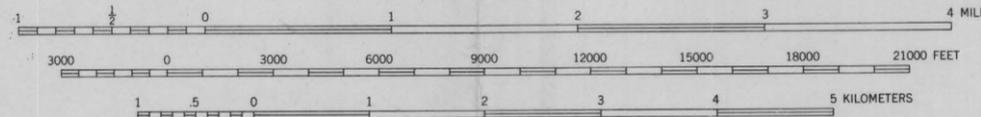
31° 15'

3458000m.N.

Topography by S. C. Kain
Surveyed in 1941-42



SCALE 1:62500



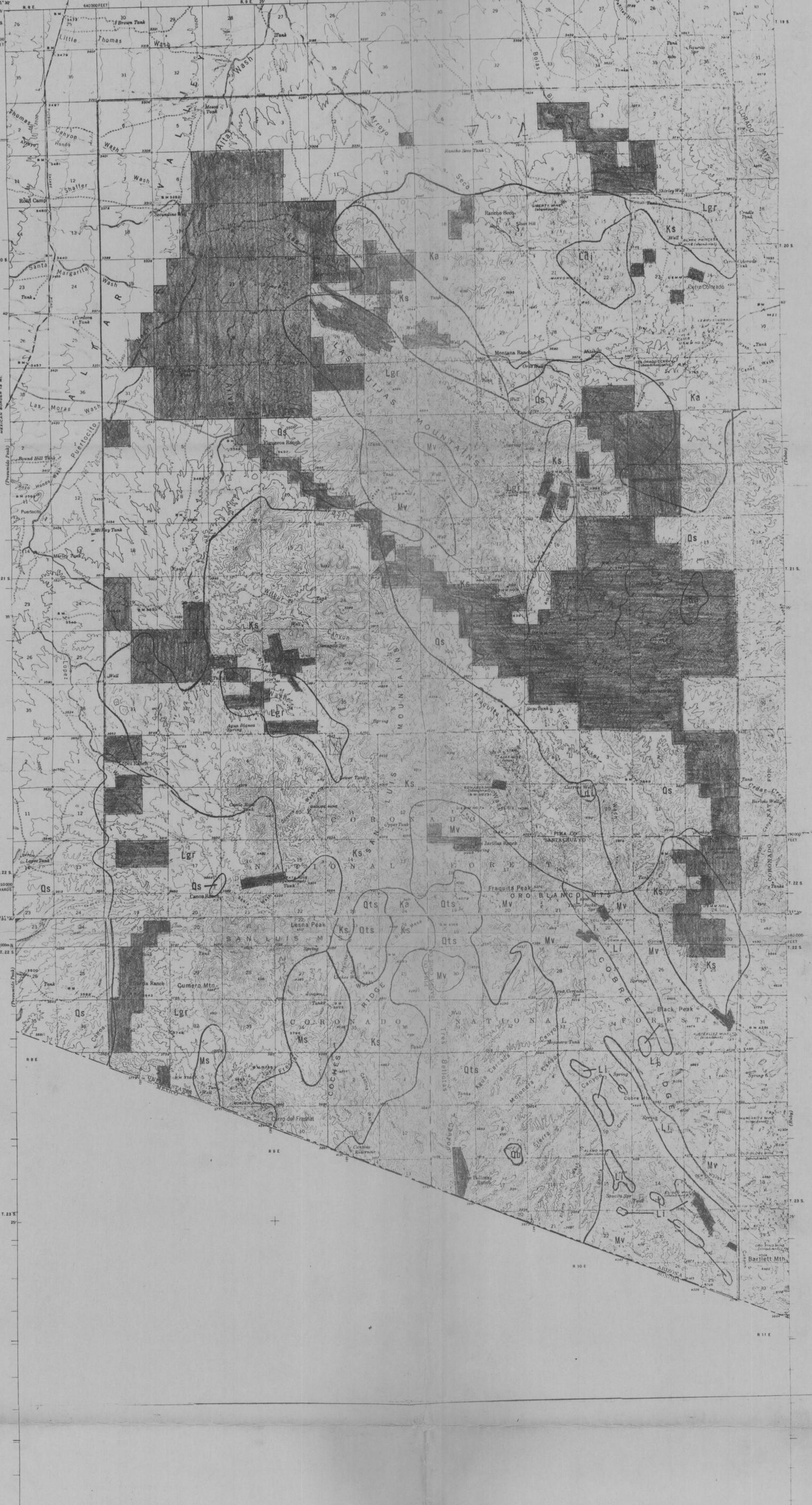
CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona (Central)
rectangular coordinate system
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue

ORO BLANCO, ARIZ.
N 3115—W 11115/15

1942

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



EXPLANATION

Shaded Areas designate patented or leased land

GEOLOGY

- Qs — Silt, Sand, and Gravel
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Geology as taken from Geologic Map of Pima and Santa Cruz Counties, Arizona
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ARIVACA AND ORO BLANCO QUADRANGLE MAPS SHOWING PATENTED AND LEASED LAND AND GEOLOGY for North American Mines	
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Surveyed in 1941-42



Polygonic projection, 1927 North American datum
10,000-foot grid based on Arizona (Central)
rectangular coordinate system
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue

ORO BLANCO, ARIZ.
N 3115-W 11115/15
1942



HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD, TUCSON, ARIZONA 85703. P.O. BOX 5964, PHONE: (602) 623-0578

January 28, 1971

Mr. Q.A. Shaw
President
North American Mines
Room 920
Boston, Mass. 02109

Dear Mr. Shaw:

Re: Proposed Minerals Exploration in the
Arivaca and Las Guijas Mining Districts
T20, 21, 22, 23 S, R9, 10 E, Pima County
and Santa Cruz County, Arizona

The San Luis and Las Guijas Mountains have long been prospected and mined for their copper, tungsten and silver deposits. The geologic setting and proximity to large disseminated porphyry copper deposits and silver mines in Arizona and Mexico makes this area a prime target for a reconnaissance exploration program.

Most of the old workings in the area are localized where Laramide rocks intrude Cretaceous and Paleozoic sediments. Production in the area was in the early nineteen hundreds with a total worth of approximately \$100,000.00. GEOEX has done some geology and geophysics in the Cobre Mountains just to the southeast of this district. In addition, various theses are on file at the University of Arizona concerning the area. The goals of a reconnaissance exploration program in this area would be to delineate areas of contact mineralization as well as to check the intrusives for indications of disseminated ore within them. One exploration team could execute an initial investigation in approximately one month. Although this is a rather large area, most of the primary exploration efforts would be localized at or near the igneous contacts. However, igneous masses would also be field checked as a matter of routine.

An initial investigation would involve five primary stages.

1. A land status map of existing claims and available land is always a necessity in mineral exploration. This data would be easily obtained from the Pima and Santa Cruz County court houses.

2. General geology maps are available on 1:375,000 scale. This data would be transferred to 1:62,500 topographic maps and field checked.

3. Field investigation would be aimed at the igneous contact first around known mineralization and later other areas of geologic interest.

4. Rock chip and channel samples may be cut in areas of interest, however, any extensive sampling program would be a result of initial investigation findings.

5. The geologic setting lends itself to some geophysical methods. As part of the initial field reconnaissance examination, some preliminary methods would be tried to check their applicability. Magnetometer data may be found useful in delineating obscured contact zones. Random magnetometer lines may be run in areas of known mineralization to establish susceptibility ranges. In addition, self-potential surveys may be tried in zones of suspected sulfide oxidation. If a self-potential anomaly is detected, induced polarization follow up may be desirable along with preliminary reconnaissance induced polarization of the more localized and most favorable areas indicated.

Conclusions:

The accumulation and compilation of all available data would take two men approximately a week plus the expense of maps and drafting. The field work would take about three weeks and would be conducted by two GEOEX geologists. The preliminary investigation would cost an estimated \$6,000.00. The finished program would be a geologic map 1:62,500 scale, detailed maps in areas of interest showing sample stations and assays, profiles showing self-potential and magnetometer results, preliminary land status map and report on findings as well as recommendations for further work.

Cont'd.....

Cont'd.....

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We believe there is an excellent chance for at least several good disseminated sulfide-type drill targets to be identified with this approach in this region.

Index taken from Arizona Bureau of Mines geological map of area bounded in red is attached.

Respectfully submitted,
HEINRICHS GEOEXPLORATION COMPANY

By: Dennis Fischer
Geologist

Approved: Donald B. Cooley
Senior Geologist

Enclosure: 1 extra copy
1 plus 1 copy enclosed
2 copies - GEOEX Job #437 file

1/28/71
Box 5964
Tucson, Arizona 85703
GEOEX Job # 437

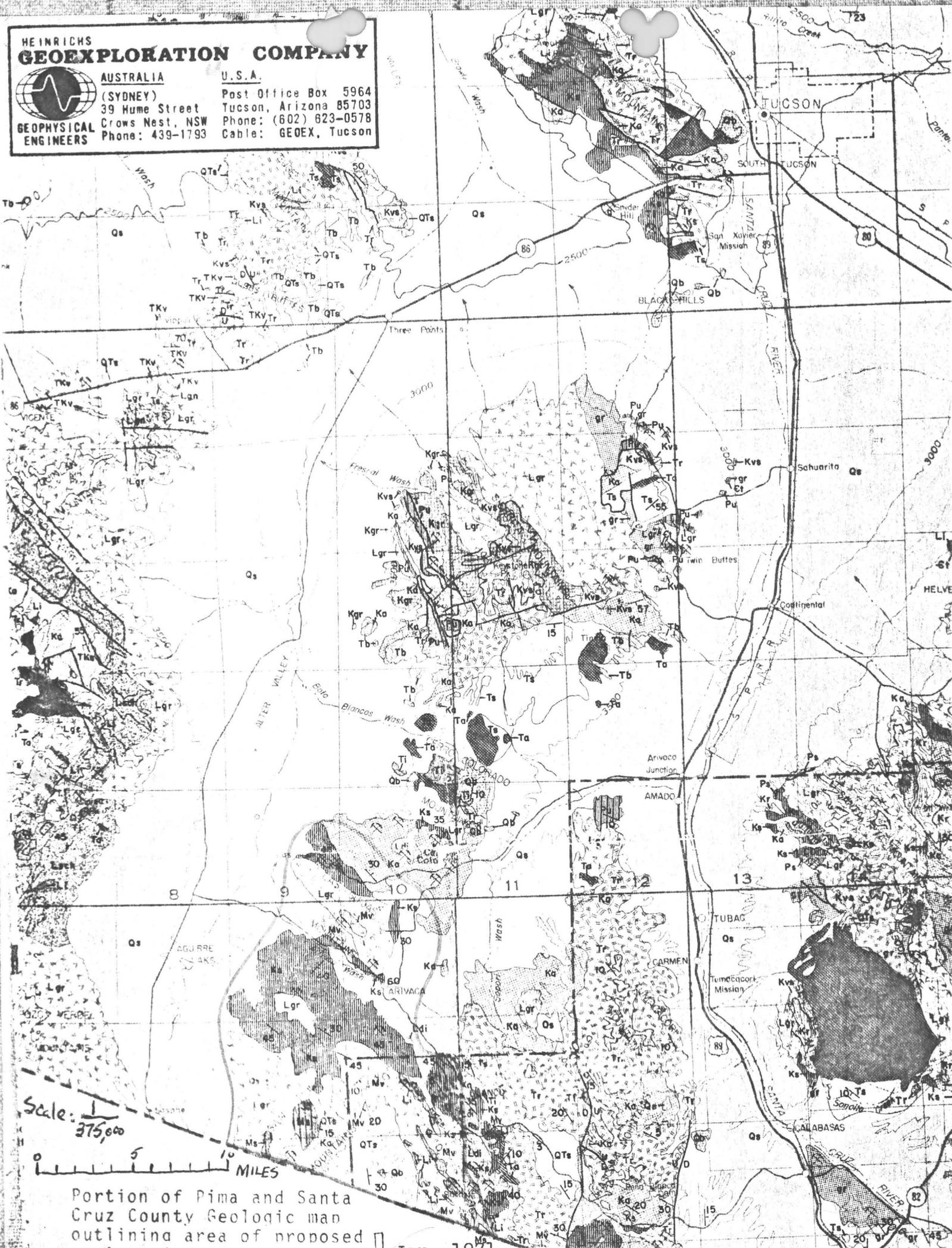
DF/DBC/re:

**HEINRICHS
GEOEXPLORATION COMPANY**



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Phone: (602) 623-0578
Cable: GEOEX, Tucson



Scale: $\frac{1}{375,000}$
0 5 10 MILES

Portion of Pima and Santa Cruz County Geologic map outlining area of proposed exploration program
Jan. 1971



HEINRICHS GEOEXPLORATION COMPANY

806 WEST GRANT ROAD, TUCSON, ARIZONA 85703. P.O. BOX 5964. PHONE: (602) 623-0578

March 29, 1971

Mr. Q. A. Shaw, President
North American Mines
Room 920
50 Congress Street
Boston, Mass. 02109

Re: GEOEX Job # 615
Geologic Reconnaissance
South and West of Arivaca, Az.

Dear Mr. Shaw:

I spent last Friday, 26 March 1971, in the field south and west of Arivaca looking at the old mines and as many contacts as possible.

In the Ajax and Edwards mine areas a little copper oxide mineralization can be seen in volcanics but only very little. These workings are old silver workings - not very deep or extensive. One mine near the Edwards is being worked by a Mr. Glen Shields and a helper but probably not profitably.

The San Luis Mine is another old silver working and from looking at the dumps, must have reasonably extensive underground workings. This mine is in the Volcanics not far from the intrusive contact but at this time I am unable to guess at the relationship of the mineralization to the intrusive. In fact at this stage I am not even sure that we are looking at an intrusive; we may have a window here and be looking at much older rock than the Laramide intrusive as shown on the county geologic map. I did not see any alteration in the intrusive but it is very weathered which may have masked any alteration and I really didn't see much of it.

We saw no sulfide mineralization anywhere but we did see a fair amount of oxide copper mineralization on a couple of the Silencio Claims. These claims are undoubtedly valid and some one is driving a tunnel along the strike of the mineralized outcrops. We don't know who it is but they have been doing this quite recently.

At this part of the program, we cannot point to any drill targets or even any definite area that warrants geophysical work as yet. The ground

Mr. Q. A. Shaw

-2-

March 29, 1971

cannot be written off completely however. A minimum of two weeks remapping and sampling is recommended before a decision is made about the area. This would include a few geochemical traverses to evaluate the background mineralization and to see if we can find any anomalous silver bearing areas as well as copper.

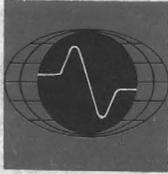
We are looking forward to your visit to discuss this with you.

Very truly yours,
Heinrichs GEOEXploration Company

Don
Donald B. Cooley
Senior Geologist

DBC:jh

cc: extra encl.



HEINRICHS GEOEXPLORATION COMPANY

5964

806 WEST GRANT ROAD, TUCSON, ARIZONA, 85703. P.O. BOX 5674. PHONE: (AREA CODE 602) 623-0578

March 19, 1971

Mr. Q.A. Shaw - President
North American Mines, Inc.
50 Congress Street
Room 920
Boston, Mass. 02109

Re: Stage one of Arivaca
exploration program
GEOEX Job # 615
Pima & Santa Cruz
Counties, Arizona

Dear Mr. Shaw:

On March 16 and 17 two Geoex geologists, Dennis Fischer and Steve Cruze, began investigation of the Las Guijas Mountains and Cobre Ridge area. Prior to the field work, U.S.G.S. topographic sheets were used as base maps to compile geology and land status information. The geology was extrapolated from the Pima and Santa Cruz Counties geology map while the land status was obtained from public domain maps on file in the Phoenix land management office.

As proposed in our letter to you dated February 25, 1971, stage one would be directed at investigating the sulfide potential of ore occurrences in the Las Guijas and Arivaca mining districts. Thus far we have spent two days in the field and wish to report our findings at this time.

The Las Guijas Mountains and the Cobre Ridge area have been the major economic ore producing sectors within the proposed exploration region. Therefore, our initial efforts were directed at evaluating numerous workings within these two areas.

The Las Guijas Mountains are a granitic intrusive mass into Cretaceous sediments. The range is marked by numerous mines and prospects which, with few exceptions, are located along nearly-vertical shear zones. The fractures

Cont'd.....

March 19, 1971

are often associated with white massive quartz, some specularite and red hematite and copper oxides. In particular, the Las Guijas Mine shows much pyrite and chalcopryrite. (See reference Circle No. 1 on attached map.) The ore occurs along a steeply dipping shear zone striking about N 80° W. Along strike, numerous small workings have pursued the mineralization. In conjunction with the Las Guijas Mine, there are other workings southeast in Section 6 T. 21 S., R. 10 E. which show similar shear zones and display pyrite and chalcopryrite in them. The connection, if any, should be investigated and may warrant a geophysical survey in the future. With the exception of the above mentioned workings, the range does not appear to warrant any further extensive exploration at this time.

In 1965 GEOEX was contracted to perform some induced polarization surveys in Sec. 31, T. 20 S., R. 10 E. The results of the lines showed an anomaly and drilling was recommended. The results of the drilling showed the I. P. anomaly to be a result of pyritic black shales. The pyrite is believed to be of syngenetic origin, a very common phenomenon. It should be stated that the pyrite occurrence in the granite at the Las Guijas Mine is in vein form along shear zones and almost certainly not syngenetic.

The Cobre Range area lies in a different geologic setting than do the Las Guijas Mountains. Cobre Ridge consists of volcanic dikes and ridges of rhyolite. The shear zones are again associated with much iron staining, but show little evidence of primary sulfide existance. The only exception noted to this northwesterly trend and lack of sulfides is at the Warsaw Mine, Sections 18, 19, T. 23 S., R. 11 E. (See reference circle No. 2 on attached map.) This mine is located along a shear zone approximately five to six feet wide striking N. 10° E and dipping 75° NW. The shear zone contains numerous veinlets of pyrite and chalcopryrite. Meteoric waters have acted to coat the walls with much copper sulfate and carbonate.

The remaining area will require two more days of investigation and will again be aimed at the existing workings and contact zones. Upon completion of that work we will be able to evaluate the need and feasibility of additional work in the area.

Respectfully submitted,
Heinrichs GEOEXploration Co.

Dennis Fischer
Dennis Fischer, Geologist

DF;jh
Encl: Composite
geology & Land
status map.

Steve Cruze
Steve Cruze, Geologist