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James Doyle Sell Mining Collection

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Aa-3.0.0

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

July 15, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Preliminary Report
Stronghold Canyon East Area
Cochise County, Arizona

Summary and Conclusions

A band of intensely tactized Abrigo Limestone units, some 200 feet wide and a mile and one-half in length, are exposed and were sampled by three representative samples. The mapped extent of the Abrigo is over twice the length (or a total of 3-1/2 miles), but the remainder has not been checked. Assay data show low values in the highly oxidized exposed units, but the manganese, molybdenum, and lead-zinc values indicate the addition of metalliferous values and hence the potential of viable concentrations within the tactite unit.

Only a few old claim monuments were noted and I was informed that a Mr. Pruitt was the owner of the ranch land, which also had the mineral rights.

I recommend that a land status survey be made of the area and, if found available, that several holes 500-1000 feet (inclined) be drilled into the unit to determine the sulfide content.

James D. Sell

JDS:lb
Att.

Preliminary Report
Stronghold Canyon East Area
Cochise County, Arizona

Thirteen samples were collected in and adjacent to the mouth of the canyon to Cochise Stronghold, with the sampling in the eastern central part of T17S, R23E, and the SW1/4 of T17S, R24E, Cochise County. Here, a 3-1/2 mile band of Pinal Schist, Cambrian Bolsa and Abrigo, Devonian Martin, and Mississippian Escabrosa units strike NW and dip steeply to the NE.

Near the mouth of the Canyon, a mass of Cochise Peak quartz monzonite of supposed Jurassic-Triassic age intrudes up into the Bolsa Quartzite and in turn has been intruded by a later Stronghold Granite (K-Ar age of 22 m.y.) which fronts the entire band of Pinal Schist through Escabrosa Limestone units.

The Stronghold Granite is a fresh, subvolcanic intrusive with minor iron in some of the ferromag sites and along an occasional fracture. The Cochise Peak quartz monzonite is essentially fresh, though undoubtedly slightly thermal metamorphosed by the Stronghold Granite. Most of the ferromag sites have been converted to iron oxide and epidote is found on the fractures.

The Pinal Schist is a quartzose spotted schist with abundant red iron on the schistosity planes. The Bolsa has abundant iron along fracture and bedding planes, but little iron scattered intragranular.

The Abrigo Limestone is variably altered where noted and sampled. A total tactite basal unit of several hundred feet in width and over a mile in length was sampled by numbers SH-5, 6, & 7. The upper units are metamorphosed with weak tactite and abundant silica and represented by sample SH-8. The Abrigo outcrops shown in the SW1/4 of Section 20 were not found except for soil rubble exposure. The Martin in the same area is on a small rounded hill and has been extensively bleached, recrystallized, and abundant silica-chert added.

On the northwest end of the sampled area, the Martin and Escabrosa units are exposed in low hills and again exhibit recrystallization and some silica addition with weak tactite development in what are apparently porous sandy units. Sample SH-10 is from a manganese-flooded shear zone in the Martin. Sample SH-6 also contained manganese, as do SH-4 and 7 in lesser amounts.

Table 1 lists the samples secured from the various rock units and a short remark. Assay results are recorded in AARL sheets of Tables 2A & 2B. The geology (after Gilluly) and sample sites are plotted on Attachment A.

A Mr. Pruitt is the owner of the "Half Moon" Ranch with headquarters at the mouth of Stronghold Canyon East (NE1/4, Sec. 24, T17S, R23E). The ranch is also reported to have the mineral rights (Verbal. Mr. Shaw, retired U of A, hydrology, Dept. of Agriculture, who lives in double-wide trailer above

rock house, family home, about half mile up canyon from Pruitt ranch house). Old claim monuments were noted in a few places.

A recent claim notice monument was found east of the sample site SH-4 and built on and of Bolsa Quartzite. The notice contained the following information:

Claim Name:	San Patricio #10
Locators:	Mangel R. Hernandez, Ralph M. Cortmell, and H. H. Cortmell
Date:	April 12, 1975
Orientation:	50 ft. easterly & 1450 ft. westerly, 600 ft. wide
District:	Dragoon Mining District

Only one other claim monument was seen to the south, but was not checked. An east end center monument was not found, nor the corner monument to the north.

James D. Sell

James D. Sell

JDS:lb

TABLE 1. Stronghold (SH-series) Samples
W Central Parts of T17S, R24E

Sample No.	Rock Type	Remarks
SH-1	Jr. granite	Essentially fresh, small amount of Fe-mag site breakdown, some epidote on fractures.
-2	Jr. granite	As above, with slightly more Fe stain and epidote on fractures.
-3	Stronghold granite	Very fine, equigranular, minor biotite, sub-volcanic appearance, fresh.
-4	Pinal Schist	Strikes N75°E, 40°N, thin laminated, quartzose, fine red coloration on schistosity planes.
-5	Abrigo tactite	Strike N20°W, 65°NE. Complete tactite development with green garnet and vesuvianite(?), few powdery Fe-Mn filled cavities.
-6	Abrigo tactite	Strike N60°W, 85°N. 20' pit, tactite, green garnet, replacement with thin silica ribs. Manganese replacement and veinlets of quartz-calcite.
-7	Abrigo tactite	Complete tactite development with silica and green garnet. Few Fe films on quartzitic partings.
-8	Abrigo	Weak tactite, 25 ft. cut in thin-bedded, silica ribbed unit.
-9	Bolsa	20' cut in weakly sanded quartzite, fine Fe specks along fractures.
-10	Martin	Dump grab of sanded limestone with silica-manganese, vertical.
-11	Escabrosa	Strike N60°W, steep dip, pinkish, bluish-gray, gray, streaked and bleached zone, 4-5 ft. cut.
-12	Escabrosa	Streaked with orange-reddish riblets of sub-parallel, interconnected, 3-4 ft. zone, weak sanding, dark grey.
-13	Bisbee	Stream grab sample of float from blue-green-black, siliceous unit, noted on road to Abril mine, some 3-4 miles transport distance.

3441 East Milber

TABLE 2A. Assay Results
Stronghold Canyon East Area
Cochise County, Arizona

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE July 7, 1975

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PPM COPPER	PPM LEAD	PPM ZINC	PPM MOLYBDENUM	PPM Mn	Rock unit
SH - 1	.003	0.11	56	27	42	<1	417	Jgr
SH - 2	.004	0.24	15	24	10	<1	145	Jgr
SH - 3	.003	0.30	10	11	22	2	660	Tsg
SH - 4	.003	0.23	11	14	43	<1	510	pЄpi
SH - 5	.002	0.12	18	78	87	2	0.63% 2000+	Єa
SH - 6	.003	0.09	15	0.57% 2000+	0.48% 2000+	4	2.17% 2000+	Єa
SH - 7	.001	0.11	13	87	88	2	0.65% 2000+	Єa
SH - 8	.003	0.12	17	46	36	1	916	Єa
SH - 9	.004	0.18	14	13	<5	5	57	Єb
SH - 10	.002	0.26	810	1.20% 2000+	3.85% 2000+	3	2.04% 2000+	Dm
SH - 11	.001	0.14	15	172	350	<1	356	Me
SH - 12	.002	0.16	7	75	32	1	229	Me
SH - 13	.002	0.11	54	73	152	2	0.20% 2000+	Kb

REGISTERED ASSAYER
CERTIFICATE NO.
PETE S. FLORES
Date Signed 7/7/75
Arizona U. S. A.

Invoice # 12726

CHARGES $ 100.50

3441 East Milber

TABLE 2B. Assay Results
Stronghold Canyon East Area
Cochise County, Arizona

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company

DATE July 7, 1975

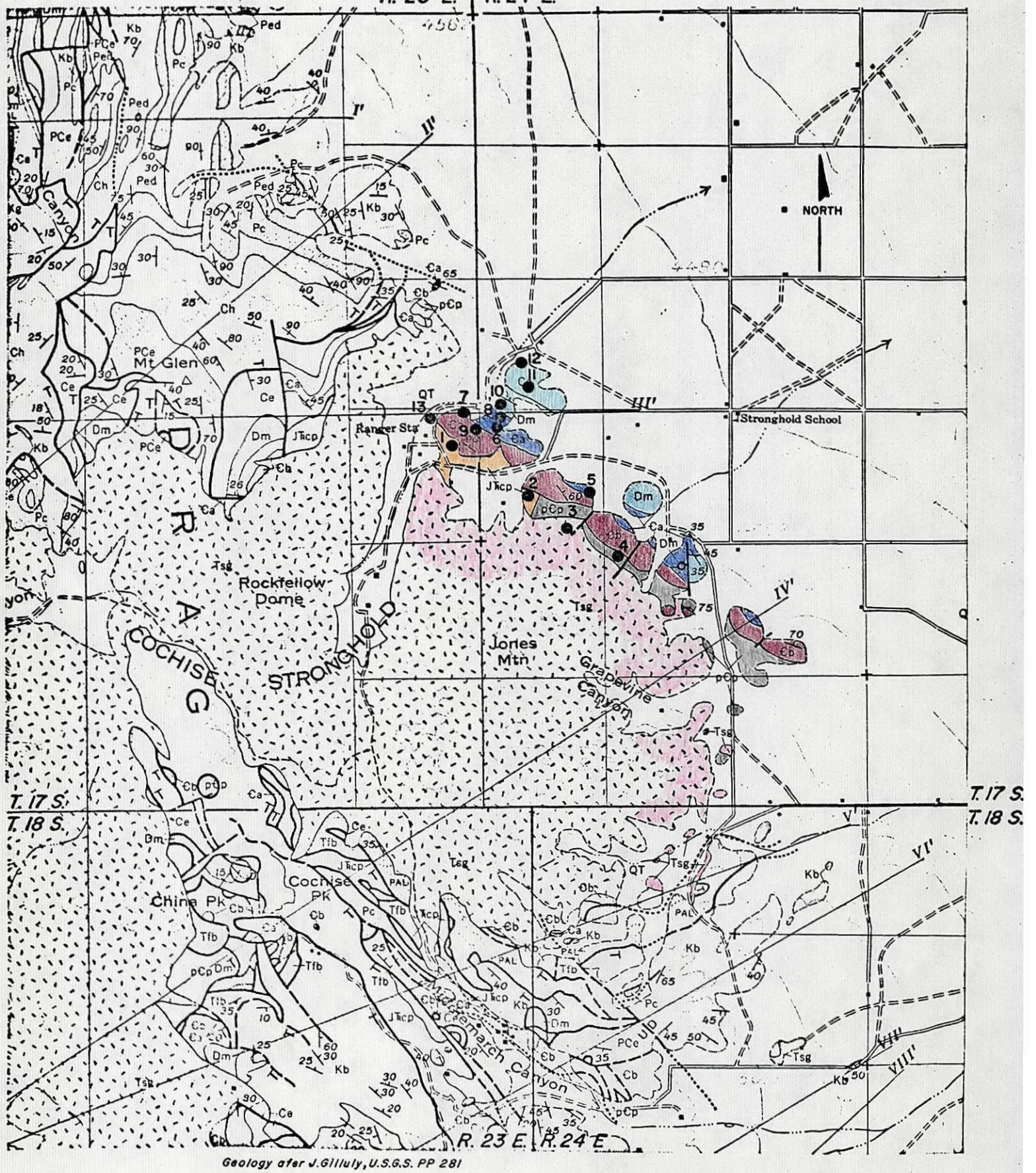
SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT Mn	
SH - 5							0.63	
SH - 6				0.57	0.48		2.17	
SH - 7							0.65	
SH - 10				1.20	3.85		2.04	
SH - 13							0.20	

REGISTERED ASSAYER
CERTIFICATE No.
PETER S. FLORES
Date Signed 7/7/75
Arizona U. S. A.

Invoice # 12726

CHARGES $ 35.25

Attachment A



Geology after J. Gilluly, U.S.G.S. PP 281

GEOLOGY & SAMPLE SITES

(SH-Series)

STRONGHOLD CANYON EAST AREA

Cochise County, Arizona

SCALE 1:62,500

JD Sell

July 14, 1975

Xerox Orig.
MVK-2863

Stronghold Sample

SH-1 Fk granite. basically fresh. small Fe-mag slight bleaching, some epi on fracture

-2. Above, perhaps more Fe-stain in Fe-Mag site, also epi on fract
Note site is in gulch to south very fresh.

-3. T. Stronghold granite. very fine equigranular, many biotite flecks

-4 Dual schist N 75°E, 40°N thin gray spotted schist, fine red colbrata
cover schistosity plane.

X5 Claim Notice, well built Cb 3½ monument.
San Patricio #D Manuel R Hernandez, Ralph M. Cartwell, HH Cartwell
12th day of April 1975 50' easterly, 1450' westerly, 600' wide.
Dragoon Mining Ltd
Cem see corner monument 300' south. No monument further south noted members.

5. Tactite Abiso N20W 15° SE Quartz-rich granite + monzonite ◇ few pelvet Fe-sm type cavities

6. Dike S60°E 85°N. Thin bedded, silica rich. 20' put w/ veinlets (pyr) reg lus + tactite, green garnet, manganese, veinlets of gtz + calcite tactite 100 + ft wide?

7. Edge Tactite, mostly silica + green garnet, few gtz mm cavities.
Prob tactite all way from Dm 6 to Cb contact. Few Fe filling on gtz-tactite

8. beds appear flat lying (16) bleached, some silica about half way up hill breccia type outcrops. Carbonate light gray some clasty No tuff. Tactite, pressure? in sandy layers

t Unit becomes very thin bedded, 1/2 of units is ½" chert-silica rich, abundant garnet-epidote type tactite Dm? N60°W, vertical.

8. 35' cut of thin bedded, siliceous ribbed unit, weak tactite.

9. 20' cut of gtz-tactite Cb. Sometimes sandstone but no oxide except some fine Fe on seams & along fracture plane (very weak). Some apparent silica introduction. few veinlets

10. dump gel of sulfide lus w/ silica mm. pot along shear fracture. prob. Dm? some silica chert. veinlets

11. Bleached zone in Mc, pinkish, blue-gray, gray, streaked. N60W prob strike
Flat (10 SW) 4-5' bed.

12. Similar Mc w/ quartz-reddish white subparallel but intercommunication. bleached + weakly veined the dark gray lus. 3-4' zone. Stage zone. pot stockwork

Mr. Shaw old time resident, double wide, above family rock house. Retire VOA water.
Mr. Pruitt owner of ranch land. first house left ("half moon" ranch) in Cooper

13. Shaw sample of blue black dense silicon material. Shaw say run 0.03 g Au.
Part of Cretaceous Belt from Abilene etc area.

$150
.003
$.450

ASARCO EXPLORATION RECORD

[X] FIELD EXAMINATION [ ] LITERATURE SEARCH [ ] ASARCO FILE [ ] _____

Section I General Indexing

① Name(s) of Property or Area: STRONGHOLD CANYON EAST					② Country: U.S.A.	③ State or Province: Arizona	
					④ Co. or Map Sheet: Cochise	⑤ File or Gore No.: Aa-3.0.0	
⑥ Latitude: 31°56'30"N	⑦ Longitude: 109°56'30"W	⑧ Mer.: G&SRB	Tws.: 17S	Rng.: 24E	Sec.: 19 20	⑨ Examined by: J.D. Sell	⑩ Date: 6/23-24/75
						⑪ Office: Tucson	⑫ Field Days: Two

Section II Sources of Information

⑬ References Author	Date	Title	Publications	Vol. No.

Section III Appraisal

⑭ Recommendations
- [X] Action Now
- [ ] Too Low Grade
- [ ] Too Small
- [ ] Ownership Problem
- [ ] Access Problem
- [ ]

⑮
- [ ] Past Producer
- [ ] Producer
- [ ] Mineral Deposit
- [X] Prospect
- [ ]

- [ ]
- [X] Geologic Concept Tactite develop.
- [ ] Geochem Anomaly
- [ ] Geophy. Anomaly
- [ ]

⑯ Production

Commodity	Tons	Grade
Probably none		

⑰ Reserves [ ] Measured [ ] Estimated

Commodity	Tons	Grade

⑱ Num. Drill Holes: None
Approx. Total Footage: _____

⑲ Excavations: 1 - 20' shaft, several pits

⑳ Spectro. Analysis Attached

㉑ Assays Attached

㉒ Geochem Results Attached X

Section IV Geologic Data

㉓ Commodity or Contained Metals: Pb-Zn-Cu

㉔ Ore Minerals - Major: Oxidized galena, sphalerite, chalcopyrite(?) Minor: Manganese

㉕ Host Rocks - Major: Abrigo Limestone Minor: _____

㉖ Age of Host Rocks: Cambrian

㉗ Nature of Exposures: Low rolling hills, near vertical bedding.

㉘ Alteration: Tactite

㉙ Total Extent: +200 ft. by ±3 miles

㉚ Structure: Best tactite exposed restricted to lower Abrigo Limestone, with weaker tactite in remainder of Abrigo, spotty sanding & bleaching in rest of Paleozoics.

㉛ Ore Occurrence: Tactite replacement of favorable limestone horizon.

㉜ Age of Mineralization: Laramide(?)

㉝ Conclusions and Recommendations: Samples SH-5, 6, & 7 in main tactite zone. Sample SH-6 from 20' shaft. Pervasive tactite development over substantial width (stratigraphic thickness) and long length and manganese-moly values suggest mineralizing additions of possible economic significance in sulfide portion of tactite.

(For additional space use extra sheets)

441 East Milber

TABLE 2A. Assay Results
Stronghold Canyon East Area
Cochise County, Arizona

Phone 889-5787

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85714

SAMPLE SUBMITTED BY American Smelting & Refining Company DATE July 7, 1975

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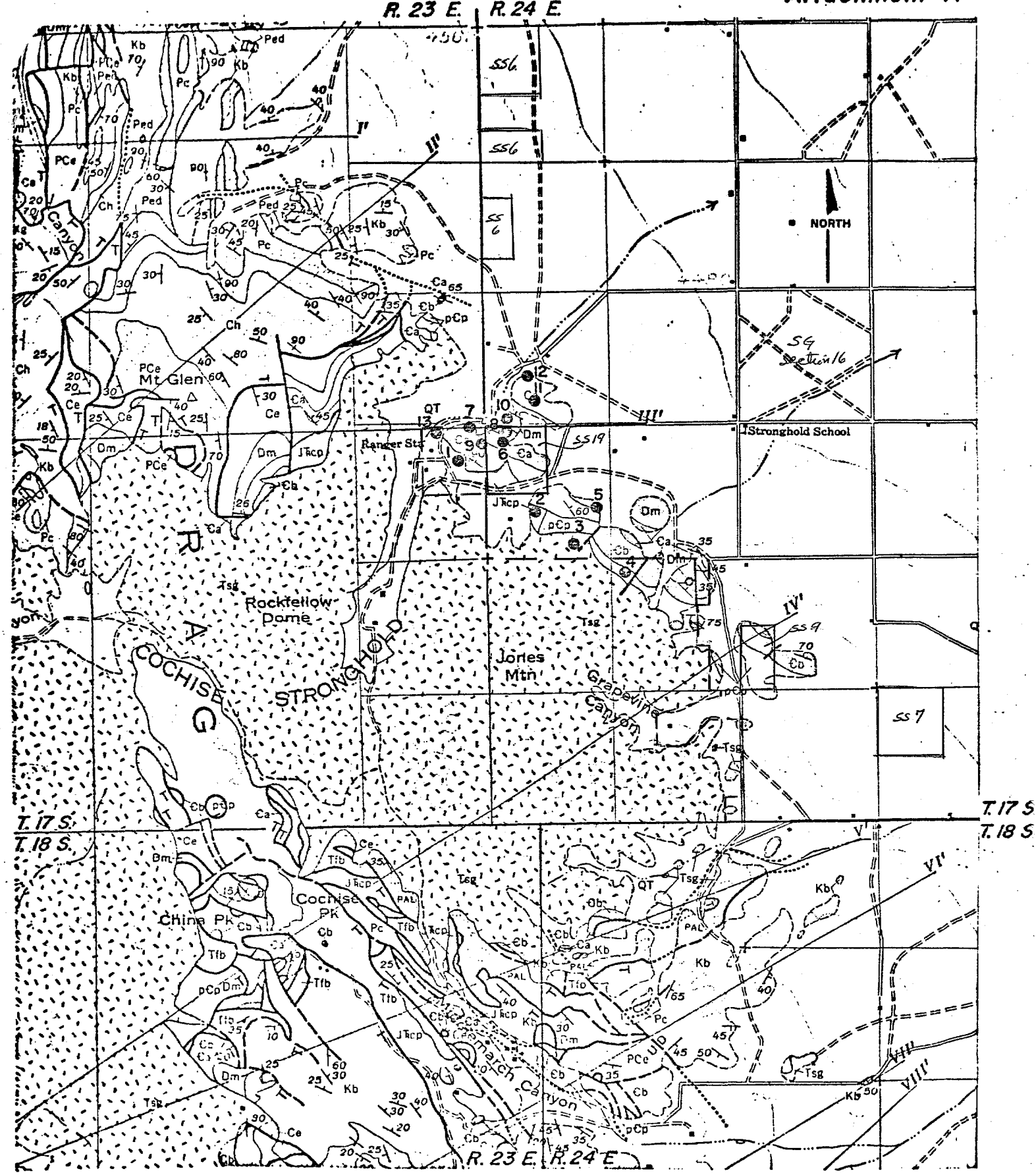
SH - 2	.004	0.24	15	24	10	<1	145	Jgr
SH - 3	.003	0.30	10	11	22	2	660	Tsg
SH - 4	.003	0.23	11	14	43	<1	510	pЄpi
SH - 5	.002	0.12	18	78	87	2	0.63% 2000+	Єa
SH - 6	.003	0.09	15	0.57% 2000+	0.48% 2000+	4	2.17% 2000+	Єa
SH - 7	.001	0.11	13	87	88	2	0.65% 2000+	Єa
SH - 8	.003	0.12	17	46	36	1	916	Єa
SH - 9	.004	0.18	14	13	<5	5	57	Єb
SH - 10	.002	0.26	810	1.20% 2000+	3.85% 2000+	3	2.04% 2000+	Dm
SH - 11	.001	0.14	15	172	350	<1	356	Me
SH - 12	.002	0.16	7	75	32	1	229	Me
SH - 13	.002	0.11	54	73	152	2	0.20% 2000+	Kb

REGISTERED ASSAYER
CERTIFICATE NO.
STATE OF FLORIDA
7/7/75



Geology after J. Gilluly, U.S.G.S. PP 281

— — Forest Service Boundary

State Grant

State Selection

GEOLOGY & SAMPLE SITES

(SH-Series)

STRONGHOLD CANYON EAST AREA

Cochise County, Arizona

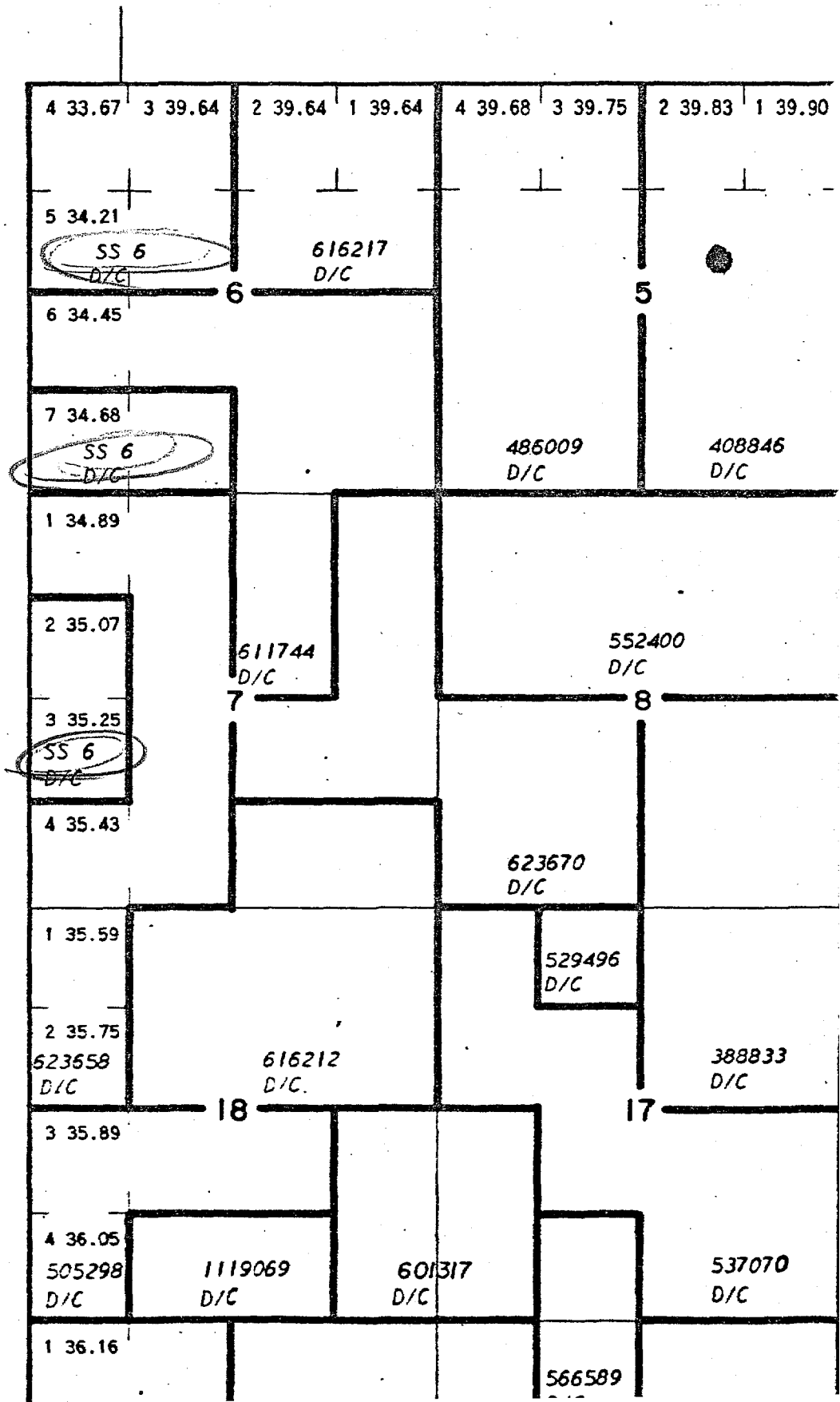
SCALE 1:62,500

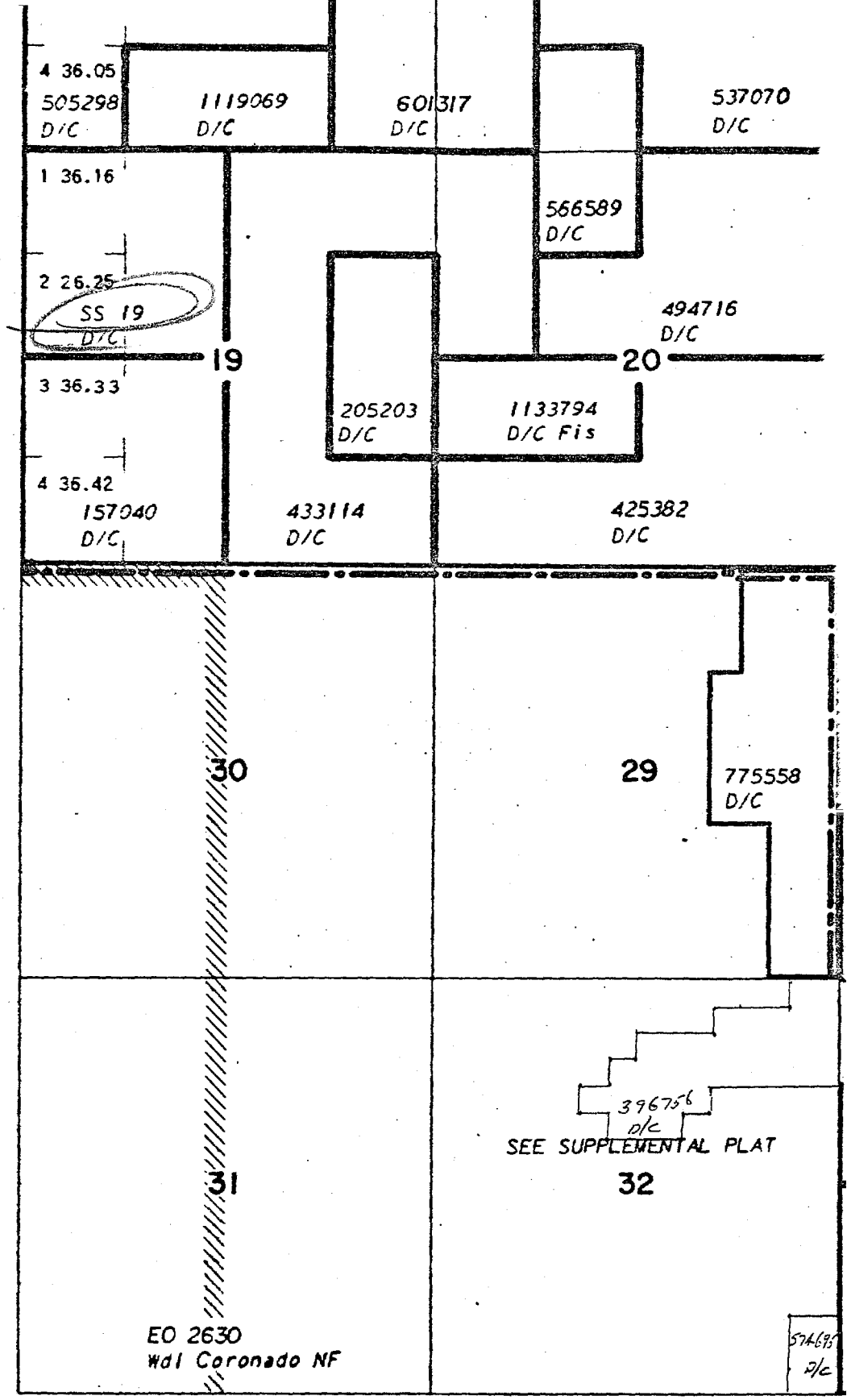
JD Sell

July 14, 1975

Xerox Orig. NVK-2863

PARTIALLY SURVEYED TOWNSH

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4 36.42
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433114
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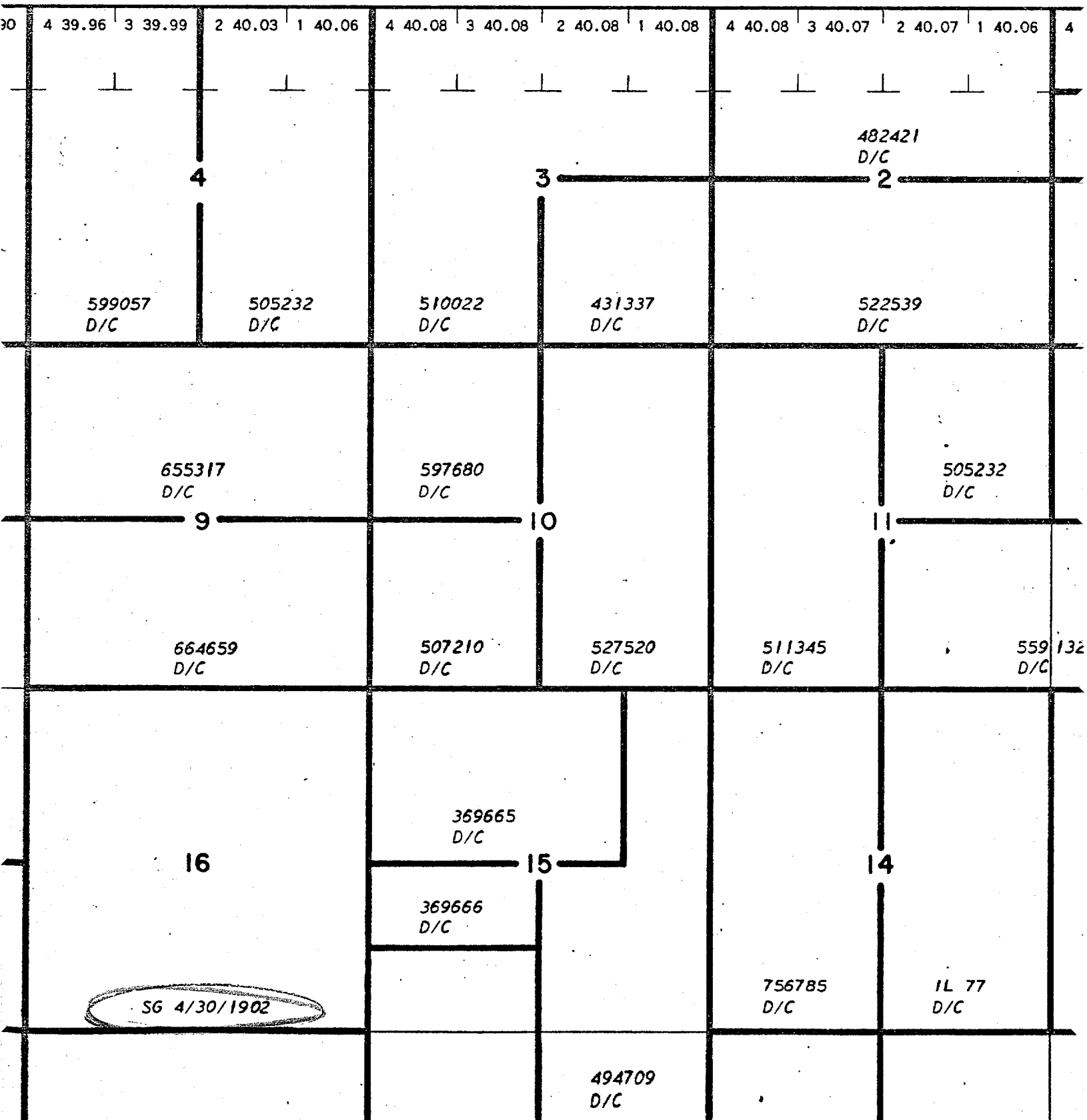
425382
D/C
30
29
775558
D/C
396756
D/C
SEE SUPPLEMENTAL PLAT
31
32
EO 2630
Wdl Coronado NF
574695
D/C

HIP 17 SOUTH RANGE 24 EAST OF THE GILA AN

COCHISE COUNTY



369666
D/C

SG 4/30/1902

756785
D/C

IL 77
D/C

494709
D/C

400026
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546661
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597 35
D/C

21

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505295
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486 012
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28

27

26

SS 9
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D/C

597826
D/C

511345
D/C

396756
D/C

SS 7
D/C

33

34

35

597348
D/C

567424
D/C

689207
D/C

537068
D/C

567423
D/C

555453
D/C

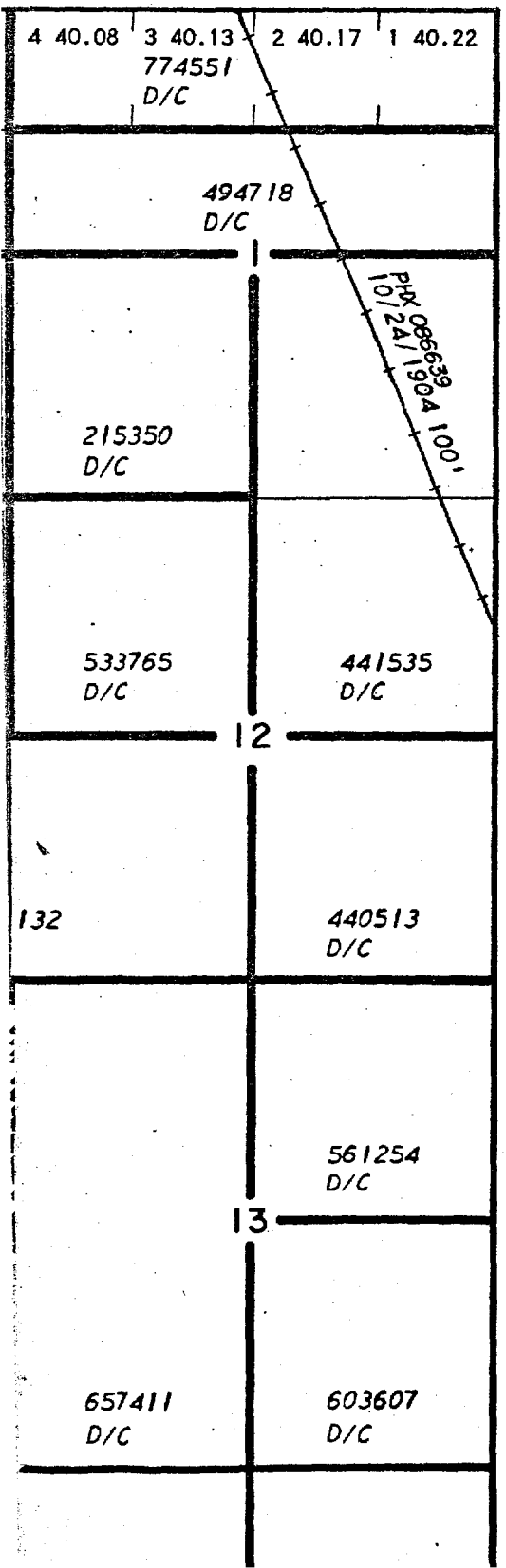
SCALE

10 5 0 10 20 30 60

30 chains to the inch

ND SALT RIVER MERIDIAN, ARIZONA

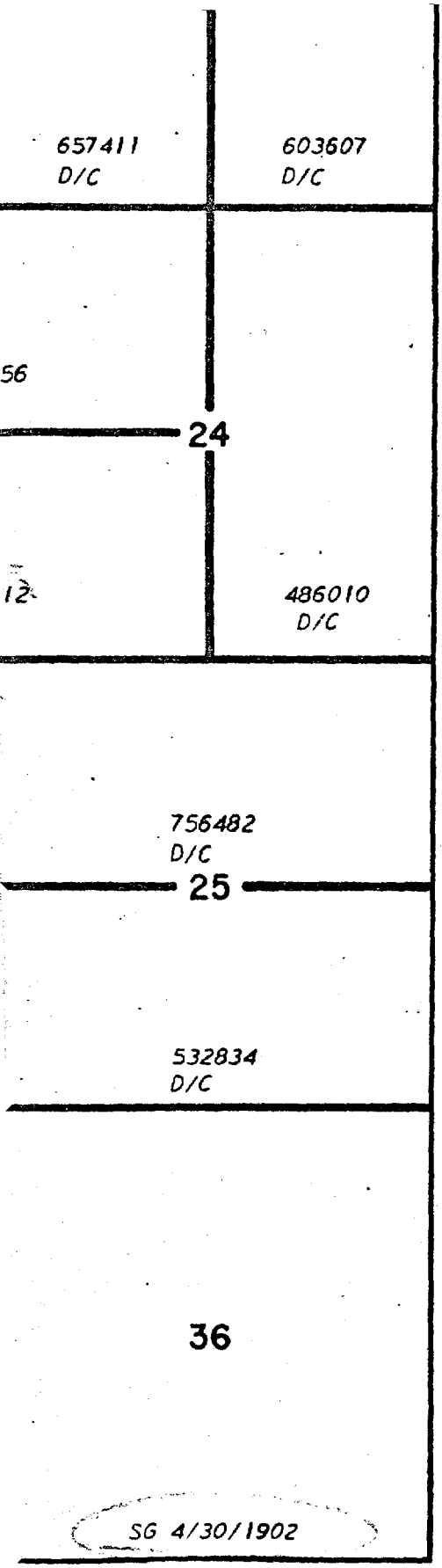
STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES



INDEX TO SEGREGATED TRACTS				
RESURVEY	ORIGINAL SURVEY			
TRACT NO	T	R	SEC	SUBDIVISION

FOR ORDERS EFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

DIST NO. 4



Lat. 31°54'13" N
Long. 109°56'57" W

CURRENT TO	BY

T. 17 S
R. 24 E

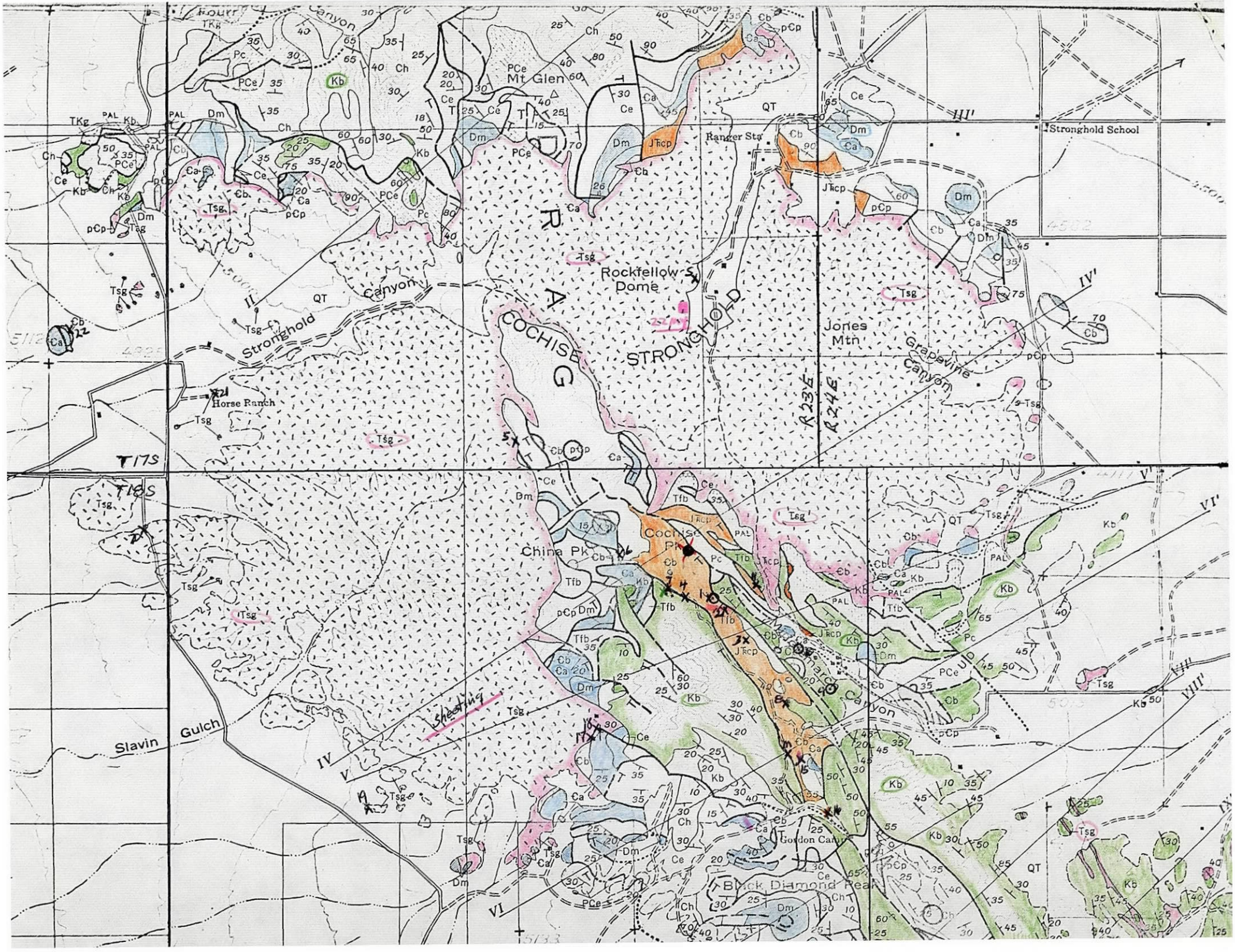
29

396756
D/C

32

EO 2630
Wdl Coronado NF

574695
D/C


Mt Glen
Ranger Sta
Stronghold School
Rockfellow Dome
COCHISE STRONGHOLD
Stronghold Canyon
Jones Mtn
Grapevine Canyon
Horse Ranch
T17S
T18S
R23E
R24E
China Pk
Cochise Pk
Shooting
Slavin Gulch
Gordon Canyon
Black Diamond Peak
I
II
III
III'
IV
IV'
V
V'
VI
VI'
VIII
VIII'

KM Middlemarch

✓ Sit 1. Varied granite. Very open habit. Semi-c[illegible] [illegible]
Mr Forstein & Mr Botha. Weak argillic alt. in clay.
4" casing well ≈ 20' Silt black, no chips found. Prob. shallow hole.
12 pg. latite dike w/ py. N50°W cutting granite. ≈ 20' wide.

✓ 3. Sit in granite. Prepared, not drilled. Mor. habit, coarse, Mica Fe. Mn.
Weakly alt.

35.2 4. At Jct rd to drill sites. gr. wk alt & stain.

Lower 37.9 ✓ A5 Abril Mine habit within SS & mafic tactite N20°W 70°E.
38.8 pass
39.3 bank
39.7 6. Tunnel, $20 W, road above prob. ends at pair of tunnel. No apparent vn. gtzite N 70S. 70°N. slickens shearing?

40.3. 7. Windmill, Sonin Camp. Several digging alt in granite — gtz-lim contact. East West
✓ 7A. Granite (Bubrade lode) wk alt-stain 7B. Fault shaft near shaft, slight tactite film.
7C. Gtzite tactite.

40.4 [illegible]
41.8 Sonin-Pearl jct.
42.6 Jct Pearl 1000 wide.
43.2 Adit proposed C → ✓ 8A East portal granite. 8B Hesta gado tactite bx. c/sorgi? 8C Fault surge (Dump)
Proposed road to C not extended.

43.9 Jct to Middlemarch Canyon.
44.3 rd & left w/new work. Drill site "B" abundant cement core. Fe contact. This end of mole has better color anomaly.
44.55 end new rd. Drill hole ≈ 400' to water. near Coms 1092 o ch 5/13. Wk alt tact. sed (?) 9.
44.7 Return to rd. take left.
44.9 Jct with rd on map around hill.
45.6 past mill. old rotary hole. Not much cuttings.
46.7 ✓ take left back south. Tactite not cutting grin cut
40.9 cut with rotary hole, pieces back on ant. "in Corg cut below between R&C" looks like chalcopyr. cement core. Bubrea (Sanco Colmakoma)
{ At Sit A 10. Core chips, fine py, blebs & vein in v fine grained blk sed?

47.7 Colmakoma tactite in Bubrea. Abundant specular hematite in rosettes, very pretty.
return 48.2 jct Middlemarch Canyon & rd to Colmakoma. Granite?, slightly gneissic ✓ 11.

---

15. SS-gtz-fine cgl. N10°W, 30°E. with fine gtz latite on NW nose of granite 20' between granite & pass on W — mostly gtzite
W on flank 50'± Shaly, fractured, sandy, extensive on E flank west, xhot gtz. on E too.
? gtz latite like dike? coformable.

16. Fastenberg Mine. Contact granite & Bubrea (Glance prem.) ✓ G has gtzite pillar near contact.
Several drill sites along road. Drill rig (Bonfo Bro Canada BBS-2, worm drive (Chado of Nicaragua?)
sed ox, inclined hole east toward lens.

✓ over

92.4 China Camp Rd

94.3 contact w/ gr?, 17. Gr. with lin nearby

94.4 Sheephead Pass. K, Granite (C? 1' from contact) intrusive into phyllites (A-B) ✓ TOD gr across road ≈ 50' from contact.

Note: No break in form from here to Stronghold granite but also semi subrock look in gr, field all transitional.

98.3 South gate to Stronghold

99.7 Longest fracture in granite trend N30°E in NW ¼ of Sec. 16, ✓ R236, T185, SW corner Stronghold granite W fed.

00.5 turn right (east) to hill

00.7 end of road to hill. Sample ✓ 19. SW¼ NE¼ Sec. 17. Nearby coarse Stronghold "granite" with fewer aplitic dike. One more out front of very fine equigranular appears to cut N70°W thru range front. (appears gr intrude "b" with "c" to west) (recall above intrude gr.)

00.9 Back to rd other fence.

01.6 Slow jct take left to valley.

4.0 granite N/E ¼ Sec. 1 Packard Tank area (20)

4.3 Packard Tank

(.5 turn off to east)

6.75 Ravine, Sec. 3 ≈ 21. Granite Square mud - adobe house ⊓ U shaped overlooking (north N.)

8.9 Knob Hill Sec. 25-26. Schist - gneiss volc? dome? Rhyolite tuff.? (22)

To J. Dell

Date 7/1/75 Time 8:05

WHILE YOU WERE OUT

M Dave Hackman

of

Phone 326 - 9516

Area Code Number Extension

TELEPHONED		PLEASE CALL	✓
CALLED TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		URGENT	
RETURNED YOUR CALL			

Message

Turned down verbally
on July 28, 1975

Operator Lois

EFFICIENCY® LINE NO. 2725 AN **AMPAD** PRODUCT 60 SHEETS

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

July 16, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Stronghold Granite
Central Dragoon Mountains
Cochise County, Arizona

The Stronghold granite, found mainly in T17S, R23E and 24E, and T18S, R23E and 24E, has long been considered an early Tertiary intrusive. Gilluly (USGS Prof. Paper 281) determined it to be post-major thrusting and noted that the granite had superimposed a wide thermal metamorphic halo into the wall rocks around the stock. The 1969 Geologic Map of Arizona (Arizona Bureau of Mines and USGS) considered it to be a "Laramide" granite (TKgr).

However, in 1964, Damon and Bikerman published a K-Ar age date of 22±3 m.y., or mid-Tertiary, for the granite (Arizona Geological Society Digest 7). The granite contains abundant sanidine and often has a corroded subvolcanic appearance in the quartz-feldspar, and there seems to be no doubt that the large mass is a post-Laramide unit.

The geologic map of the Stronghold granite and surrounding units, as shown by Gilluly (Plate 5), suggests the mass is nearly separated (in plan) by a long spur of sediments. In the field and in vertical cross-section the granite is noted to plunge gently under the sediments (this is especially indicated on the west side of the spur of sediments). Drill hole M-1, of Kerr-McGee, intercepted Stronghold granite at a depth of 1193 feet and contouring across the spur indicates a topographic sag in the top of the granite underlying the sediments. Similar contours are suggested when reconstructed across other parts of the spur.

The eastern part of the granite has the dominant subvolcanic appearance and is the site of the age date sample. The western part has a more granitic texture and often has an intense sheeting, near vertical, which trends N30°E. The north and south margins of the Stronghold granite also trend in nearly the same direction.

In 1962, Charles Bock completed a Dissertation at the U. of A. (Library number E9791 1962 225, PhD) entitled: "The Distribution of Some Selected Alkali Metals and Alkaline Earths in the Stronghold Granite, Cochise County, Arizona." Bock covered the entire massif, with nearly equal-spaced distribution, using 243 sample points plus 23 samples of rhyolite dikes and 5 samples of aplite dikes. His abstract reads, and I quote:

"X-ray fluorescent spectrographic analyses show the Stronghold Granite to be impoverished in strontium with respect to other analyzed granites of similar calcium content and higher in the ratio of calcium over strontium. Rubidium and potassium over rubidium values for the Stronghold Granite are similar to values obtained for other biotite granites. Trend surface analysis techniques applied to the variables measured show that definite compositional trends exist in the massif. High order trend surfaces for strontium and calcium show negative correlation with high order trend surface for the ratio calcium over strontium. The high order surfaces for calcium over strontium and potassium over ribidium show negative correlation with each other indicating that late stage igneous events are more dominant in the northeast than in other parts of the pluton."

In using the first order or linear trend surface, it is fairly evident that both the east and west parts of the Stronghold granite are of the same intrusive unit. Attachment A is the linear plot for strontium as ppm in the whole rock. Attachment B is the linear plot for the ratio calcium over strontium. Note that both show a progressive change from west to east.

Bock further points out (page 40) that ...."An increasing ratio of calcium over strontium is considered an index of increasing differentiation in igneous rocks (Heirer and Taylor, 1959, p. 298). If the Linear plus Quadratic plus Cubic trend surface for calcium over strontium truly represents a trend in the Stronghold Granite, then late stage igneous events progressed toward the northeastern part of the pluton." Bock illustrates this point with the Linear plus Quadratic plus Cubic trend surface as reproduced on Attachment C, with Gilluly's geologic as the base. Perhaps his trend is also indicating a "granitic" western portion versus the "subvolcanic" eastern portion?

S. R. Davis of ASARCO conducted a biotite sampling program in the Stronghold granite and the sample sites plus values are shown on Attachment D. The ASARCO samples 1 through 25 are reported in ppm copper found in the biotite separates whereas samples M-1 and SH-3 are ppm copper in whole rock analysis. The values are very low and the two highest values are found in the south central part in drill hole site M-1 and biotite sample site #18. One possible contour configuration of the copper values is shown on Attachment E. Note the northeasterly elongation on the closed contours which are parallel to the apparent elongation of the intrusive margins on the north and south. The high values curve the countours to the southeast and into the trend of maximum known mineralization in the adjacent sediments around Middlemarch Canyon.

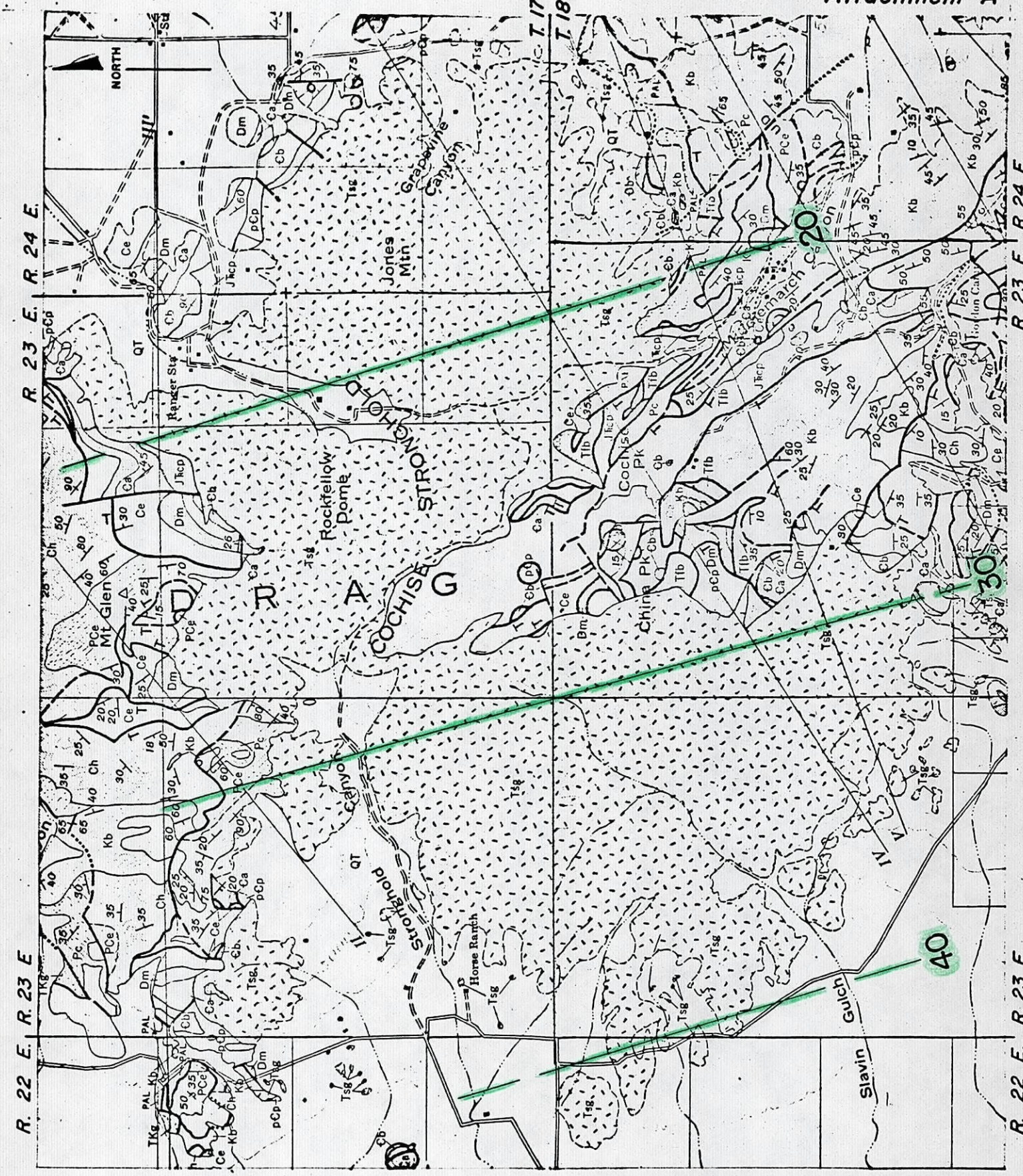
The age date of 22 m.y. suggests the Stronghold granite was emplaced long after the classic Laramide event (ending at 55 m.y.) which culminated the vast majority of mineralization in Arizona, and thus the biotite copper should reflect the amount in the igneous melt which can be modified by contamination from wall-rock sources. Do the higher values suggest contamination from a mineralized Laramide pluton at depth in the vicinity of Middlemarch Canyon?

James D. Sell

James D. Sell

JDS:lb
Atts.

Attachment A



Geology after J. Gilluly, U.S.G.S. PP 281

STRONGHOLD GRANITE

Linear Trend Surface of ppm Sr.

STRONGHOLD GRANITE

(after Bock, fig. 9, p. 36)

Cochise County, Arizona

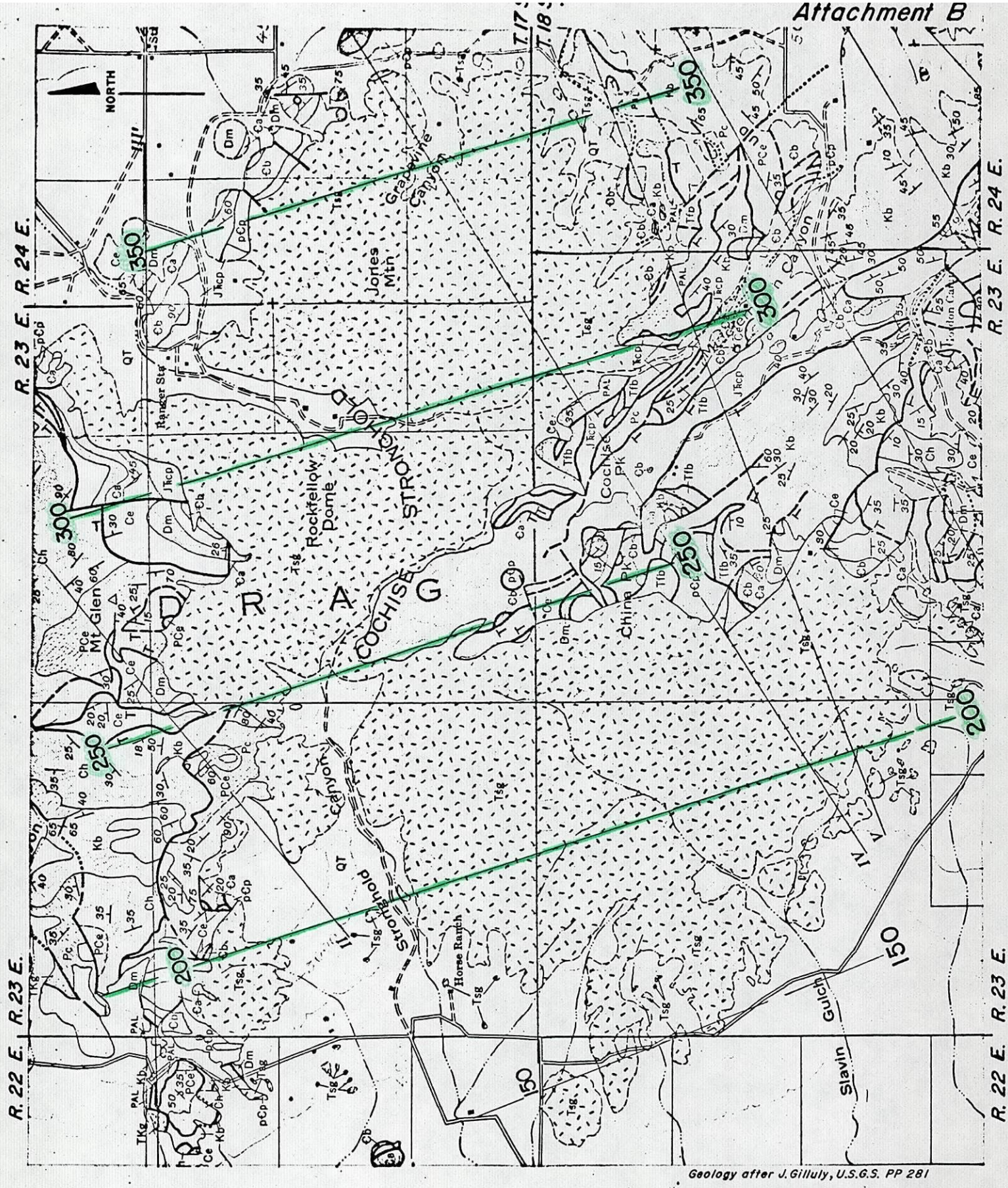
SCALE 1:62,500

J.D. Sell

July 15, 1975

Xerox Orig.

Attachment B



Geology after J. Gilluly, U.S.G.S. PP 281

STRONGHOLD GRANITE

Linear Trend Surface of the Ratio Ca/Sr

STRONGHOLD GRANITE

(after Bock, fig. 10, p. 37)

Cochise County, Arizona

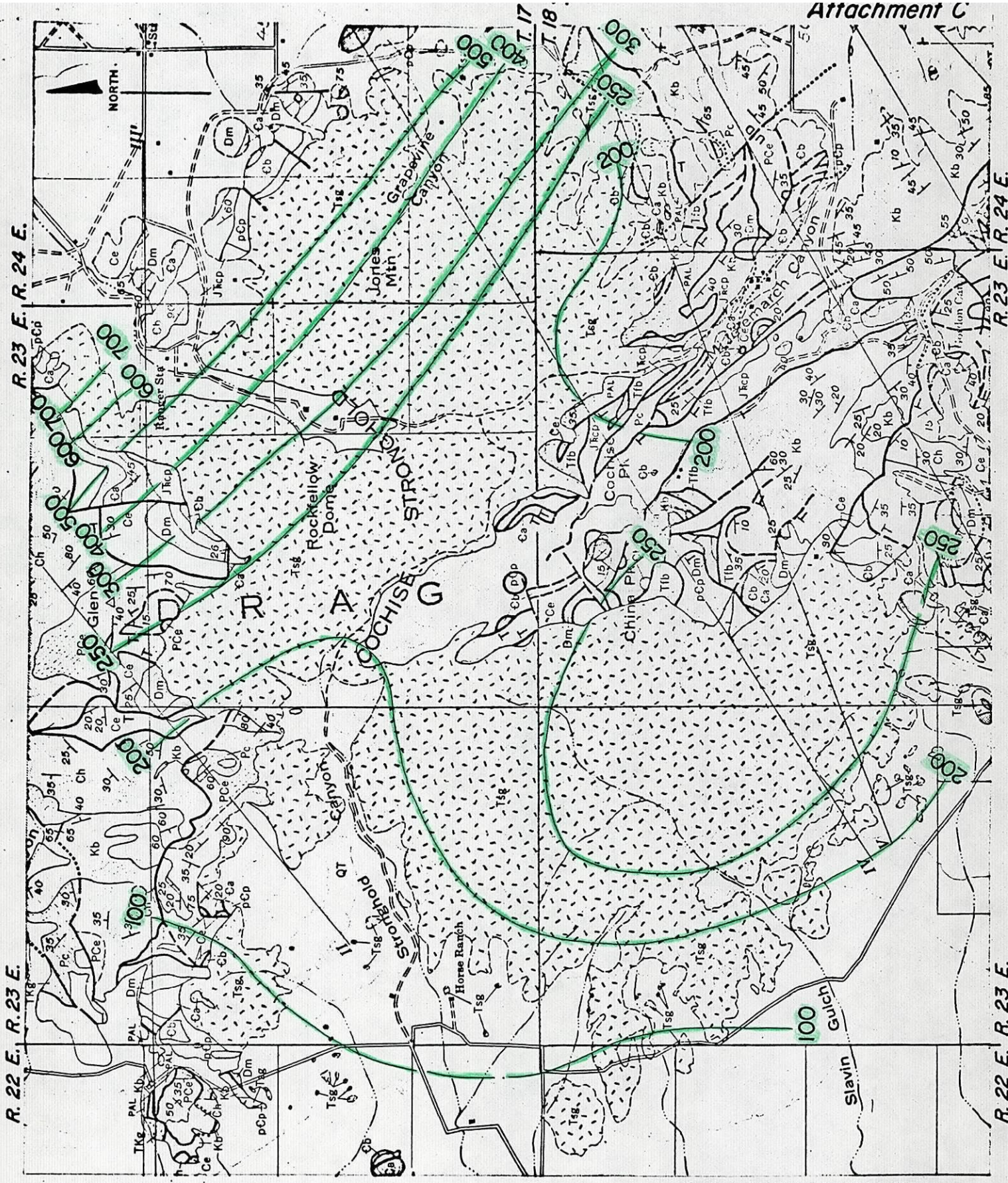
SCALE 1:62,500

J.D. Sell

July 15, 1975

Xerox Orig

Attachment C



Geology after J. Gilluly, U.S.G.S. PP 281

STRONGHOLD GRANITE

Linear + Quadratic + Cubic Trend Surface

for the Ratio Ca/Sr

STRONGHOLD GRANITE

(after Bock, fig. 10, p. 37)

Cochise County, Arizona

SCALE 1:62,500

JD Sell

July 15, 1975

Xerox Orig MVK-2866

Attachment D

Geology after J. Gilluly, U.S.G.S. PP 281

STRONGHOLD GRANITE

9/24 = ppm Cu / sample No.

ASARCO Biotite Sample Sites & Results
with addition of M-1 and SH-3

STRONGHOLD GRANITE

(after S.R. Davis, Map No. 2541)

Cochise County, Arizona

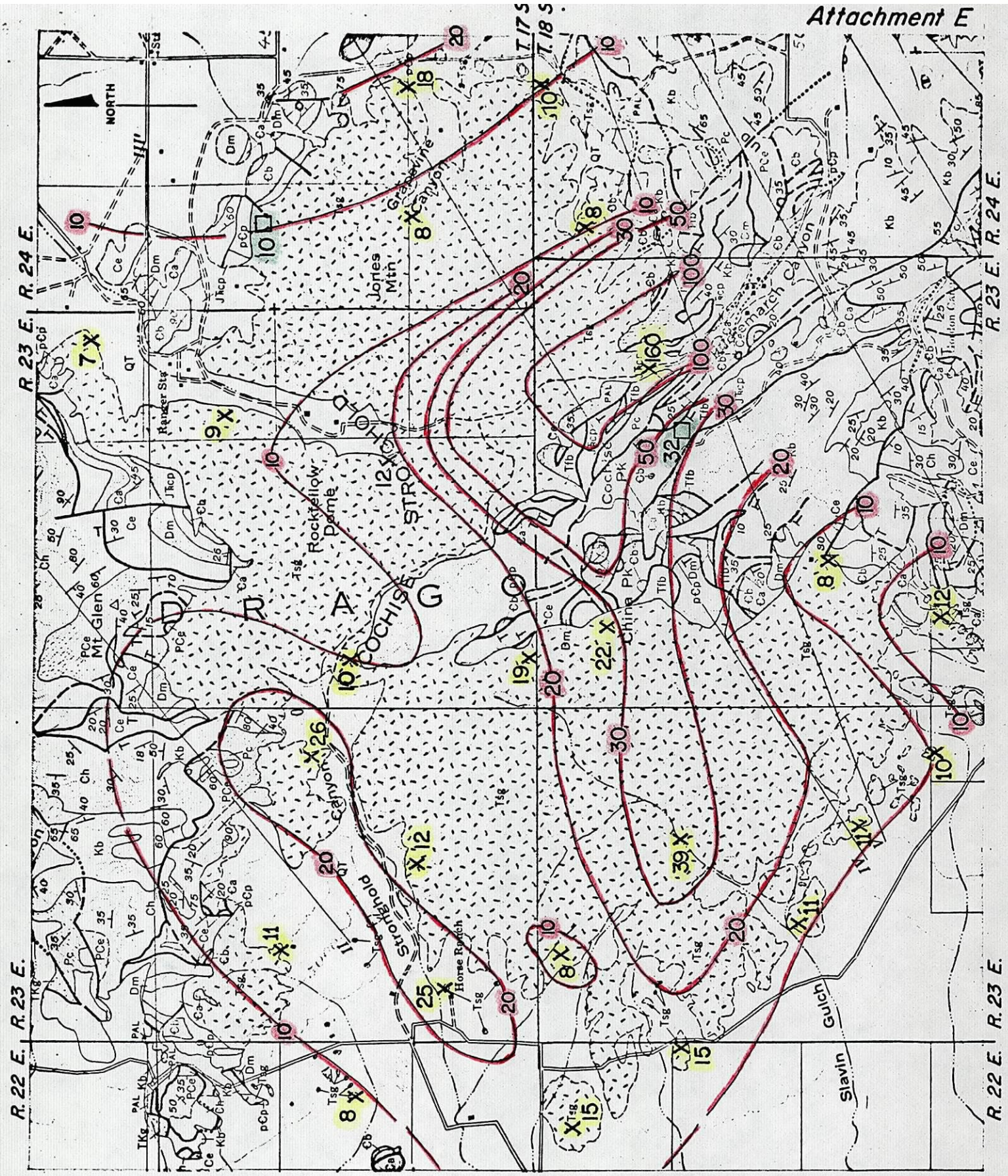
SCALE 1:62,500

JD Sell

July 15, 1975

Xerox Orig.

Attachment E



Geology after J. Gilluly, U.S.G.S. PP 281

STRONGHOLD GRANITE

BIOTITE SAMPLE

X WHOLE ROCK SAMPLE

A Possible Contour of Copper Values in Biotite & Whole Rock

STRONGHOLD GRANITE

Cochise County, Arizona

SCALE 1:62,500

JD Sell

July 15, 1975

Xerox Orig.

Tin 5

E9791 1962 225

Charles M. Beck, 1962, Ph.D. The Distribution of Some Selected Alkali Metals & Alkaline Earths in the Stronghold Granite, Cochise Co. Ariz. 95p

D.J. Cederstrom, 1946 Ph.d. Geology of the central Dragoon Mtn, Ariz.

E9791 1946 S-

Blackdiamond (Dragoon Camp). opened on large scale around 1900. tested just several years. mill, smelter, aerial tram, power plant.

1,100,000 #Cu, $3,000 Ag. (ABM 140, p. 91)

Middlemarch 1895-1910, 1915-1921 leases. total 265,000 #Cu $10,000 Ag.

~~433.736 shown~~

~~383.736 shown~~

Charles Bock UofA 1962 ☒

Charles M. Bock, PhD 1962

The Distribution of some selected alkali metals & alkaline Earths in the Stronghold Granite, Cochise Co., Ariz 95 p.

Devon 22 ± 3 my Stronghold granite sample.

taken in NE 1/4 SE 1/4 Sec. 26, T 17S, R 23E.

OL K-M early week of 23rd

6

1.7

5.5 8

90

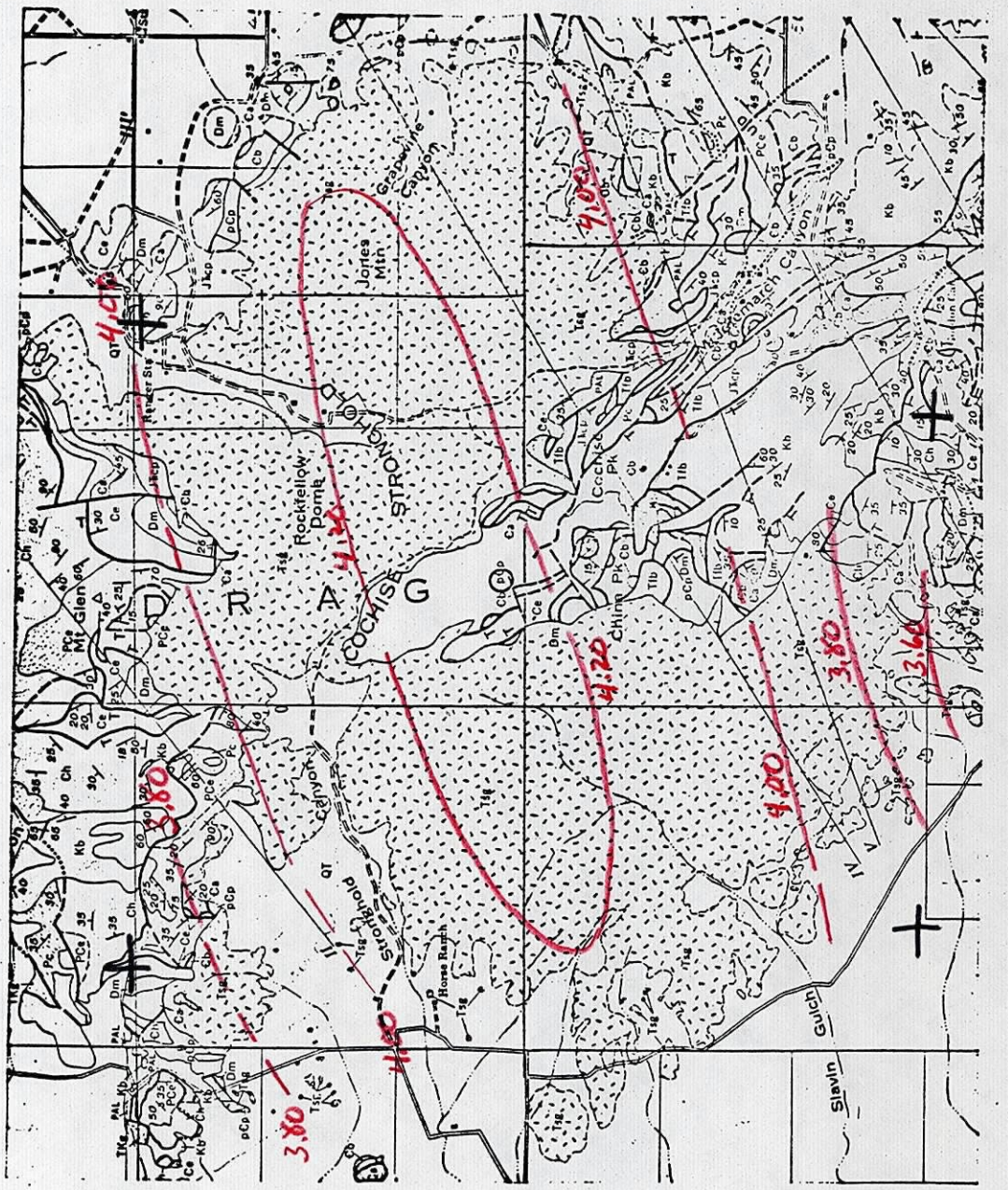
Dragoon

1 —

2 —

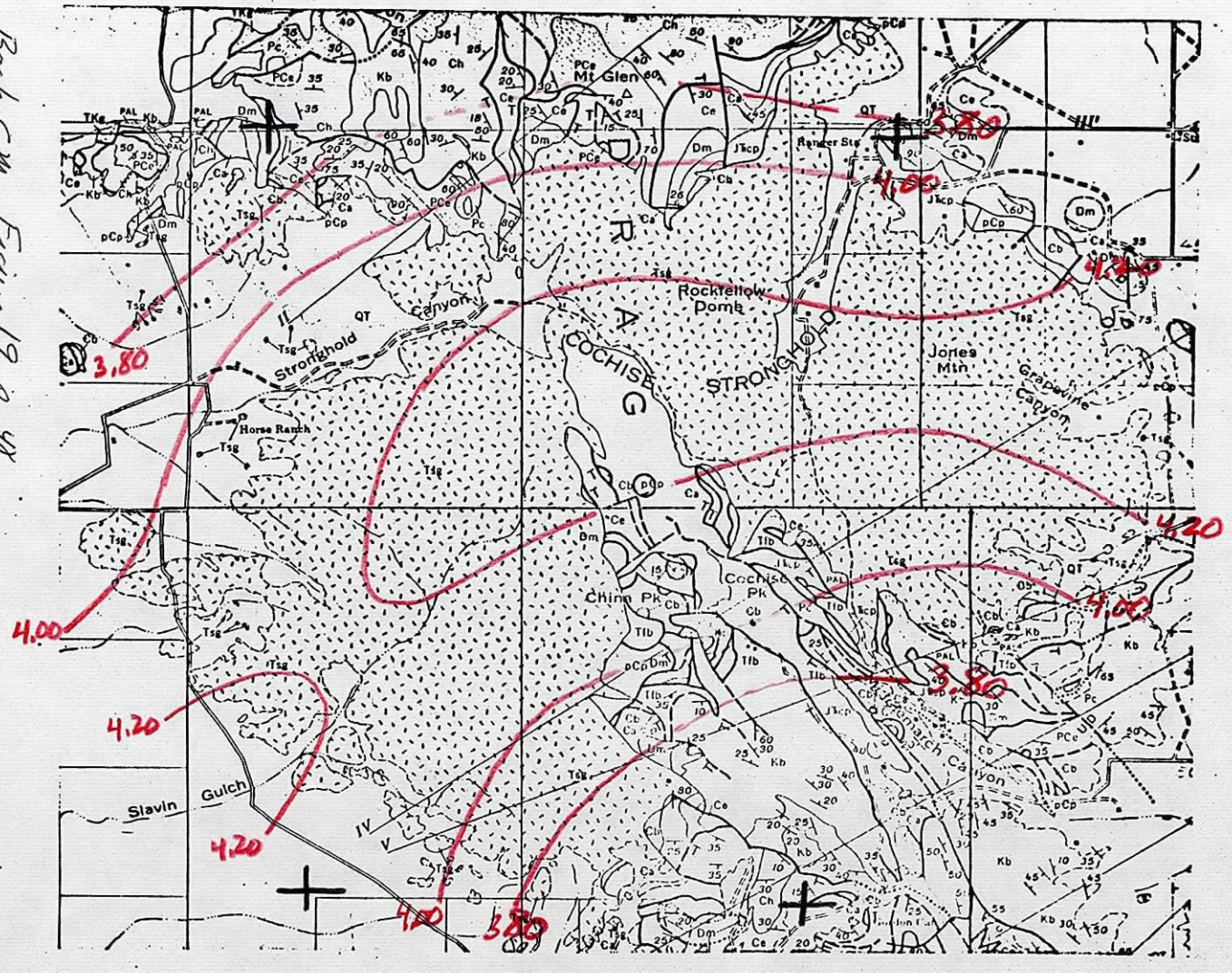
(1)	30,000	30,000	250
(2)	2	2	5,000
			20
(3)	7,000	7,500	2,500
		17,000	200
		100	5
(6)	250		5,975
(9)	5,000	57,257	
(11)	20		
(10)	50		
(5)	5,000		
(7)	200		
(8)	17,000		
(12)	55		
(9)	100		
(8)	105		

Bock .... p. 49-50 ..... In noting that late stage igneous events progressed toward the northeast in the Threshold Granite, the writer does not mean that differentiation in the granite progressed laterally. Consideration of vertical position of sampled sites in trend surface analyses would almost certainly alter the configuration of the trend surface so that varied trends may be distinguished. Further, from relation with the country rocks the writer gained the impression that the pluton is unroofed only to a shallow depth. Thus the weathered surface of the pluton in places may be very close to the original interface between the massif & the country rocks.



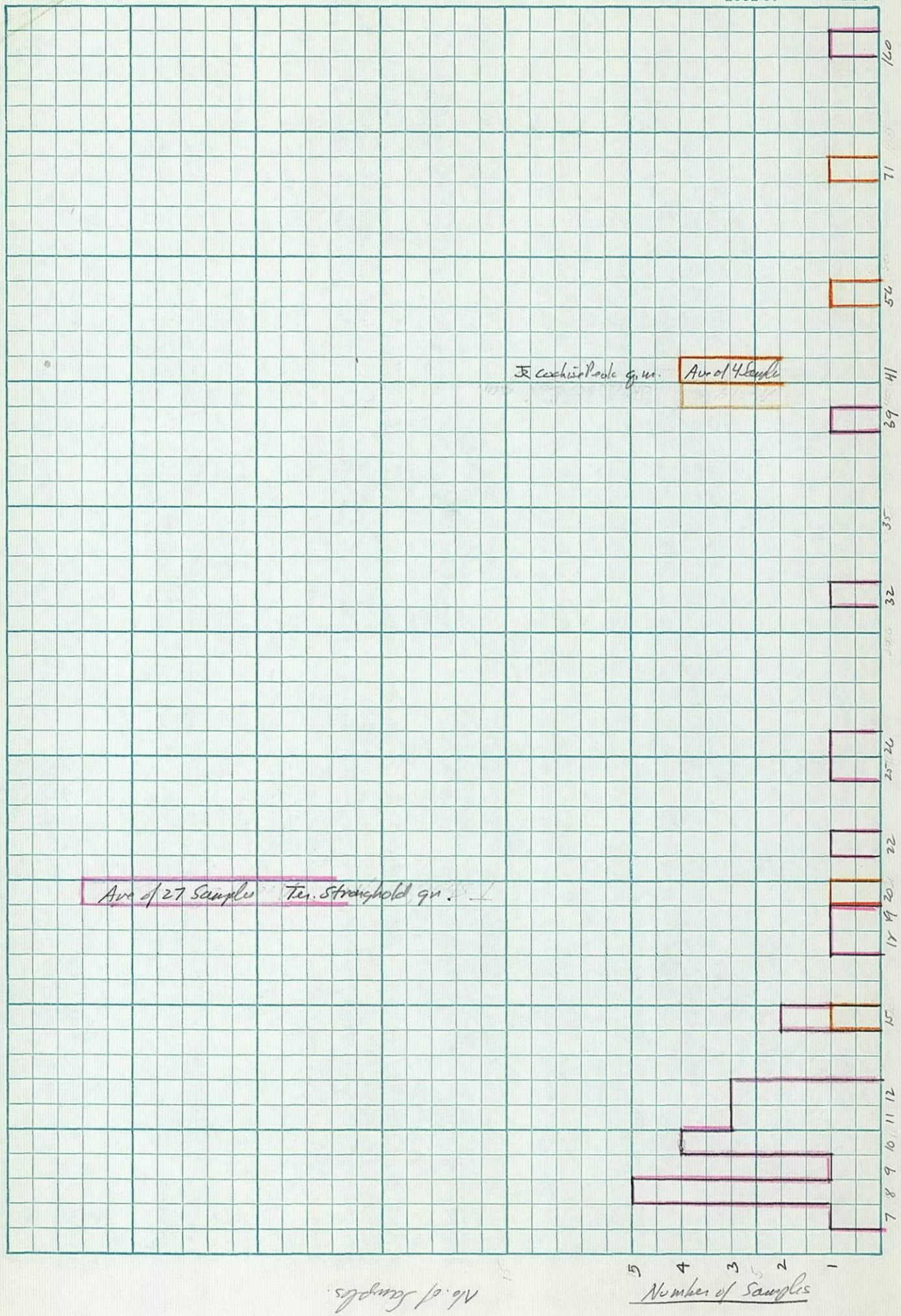
Bock, C.M., Figure 18, p. 47.

L + Q (linear + quadratic) trend surface for % K in Stronghold Granite, Cochise County, Arizona



Bock, C.M., Figure 19, p. 48

L + QTC (Kinsa + Quadrotte + Cubic)
Trend surface for 87K in Stronghold Granite
Cochise County, Arizona


Ave of 27 Samples Ter. Stronghold qn.
Ave of 4 Samples
Number of Samples
No. of Samples
7 8 9 10 11 12 15 17 19 20 22 25 26 32 35 39 41 52 71 160
1 2 3 4 5

ppm in JTR gp.

SH-1 56
SH-2 15

M-1 22'-99' = 20 ppm
M-2 768-797 = 71 ppm
~~M-3~~

4) 162 = 41

? maybe Lawrence ?

~~8~~
~~11~~
~~12~~
~~26~~
~~10~~
~~25~~
~~8~~
~~15~~
~~15~~
~~11~~
~~39~~
~~11~~
~~10~~
~~12~~
~~8~~
~~19~~
~~22~~
~~160~~
~~10~~
~~8~~
~~8~~
~~18~~
~~12~~
~~9~~
~~7~~
~~32~~ M-1
~~10~~ SH-3

27 | 536 = 20

7	8	9	10	11	12	13	14	15	16	17	18	19
1	~~IIII~~	1	IIII	II	III			II			1	1

20	21	22	23	24	25	26	27	28	29
		1			1	1			

32	39
1	1

160
1

Stranglold Sample.

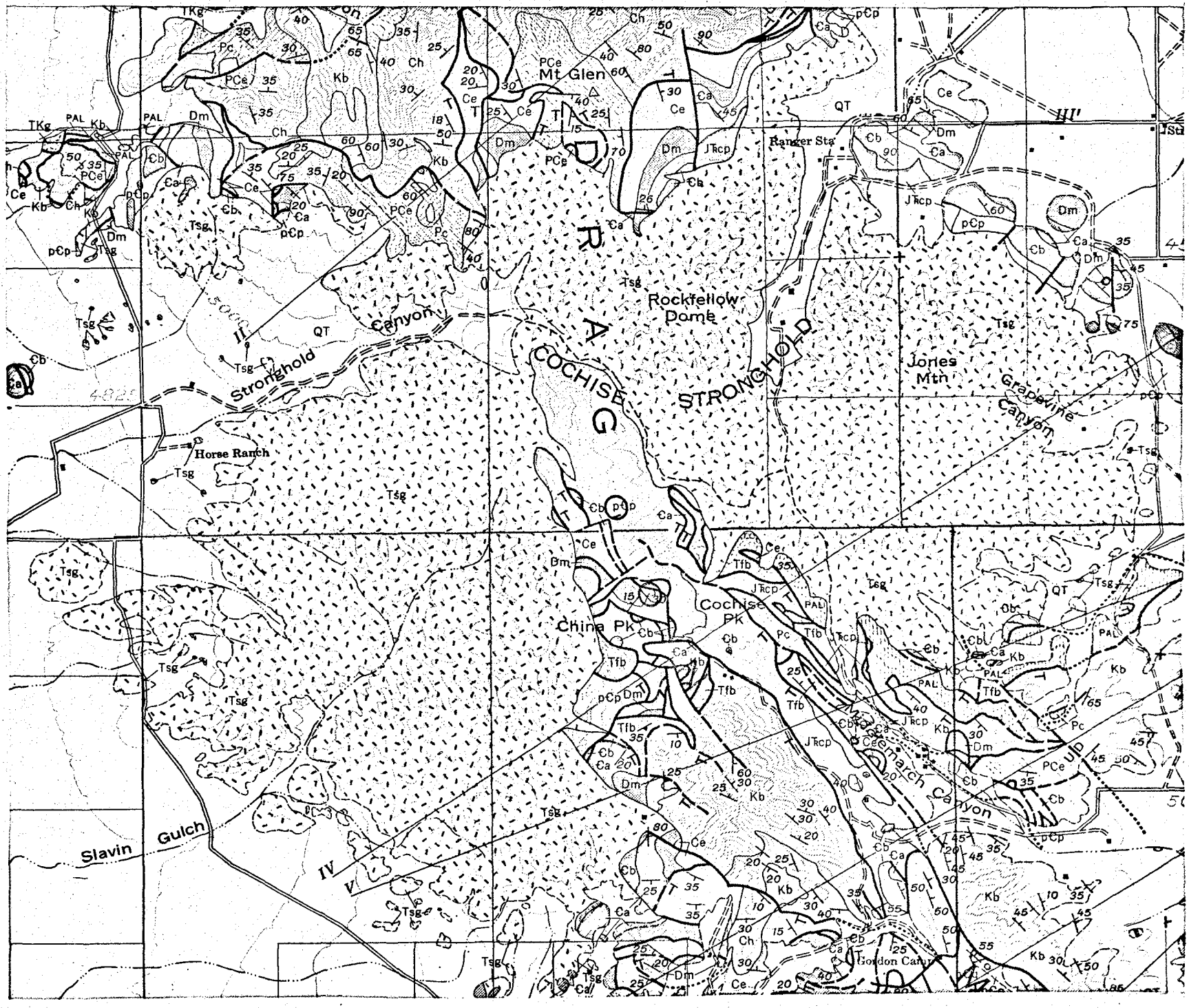
	Cu	Pb	Zn
M-1	58	16	68
	26	13	17
	12	20	5
	3) 96 = 32	49 = 16	90 = 30
M-2	163	—	241
	93		145
	75		2300
M-3	—		

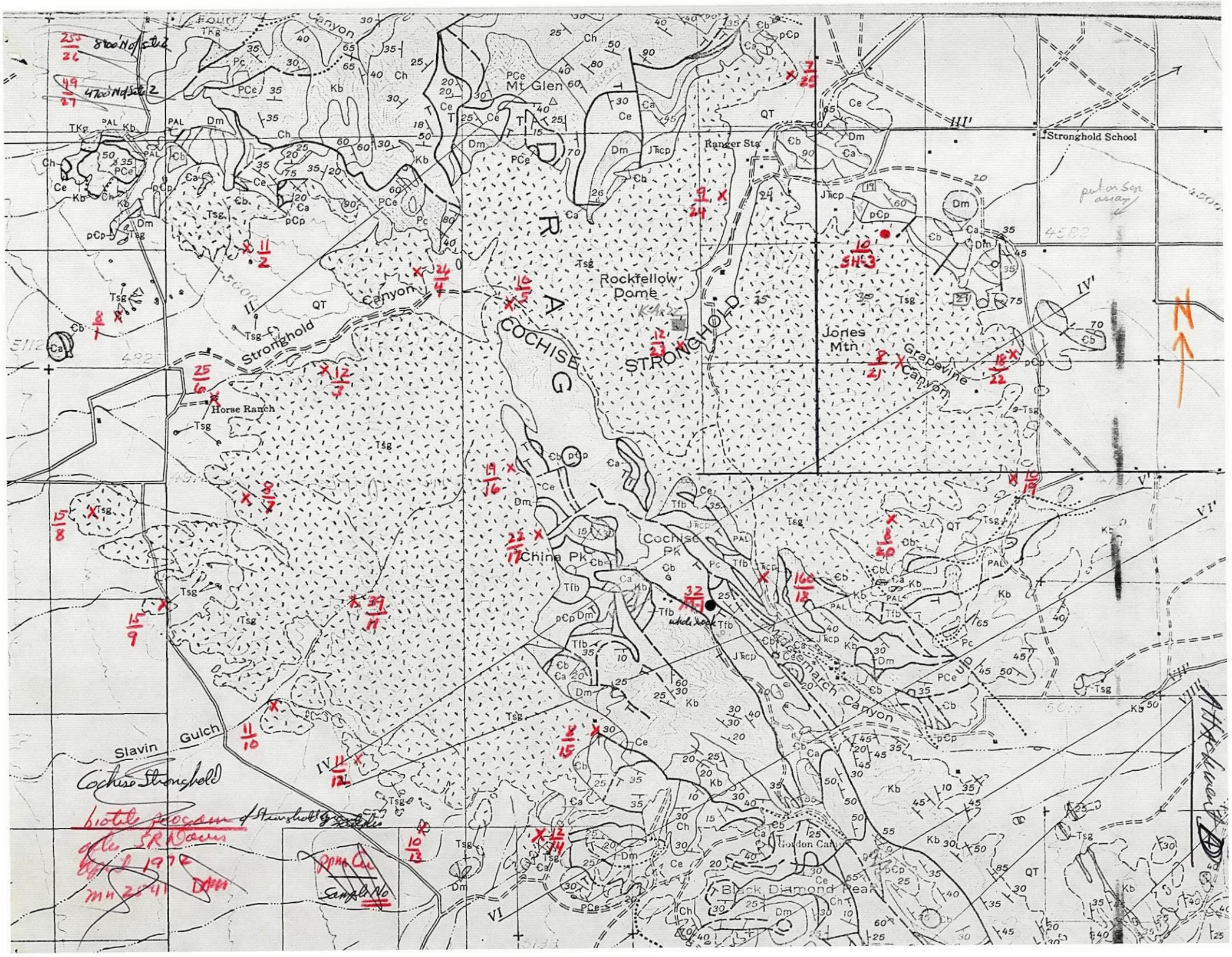
Also Kilo (Carnot ?)

Sent in Bottle per sec

Cu
10
12
8
22
19
140
8
10
2
8) 249 = 31

Clar
8
9
14
44
50
13
71
5
214


Mt Glen
Rockfellow Dome
Stronghold Canyon
COCHISE STRONGHOLD
Jones Mtn
Grapevine Canyon
Horse Ranch
China Pk
Cochise Pk
Ranger Sta
Slavin Gulch
Gordon Canyon
Ceanarch Canyon
Up
III
II
IV
V


Mt Glen
Ranger Sta
Stronghold School
Rockfellow Dome
Stronghold Canyon
Horse Ranch
Jones Mtn
Grapevine Canyon
Cochise Pk
China Pk
Slavin Gulch
Black Diamond Peak
Gordon Canyon
Cochise Stronghold

Geology after Gilluly

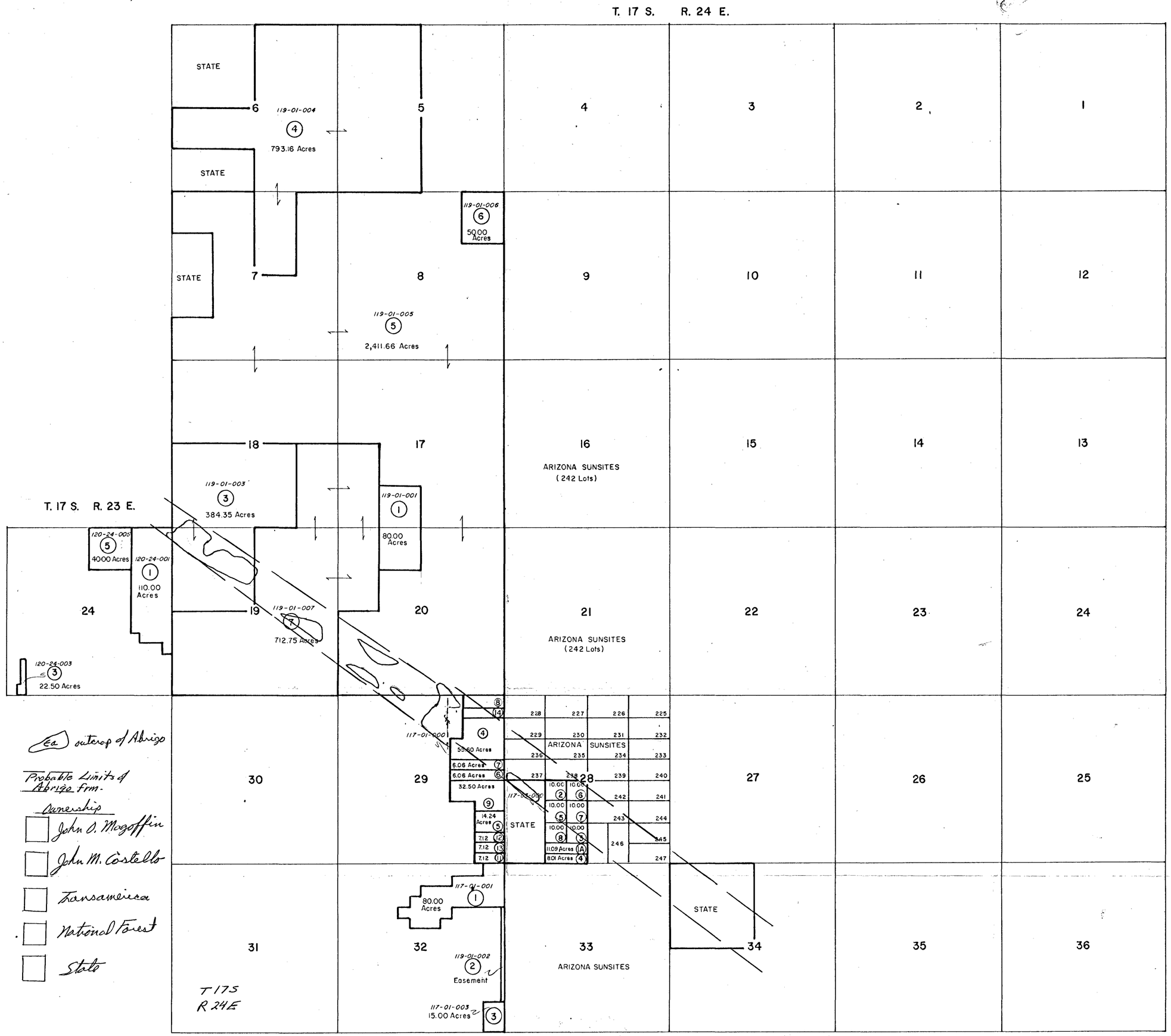
ASARCO Biotite Sample Sites & Results ~~(after S R Davies, Map Mn 2541)~~
with additional sites M-1 and SH-3 (after S R Davies, Map Mn 2541)

Stronghold Granite
Cochise County, Arizona.

Stronghold Granite

9 (ppm Cu)
24 (Sample Number)

~~Geology of the Stronghold Granite and Surrounding Area~~
~~(after Gilluly, Plate 5, USGS Prof Paper 251).~~
~~With biotite~~



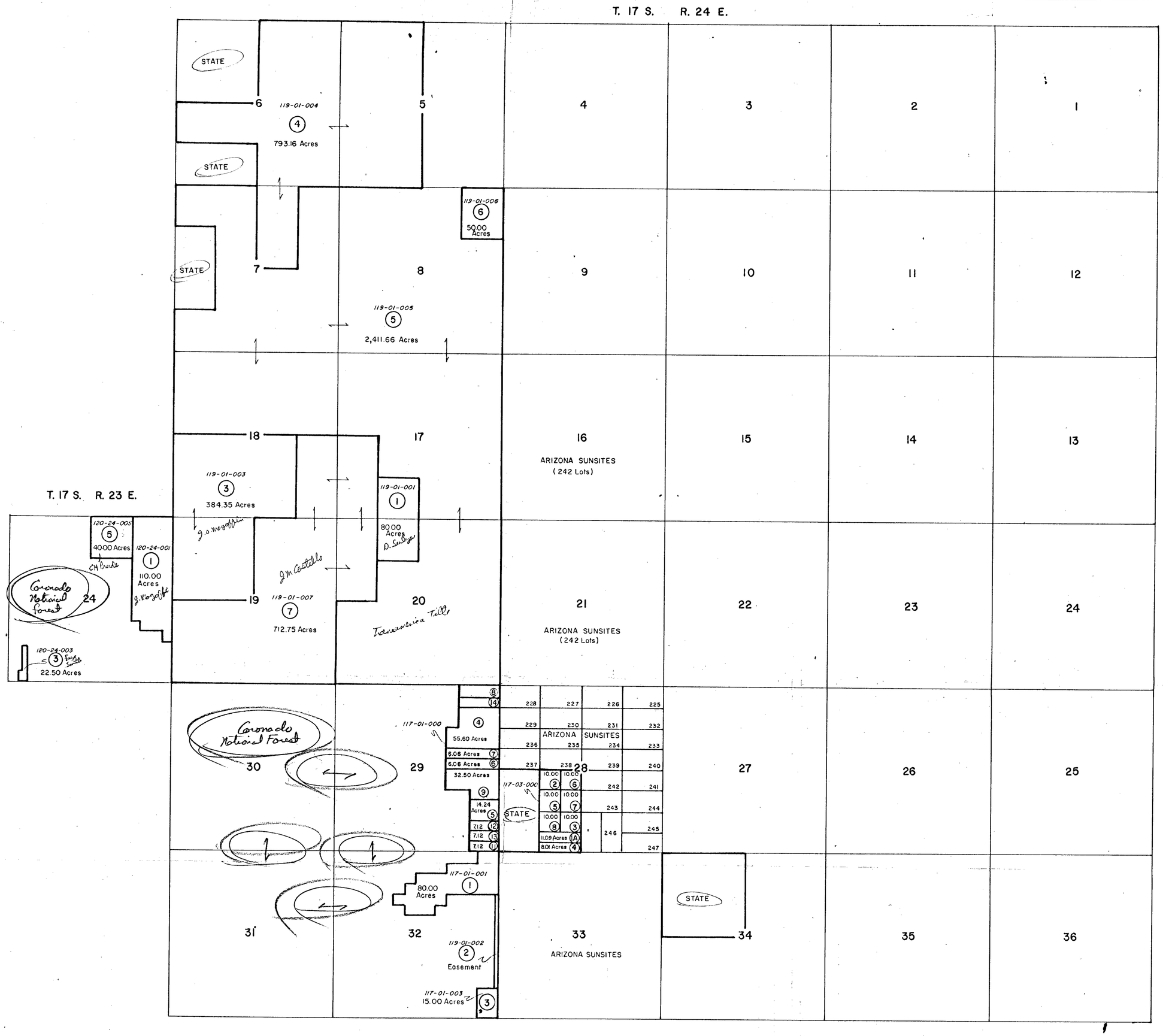
BK-MAP-CODE	OWNER
119 - 01 - 004	Transamerica Title Ins. Co.
119 - 01 - 005	Transamerica Title Ins. Co.
119 - 01 - 006	Transamerica Title Ins. Co.
119 - 01 - 001	David Sulgar
119 - 01 - 002	Horizon Land Easement
119 - 01 - 003	John O. Magoffin
119 - 01 - 007	John M. Costello
117 - 01 - 001	Carl Nelson Adams
117 - 01 - 003	Ronald M. Searle
117 - 01 - 004	Richard M. King
117 - 01 - 005	Russell McConnell
117 - 01 - 006	Joseph Lenihan
117 - 01 - 007	James E. Smith
117 - 01 - 008	Thomas Honeycutt
117 - 01 - 009	Ross L. Shields
117 - 01 - 010	Horizon Land
117 - 01 - 011	Edward Laughlin
117 - 01 - 012	Richard M. King
117 - 01 - 013	Conrad Brown
117 - 03 - 001A	Horizon Land
117 - 03 - 002	Horizon Land
117 - 03 - 003	June Audrey Dieckmann
117 - 03 - 004	Henry Sauro
117 - 03 - 005	Ralph A. Marmor
117 - 03 - 006	Robert W. Rice
117 - 03 - 007	Anne Ruth Erickson
117 - 03 - 008	Richard R. Hertzler
120 - 24 - 001	John Magoffin
120 - 24 - 003	Faye Smith
120 - 24 - 005	Charles H. Prude

OWNERSHIP MAP
P.D.P. STRONGHOLD PROJECT
COCHISE COUNTY, ARIZONA

Scale 1:24,000

R.B.C. Aug.1975

MVK-2882



north

North Arrow by Rockwood

BK-MAP-CODE	OWNER
119 - 01 - 004	Transamerica Title Ins. Co.
119 - 01 - 005	Transamerica Title Ins. Co.
119 - 01 - 006	Transamerica Title Ins. Co.
119 - 01 - 001	David Sulgar
119 - 01 - 002	Horizon Land Easement
119 - 01 - 003	John O. Magoffin
119 - 01 - 007	John M. Costello
117 - 01 - 001	Carl Nelson Adams
117 - 01 - 003	Ronald M. Searle
117 - 01 - 004	Richard M. King
117 - 01 - 005	Russell McConnell
117 - 01 - 006	Joseph Lenihan
117 - 01 - 007	James E. Smith
117 - 01 - 008	Thomas Honeycutt
117 - 01 - 009	Ross L. Shields
117 - 01 - 010	Horizon Land
117 - 01 - 011	Edward Laughlin
117 - 01 - 012	Richard M. King
117 - 01 - 013	Conrad Brown
117 - 03 - 001A	Horizon Land
117 - 03 - 002	Horizon Land
117 - 03 - 003	June Audrey Dieckmann
117 - 03 - 004	Henry Souro
117 - 03 - 005	Ralph A. Marmor
117 - 03 - 006	Robert W. Rice
117 - 03 - 007	Anne Ruth Erickson
117 - 03 - 008	Richard R. Hertzler
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120 - 24 - 003	Faye Smith
120 - 24 - 005	Charles H. Prude

OWNERSHIP MAP

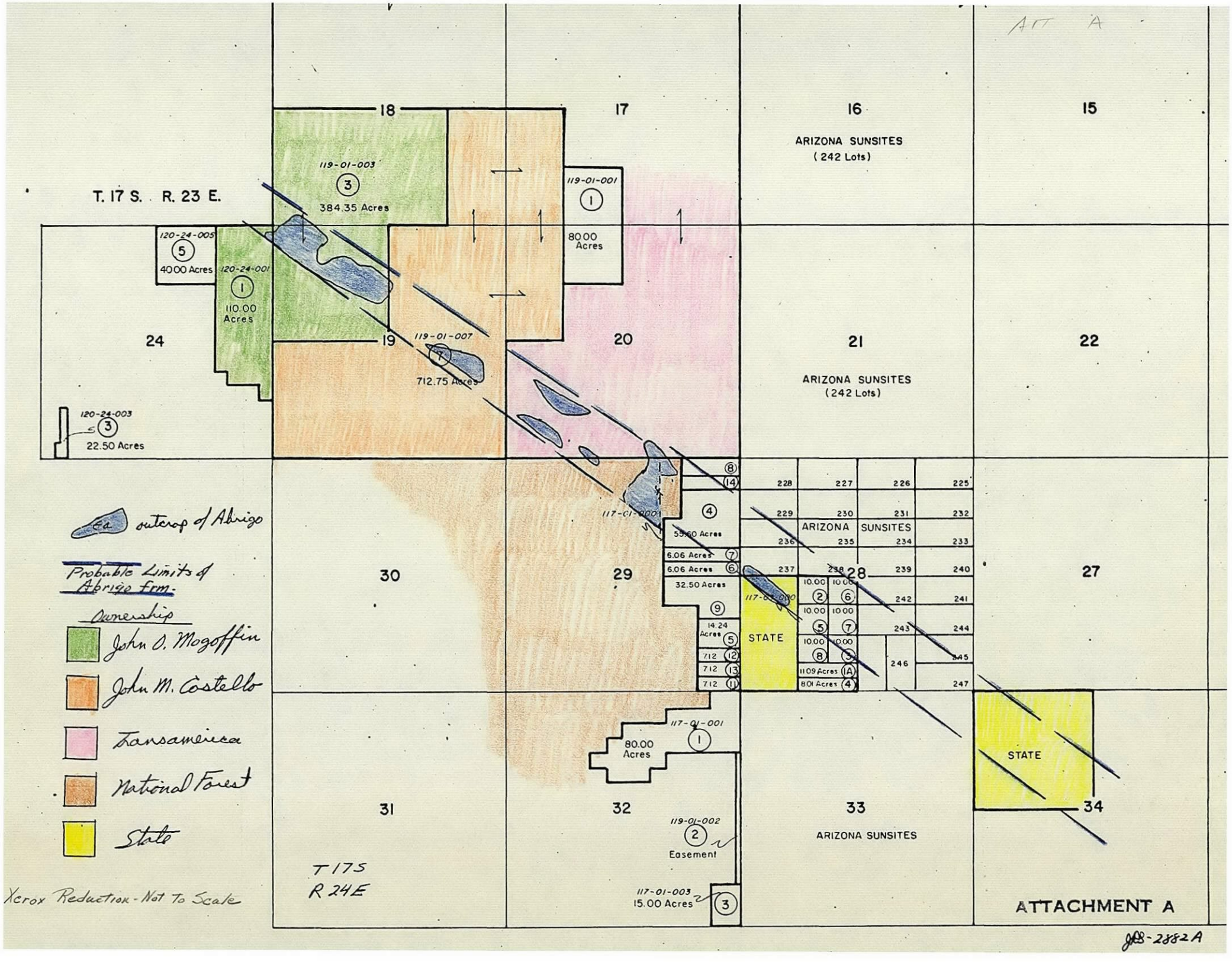
P.D.P. STRONGHOLD PROJECT

COCHISE COUNTY, ARIZONA

Scale 1:24,000

R.B.C. Aug.1975

MVK-2882


Att A
T. 17 S. R. 23 E.
18
17
16
15
ARIZONA SUNSITES
(242 Lots)
119-01-003
3
384.35 Acres
119-01-001
1
80.00 Acres
120-24-005
5
40.00 Acres
120-24-001
1
110.00 Acres
24
19
119-01-007
7
712.75 Acres
20
21
ARIZONA SUNSITES
(242 Lots)
22
120-24-003
3
22.50 Acres
Ea outcrop of Abrigo
Probable Limits of Abrigo Fm.
Ownership
John O. Mogoffin
John M. Costello
Transamerica
National Forest
State
30
29
28
27
117-01-000
4
53.60 Acres
6.06 Acres
7
6.06 Acres
6
32.50 Acres
9
14.24 Acres
5
7.12
12
7.12
13
7.12
11
8
14
228
227
226
225
229
230
231
232
ARIZONA
SUNSITES
236
235
234
233
237
238
239
240
242
241
243
244
245
246
247
10.00
2
10.00
6
10.00
5
10.00
7
10.00
8
10.00
3
1109 Acres
1A
801 Acres
4
STATE
31
32
33
34
117-01-001
1
80.00 Acres
119-01-002
2
Easement
117-01-003
15.00 Acres
3
ARIZONA SUNSITES
STATE
T 17 S
R 24 E
Xerox Reduction - Not To Scale
ATTACHMENT A
JBS-2882A

ASARCO Incorporated
Tucson Arizona

August 15, 1975

TO: W. L. Kurtz

FROM: J. D. Sell

Preliminary Report
Land Status
Stronghold Canyon East
Cochise County, Arizona

In my previous memo of July 15, 1975, I had stated that a "Mr. Pruitt" was reported to be the landowner in the area of interest. R. B. Crist has compiled a map of the ownership (Attachment B) and shows the 40 acres in Sec. 24 (T17S, R23E) to be owned by Mr. Charles H. Prude. This parcel of land is outside the Abrigo trend as defined.

Attachment A is a reduced scale portion of the township ownership map of Attachment B. On Attachment A I have outlined the approximate distribution of the Abrigo Formation outcrops and the probable trend limit of the Abrigo. From the present knowledge and sample results, Section 19 contains the best tactite and residual mineralization and is recommended to be tested with a few angle holes. The surface-mineral rights to the NW1/4 of Sec. 19 are held by John O. Magoffin (Table 1), while the remainder is held by John M. Costello.

The main outcrop shown in Sec. 20 could not be verified during the initial reconnaissance, but undoubtedly does lie between the outcropping Cambrian quartzite on the south and the hill of Devonian on the north. The Section 20 in the Abrigo trend is held by Transamerica Title Insurance Company.

The large outcrop on Coronado Forest land in Sec. 29 has not been examined, nor has the outcrop in the State Lease area of Sec. 28. The projection of the Abrigo zone goes through the NW1/4 of Sec. 34 which is also State Lease. Bob Crist determined in late July that both State Lease blocks were open at the time.

The 55.60 acre block in Sec. 29 (parcel 4) is held by R. M. King (Table 1) and is the last large block of ground within the Abrigo trend. The remainder of the trend is covered by ten and twenty-acre parcels held by individuals and the Arizona Sunsites.

TABLE I. Major Ownership Addresses

Mr. John O. Magoffin
Box 1021
Douglas, AZ 85607
Mr. John M. Costello
4319-1/2 - 8th Avenue
Los Angeles, CA 90008
Transamerica Title Insurance Co.
Box 2832
Tucson, AZ 85702
(Trust #26916)
Mr. Richard M. King
Box 66
Pearce, AZ 85625

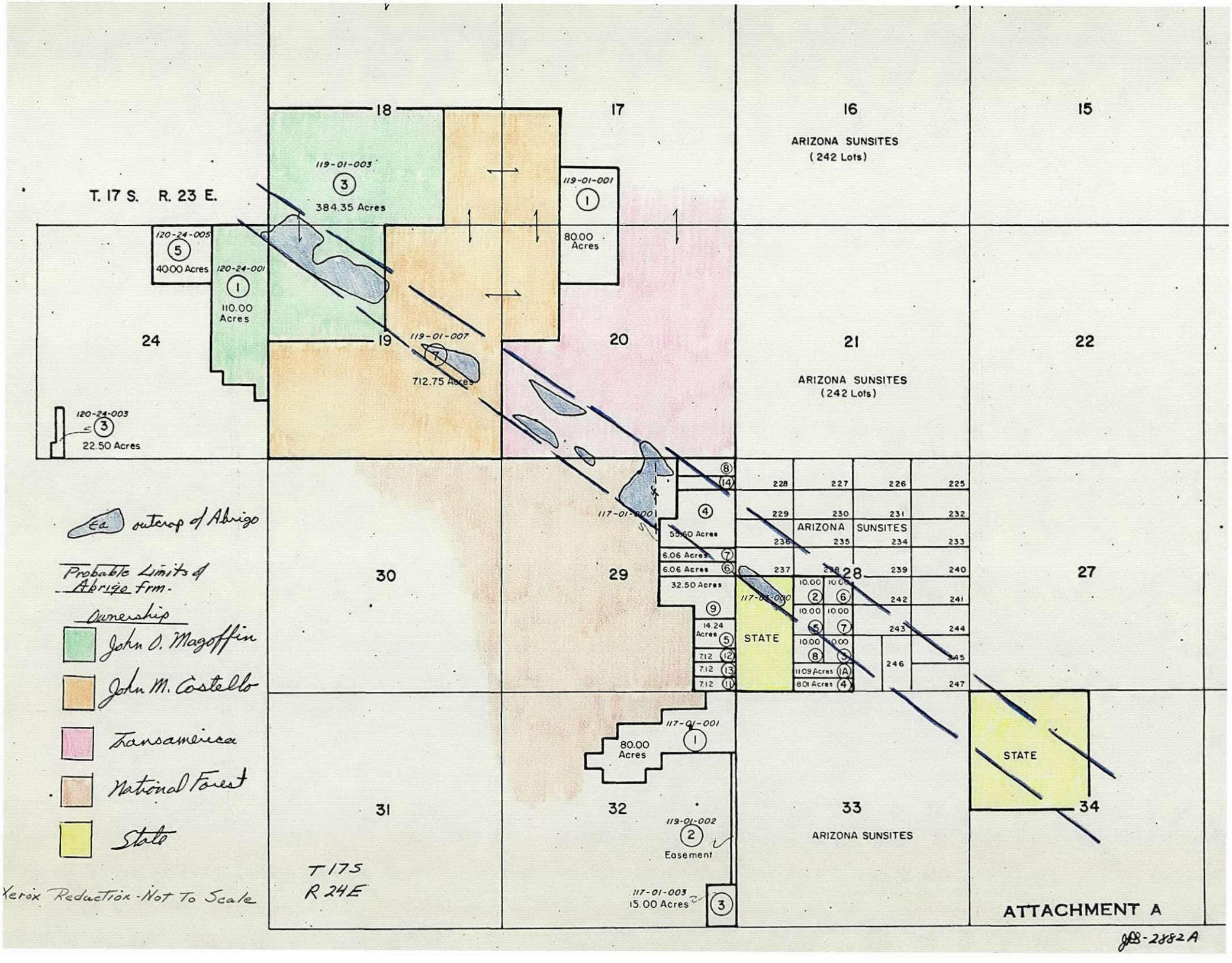
Mr. Crist has in his files the addresses of all other parties listed on Attachment B.

James D. Sell

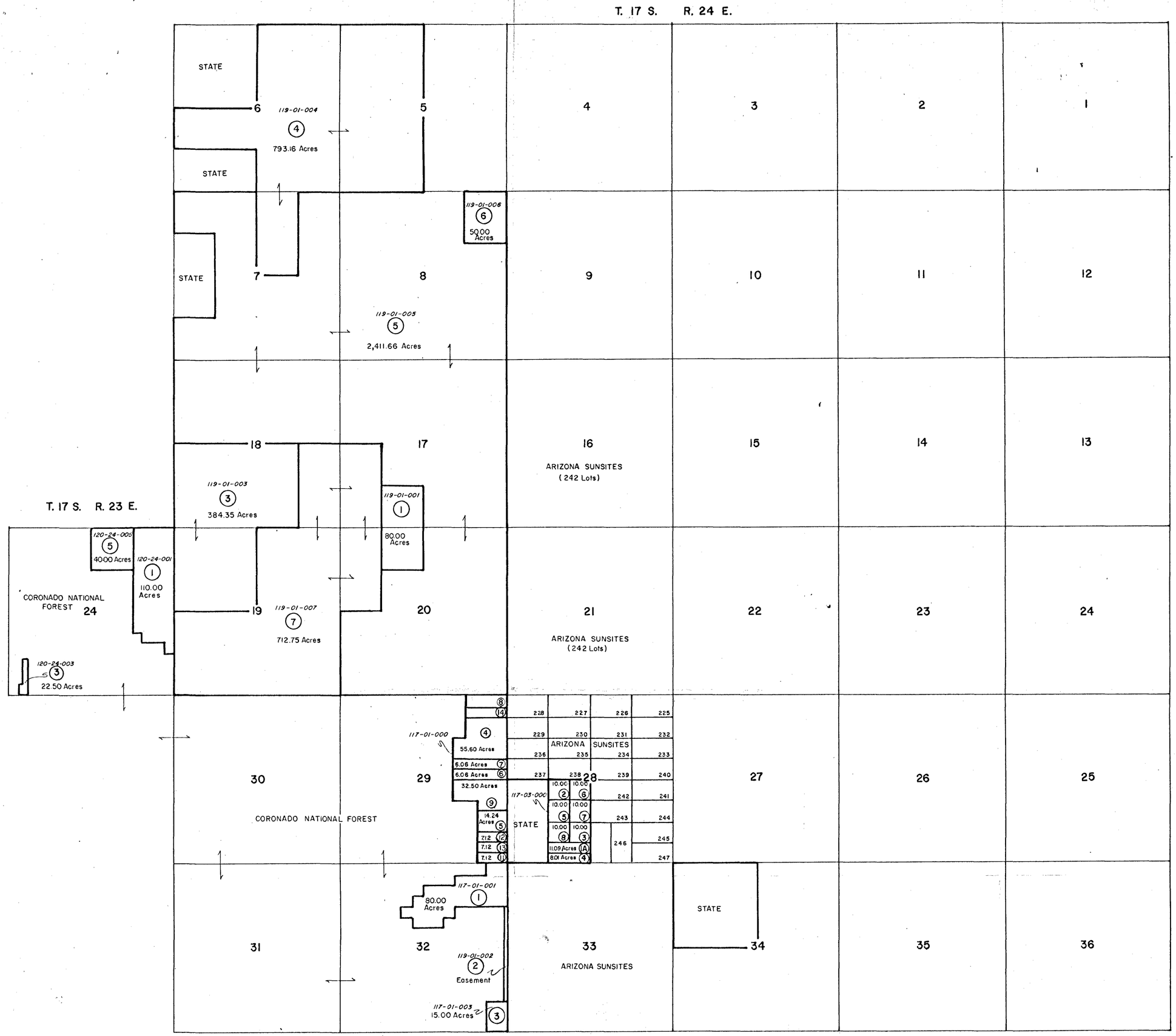
James D. Sell

JDS:lb
Atts.

cc: RBCrist


T. 17 S. R. 23 E.
18
17
16
15
ARIZONA SUNSITES
(242 Lots)
119-01-003
3
384.35 Acres
119-01-001
1
80.00 Acres
120-24-005
5
40.00 Acres
120-24-001
1
110.00 Acres
24
19
119-01-007
7
712.75 Acres
20
21
22
ARIZONA SUNSITES
(242 Lots)
120-24-003
3
22.50 Acres
8
14
4
55.60 Acres
6.06 Acres
7
6.06 Acres
6
32.50 Acres
9
14.24 Acres
5
7.12
12
7.12
13
7.12
11
117-01-000
117-01-000
STATE
228
227
226
225
229
230
231
232
ARIZONA
SUNSITES
236
235
234
233
237
238
239
240
242
241
243
244
245
246
247
10.00
2
10.00
6
10.00
5
10.00
7
10.00
8
10.00
3
1109 Acres
1A
801 Acres
4
28
30
29
27
Ea outcrop of Abrigo
Probable Limits of Abrigo frm.
Ownership
John O. Magoffin
John M. Costello
Transamerica
National Forest
State
117-01-001
1
80.00 Acres
31
32
33
34
STATE
119-01-002
2
Easement
ARIZONA SUNSITES
T 17S
R 24E
117-01-003
15.00 Acres
3
Xerox Reduction - Not To Scale
ATTACHMENT A
JB-2882A

ATTACHMENT B



BK-MAP-CODE	OWNER
119 - 01 - 004	Transamerica Title Ins. Co.
119 - 01 - 005	Transamerica Title Ins. Co.
119 - 01 - 006	Transamerica Title Ins. Co.
119 - 01 - 001	David Sulgar
119 - 01 - 002	Horizon Land Easement
119 - 01 - 003	John O. Magoffin
119 - 01 - 007	John M. Costello
117 - 01 - 001	Carl Nelson Adams
117 - 01 - 003	Ronald M. Searle
117 - 01 - 004	Richard M. King
117 - 01 - 005	Russell McConnell
117 - 01 - 006	Joseph Lenihan
117 - 01 - 007	James E. Smith
117 - 01 - 008	Thomas Honeycutt
117 - 01 - 009	Ross L. Shields
117 - 01 - 010	Horizon Land
117 - 01 - 011	Edward Laughlin
117 - 01 - 012	Richard M. King
117 - 01 - 013	Conrad Brown
117 - 03 - 001A	Horizon Land
117 - 03 - 002	Horizon Land
117 - 03 - 003	June Audrey Dieckmann
117 - 03 - 004	Henry Saura
117 - 03 - 005	Ralph A. Marmor
117 - 03 - 006	Robert W. Rice
117 - 03 - 007	Anne Ruth Erickson
117 - 03 - 008	Richard R. Hertzler
120 - 24 - 001	John Magoffin
120 - 24 - 003	Faye Smith
120 - 24 - 005	Charles H. Prude

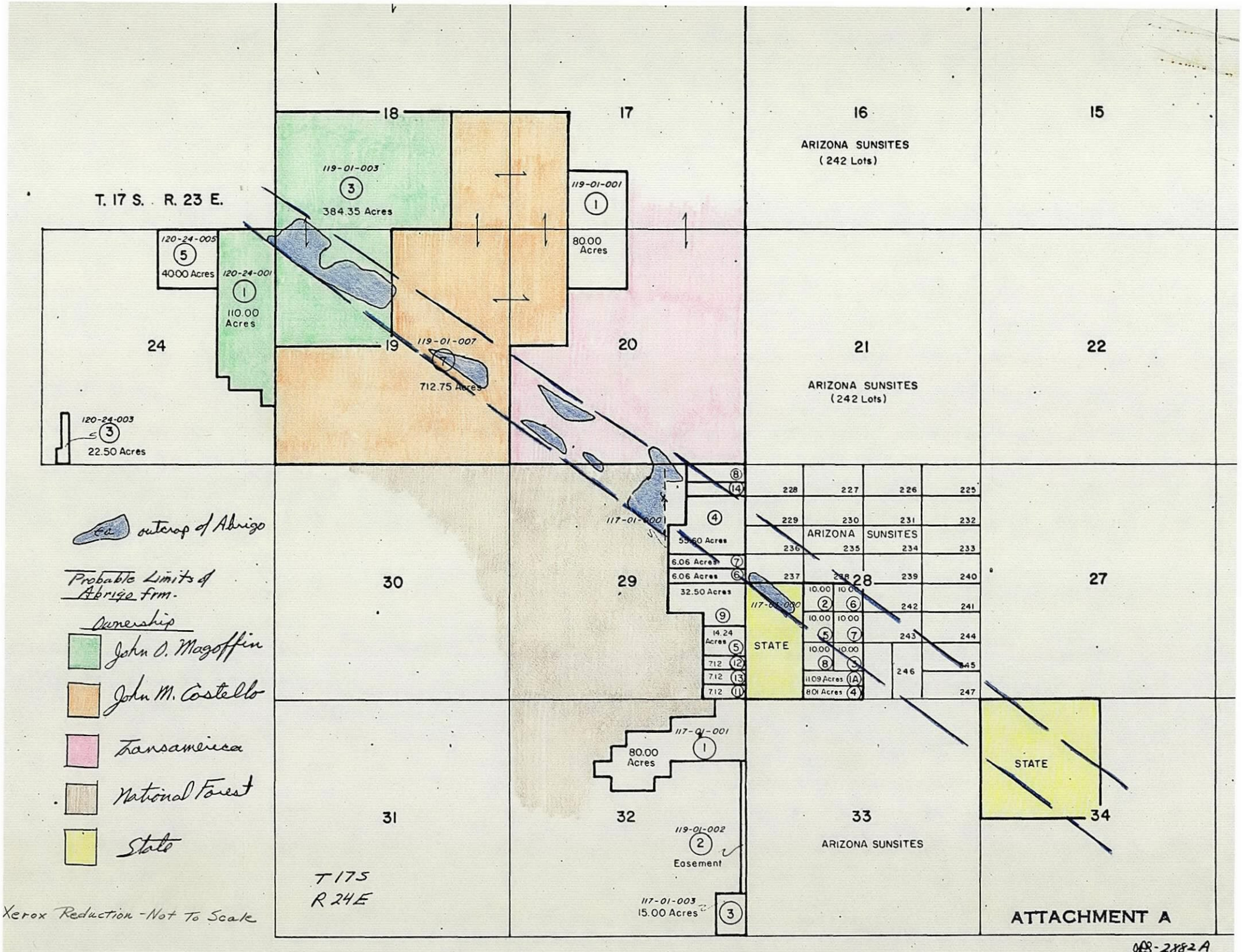
OWNERSHIP MAP
P.D.P. STRONGHOLD PROJECT

COCHISE COUNTY, ARIZONA

Scale 1:24,000

R.B.C. Aug.1975

MVK-2882


T. 17 S. R. 23 E.
18
17
16
15
ARIZONA SUNSITES
(242 Lots)
119-01-003
3
384.35 Acres
119-01-001
1
80.00 Acres
120-24-005
5
40.00 Acres
120-24-001
1
110.00 Acres
24
19
119-01-007
7
712.75 Acres
20
21
22
ARIZONA SUNSITES
(242 Lots)
120-24-003
3
22.50 Acres
outcrop of Abrigo
Probable Limits of Abrigo frm.
Ownership
John O. Magoffin
John M. Costello
Transamerica
National Forest
State
30
29
117-01-001
55.60 Acres
6.06 Acres
6.06 Acres
32.50 Acres
14.24 Acres
7.12
7.12
7.12
ARIZONA SUNSITES
STATE
28
27
117-01-001
1
80.00 Acres
31
32
33
34
119-01-002
2
Easement
ARIZONA SUNSITES
STATE
T 17 S
R 24 E
117-01-003
15.00 Acres
3
Xerox Reduction - Not To Scale
ATTACHMENT A
JOB-2882A

T. 17 S. R. 23 E.
18
17
16
15
ARIZONA SUNSITES
(242 Lots)
119-01-003
3
384.35 Acres
119-01-001
1
80.00 Acres
120-24-005
5
40.00 Acres
120-24-001
1
110.00 Acres
24
19
119-01-007
7
712.75 Acres
20
21
22
ARIZONA SUNSITES
(242 Lots)
120-24-003
3
22.50 Acres
117-01-000
4
55.60 Acres
6.06 Acres
6.06 Acres
32.50 Acres
14.24 Acres
7.12
7.12
7.12
30
29
28
27
ARIZONA SUNSITES
STATE
10.00
11.09 Acres
8.01 Acres
117-01-001
1
80.00 Acres
31
32
33
34
119-01-002
2
Easement
ARIZONA SUNSITES
STATE
117-01-003
15.00 Acres
3
Ea outcrop of Abrigo
Probable Limits of Abrigo frm.
Ownership
John O. Magoffin
John M. Costello
Transamerica
National Forest
State
Xerox Reduction - Not To Scale
T 17 S
R 24 E
ATTACHMENT A
AB-2882A

ATTACHMENT B

BK-MAP-CODE	OWNER
119 - 01 - 004	Transamerica Title Ins. Co.
119 - 01 - 005	Transamerica Title Ins. Co.
119 - 01 - 006	Transamerica Title Ins. Co.
119 - 01 - 001	David Sulgar
119 - 01 - 002	Horizon Land Easement
119 - 01 - 003	John Q. Magoffin
119 - 01 - 007	John M. Costello
117 - 01 - 001	Carl Nelson Adams
117 - 01 - 003	Ronald M. Searle
117 - 01 - 004	Richard M. King
117 - 01 - 005	Russell McConnell
117 - 01 - 006	Joseph Lenihan
117 - 01 - 007	James E. Smith
117 - 01 - 008	Thomas Honeycutt
117 - 01 - 009	Ross L. Shields
117 - 01 - 010	Horizon Land
117 - 01 - 011	Edward Laughlin
117 - 01 - 012	Richard M. King
117 - 01 - 013	Conrad Brown
117 - 03 - 001A	Horizon Land
117 - 03 - 002	Horizon Land
117 - 03 - 003	June Audrey Dieckmann
117 - 03 - 004	Henry Saura
117 - 03 - 005	Ralph A. Marmor
117 - 03 - 006	Robert W. Rice
117 - 03 - 007	Anne Ruth Erickson
117 - 03 - 008	Richard R. Hertzler
120 - 24 - 001	John Magoffin
120 - 24 - 003	Faye Smith
120 - 24 - 005	Charles H. Prude

OWNERSHIP MAP

P.D.P. STRONGHOLD PROJECT

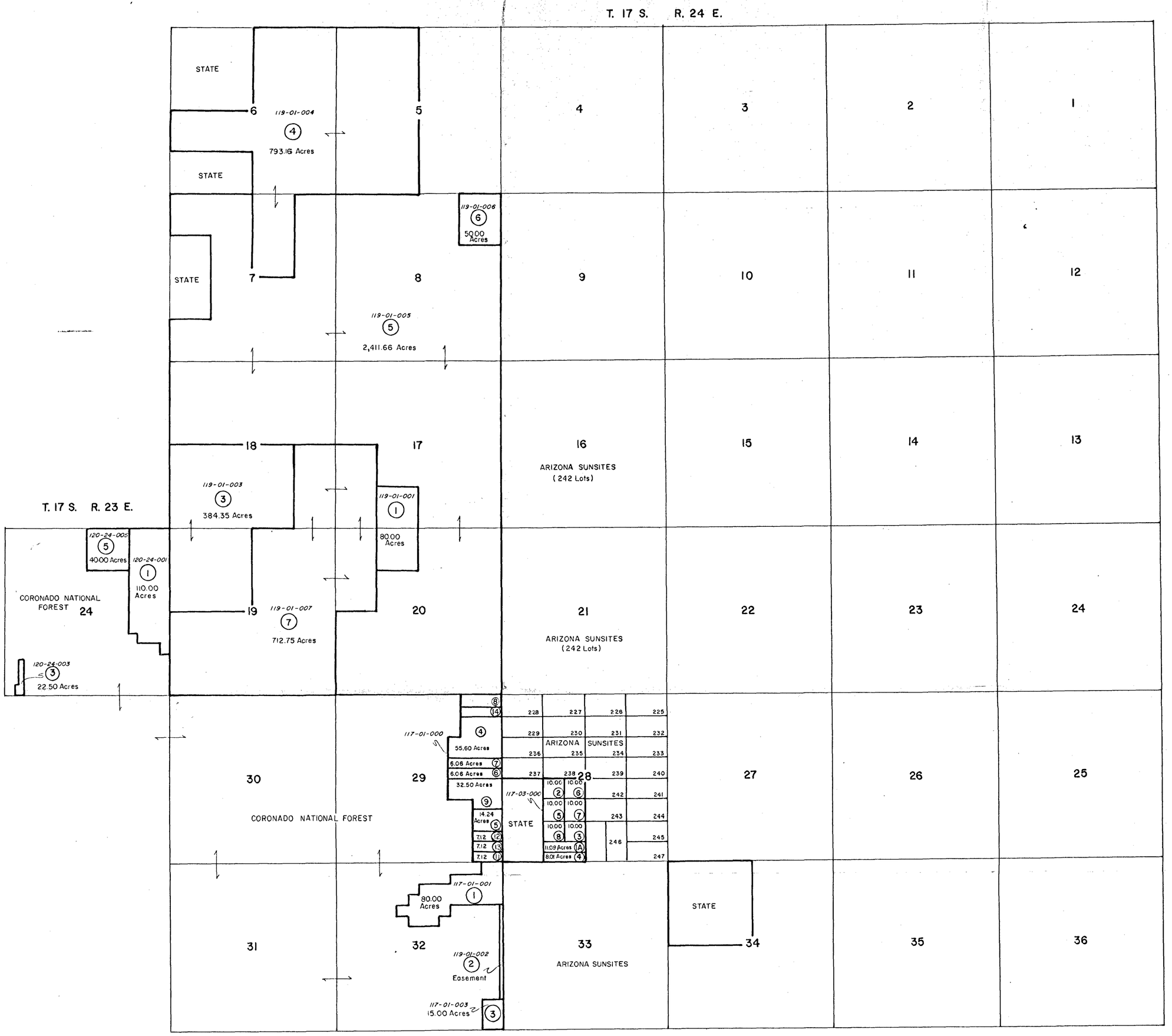
COCHISE COUNTY, ARIZONA

Scale 1:24,000

R.B.C. Aug.1975

MVK-2882

ATTACHMENT B



BK-MAP-CODE	OWNER
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119 - 01 - 001	David Sulgar
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117 - 01 - 005	Russell McConnell
117 - 01 - 006	Joseph Lenihan
117 - 01 - 007	James E. Smith
117 - 01 - 008	Thomas Honeycutt
117 - 01 - 009	Ross L. Shields
117 - 01 - 010	Horizon Land
117 - 01 - 011	Edward Laughlin
117 - 01 - 012	Richard M. King
117 - 01 - 013	Conrad Brown
117 - 03 - 001A	Horizon Land
117 - 03 - 002	Horizon Land
117 - 03 - 003	June Audrey Dieckmann
117 - 03 - 004	Henry Sauro
117 - 03 - 005	Ralph A. Marmor
117 - 03 - 006	Robert W. Rice
117 - 03 - 007	Anne Ruth Erickson
117 - 03 - 008	Richard R. Hertzler
120 - 24 - 001	John Magoffin
120 - 24 - 003	Faye Smith
120 - 24 - 005	Charles H. Prude

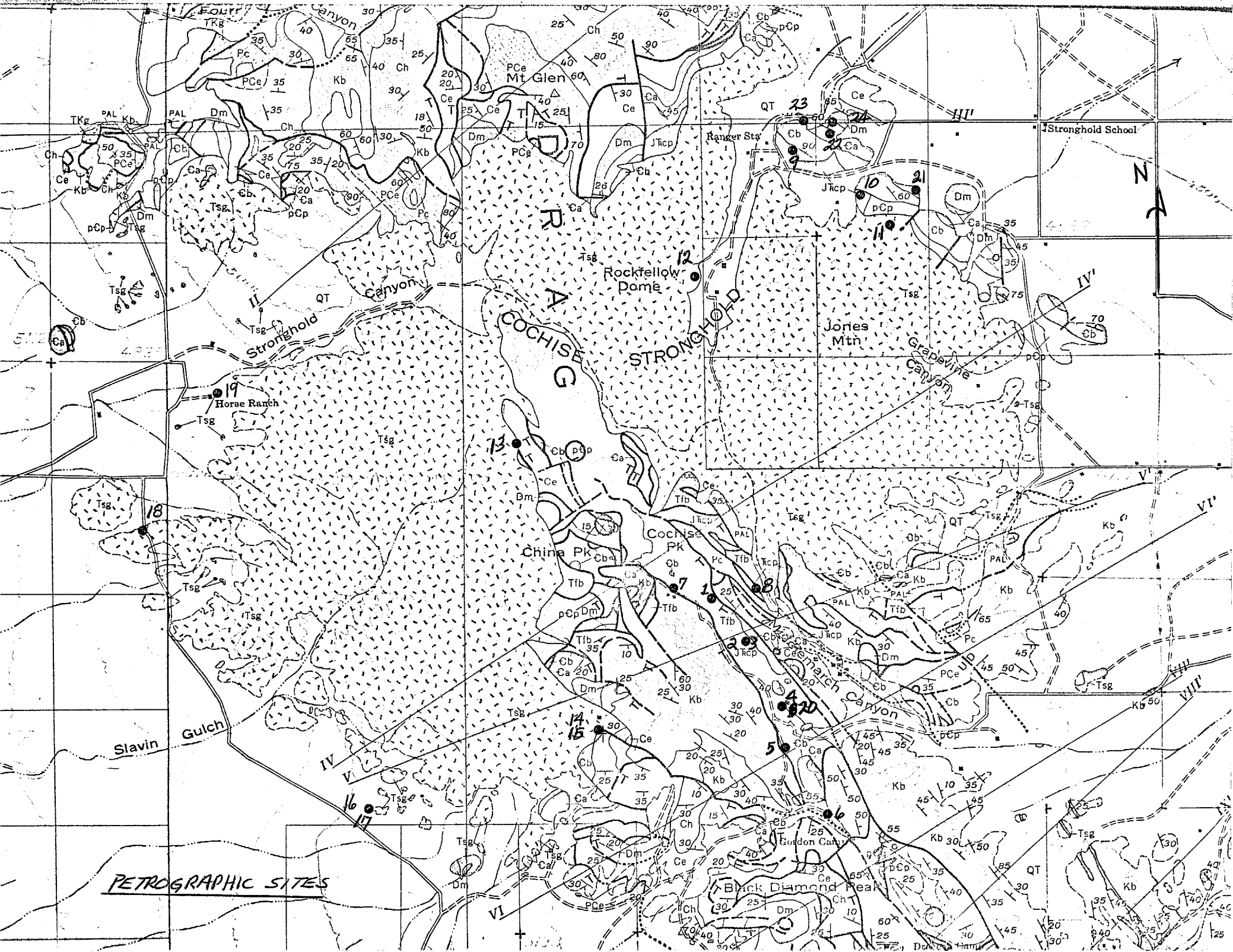
OWNERSHIP MAP
P.D.P. STRONGHOLD PROJECT

COCHISE COUNTY, ARIZONA

Scale 1:24,000

R.B.C. Aug.1975

MVK-2882


PETROGRAPHIC SITES
Mt Glen
Ranger Sta
Stronghold School
Rockfellow Dome
Jones Mtn
Grapevine Canyon
Stronghold Canyon
COCHISE STRONGHOLD
Horse Ranch
China Pk
Cochise Pk
Cochise Canyon
Slavin Gulch
Gordon Canyon
Black Diamond Peak
N

Petrographic Samples.

SH-1 Cochise Peak g.m. at K-M drill site 1. Weak Fe-stain & manganese blotches. Some nestiveite? Weak argillic-clay development

SH-2. Cochise Peak g.m at K-M undrilled site. Weakly altered, minor Fe-Mn, more coarse biotite.

SH-3. Cochise Peak g.m., coarse, ~~weak~~ strong Fe stain & in sites. Same sample area as SH-2.

SH-4 Cochise Peak g.m., coarse, weak Fe stain & in sites.

SH-5. Cochise Peak g.m., coarse, weak Fe stain.

SH-6A Cochise Peak g.m. very coarse, fresh, coarse (AX)

SH-6B Cochise Peak g.m. weak epidote alteration — fine grain

SH-7 Cochise Peak g.m., coarse, weakly altered, Fe on fracture & in sites.

SH-8 Cochise Peak g.m. (?), chilled phase (most probably part of Stronghold latite.)

SH-9 Cochise Peak g.m., essentially fresh, weak Fe stain & epidote

SH-10 Cochise Peak g.m., " " " " " " "

(SH9 = assay SH-1, SH-10 = assay SH-2).

SH-11 Stronghold granite, subvolcanic, latitic. (SH-11 = SH-3 assay).

SH-12 Stronghold granite, subvolcanic, latitic. (Near age-dated site).

SH-13. Stronghold granite, latitic. Abril Mine area, under tactite.

SH-14. Stronghold granite, coarse latitic, Sheepshead pass. 1' from quartzite. (intrusive?)

SH-15 Stronghold granite, coarse latitic " " 50' " " .

SH-16 Stronghold granite, coarse.

SH-17 Stronghold granite, latitic like in SH-16.

SH-18. Stronghold granite, very coarse, pinkish, prob. more biotite books.

SH-19 Stronghold granite, very coarse, not pinkish as 18. w/ biotite books.

SH-20 tactite, sandy-quartzitic member of Bisbee Fm. (same area as SH-4).

SH-21 tactite, Abrigo (Same as assay SH-5)

SH-22 tactite, Abrigo (Same as assay SH-6)

SH-23 tactite, Abrigo (Same as assay SH-7)

SH-24 vanadite tactite & silicification (Same as assay SH-8).

WESTERN PETROGRAPHIC

A Complete Service and Research Organization for Field and Laboratory Geology

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COMPANY ASARCO Incorporated

ADDRESS P.O. Box 5749 (1150 N. 7th Ave)

Tucson, Az ZIP 85703

SUBMITTED BY J. W. Sell PHONE ~~[illegible]~~ 792-3010

NO. OF SAMPLES 25

DATE SHIPPED June 27, 1975

SHIPPED VIA. Hand carried

JOB NUMBER

DATE RECEIVED

PAGE 1 OF 1

DATE NEEDED

P.O. NO.

☐ CHECK FOR RUSH SERVICE

EXCESS SAMPLE MATERIAL

☒ RETURN ☐ DISCARD

NOTE: IF THIN SECTION ARE SUBMITTED ALREADY SLABBED, THE SLABS SHOULD BE APPROX. 3/8 INCH THICK.

		THIN SECTIONS									STAIN, ETC.		POL. SECT.			SPECIAL						MICROSCOPIC ANALYSIS				PHOTO.		INSTR. ANALYS		
	SAMPLE NO.	STANDARD THIN SECTION	PRECUT TO SIZE	NO COVERGLASS	1 x 3" THIN SECTION	1½ x 3" THIN SECTION	2 x 3" THIN SECTION	K-FELDSPAR STAIN	CALCITE STAIN	BLUE-DYED EPOXY IMPREG.	POLISHED SECTION	POL. THIN SECTION	POL. THIN SECT. (27x46mm)	POL. THIN SECT. (1½" RD)	GRAIN MOUNT	SLAB ONLY (NO SECTION)	POLISH SLAB	1 ARROW ORIENTATION	IMPREGNATION W/ EPOXY	GRINDING IN OIL	PETROGRAPHIC DESCRIPT.	ALTERATION DESCRIPTION	POL. SECT. DESCRIPTION	MAJOR MINERALS DETERM'D	ALL MINERALS DETERM'D	POINT COUNT	MICROGRAPHS (COLOR)	MICROGRAPHS (B & W)	INFRARED ANALYSIS	X-RAY DIFFRACTION	DEBYE-SCHERRER	SPECIAL INSTRUCTIO
1	SH-1	✓																													
2	thru	✓																													
3	-25	✓																													
4																															
5																															
6	CA WB																														
7																															
8																															
9																															
10																															
11																															
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