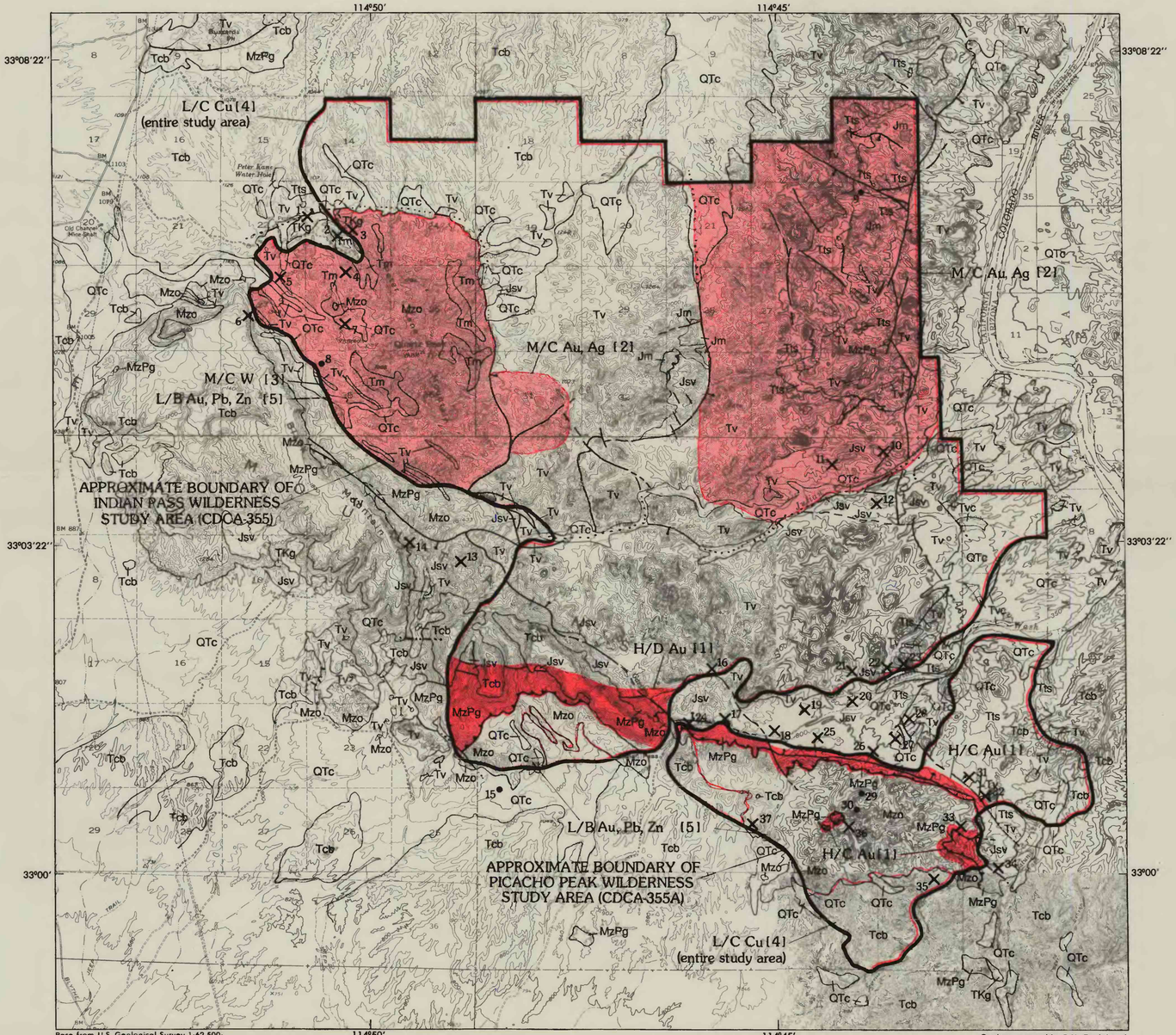
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

BULLETIN 1711-A
PLATE 1



Base from U.S. Geological Survey 1:62,500: Pichacho, 1951; Quartz Peak, 1953; Olgilby, 1963. 1:24,000: Picacho Peak, 1965

Geology mapped by R.M. Tosdal and D.R. Sherrod, 1982-1983, and G.B. Haxel, 1977

14°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1987

SCALE 1:24 000
1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER

CONTOUR INTERVAL 40 AND 50 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

CALIF
AREA OF MAP

MINERAL RESOURCE POTENTIAL MAP OF THE INDIAN PASS AND PICACHO PEAK WILDERNESS STUDY AREAS, IMPERIAL COUNTY, CALIFORNIA

EXPLANATION

- Area with high resource potential
- Area with moderate resource potential
- Area with low resource potential

Commodities

Au	Gold
Ag	Silver
Cu	Copper
Pb	Lead
W	Tungsten
Zn	Zinc

LEVELS OF RESOURCE POTENTIAL

H	High mineral resource potential
M	Moderate mineral resource potential
L	Low mineral resource potential
U	Unknown mineral resource potential

LEVELS OF CERTAINTY

A	Available data not adequate
B	Data indicate geologic environment, and suggest level of resource potential
C	Data indicate geologic environment, indicate resource potential, but do not establish activity of resource-forming processes
D	Data define geologic environment and level of resource potential and indicate activity of resource-forming processes in all or part of area

LEVEL OF RESOURCE POTENTIAL

	A	B	C	D
U/A	UNKNOWN POTENTIAL			
H/B		HIGH POTENTIAL	HIGH POTENTIAL	HIGH POTENTIAL
M/B		MODERATE POTENTIAL	MODERATE POTENTIAL	MODERATE POTENTIAL
L/B		LOW POTENTIAL	LOW POTENTIAL	LOW POTENTIAL
L/C				LOW POTENTIAL
L/D				LOW POTENTIAL
N/D				NO POTENTIAL

LEVEL OF CERTAINTY

MINES, PROSPECTS, AND MINERALIZED OUTCROPS
(None have identified resources)

1. Thedford prospect
2. Burslem prospect
3. Burslem prospect
4. Burslem prospect
5. Thedford prospect
6. Cinder pit (name unknown)
7. Miller prospect
8. Quartz outcrop
9. Shear zone outcrop
10. Prospect (name unknown)
11. Pomeroy Dot prospect
12. Pomeroy prospect
13. Prospect (name unknown)
14. Singer Mucho Labor prospect
15. Dumortierite occurrence
16. Prospect (name unknown)
17. H.R.J. Research prospect
18. H.R.J. Research 51 prospect
19. Prospect (name unknown)
20. Butler prospect
21. Gavilan prospect
22. Gavilan prospect
23. Gavilan prospect
24. Harp prospect
25. Wallace prospect
26. Wallace prospect
27. Wallace-Spencer mine
28. Wallace prospect
29. Quartz-schist outcrop
30. Quartz-schist outcrop
31. Zimmer prospect
32. Zimmer prospect
33. Wallace prospect
34. Zimmer prospect
35. Quartz-schist outcrop
36. Quartz-schist outcrop
37. Dumortierite occurrence

CORRELATION OF MAP UNITS

QTc		QUATERNARY AND (OR) TERTIARY	QUATERNARY AND (OR) TERTIARY
Tcb	Pliocene (?) to middle Miocene	PLIOCENE(?) AND MIOCENE	TERTIARY(?) AND TERTIARY
Tvc	Lower Miocene (?)	MIOCENE(?)	
Tv		MIOCENE	
Tm		OLIGOCENE	
Tts	Lower Oligocene		
TKg		TERTIARY AND (OR) CRETACEOUS	CENOZOIC AND (OR) MESOZOIC
Mzo		JURASSIC(?)	MESOZOIC
Jm			
Jsv			
MzPg			MESOZOIC AND (OR) PROTEROZOIC

DESCRIPTION OF MAP UNITS

QTc **Conglomerate and sandstone (Quaternary and (or) Tertiary)**—Unconsolidated to poorly consolidated conglomerate, sandstone, and siltstone; includes interbedded fluvial conglomerate near Colorado River

Tcb **Conglomerate and basalt (Pliocene? to middle Miocene)**—Moderately indurated, heterolithic conglomerate, sandstone, breccia, and interbedded basalt; Crowe (1978) reported a 13.1±2.5-Ma potassium-argon age for basalt

Tvc **Volcaniclastic conglomerate (Lower Miocene?)**—Well-indurated conglomerate and sandstone composed almost exclusively of subrounded to subangular clasts of silicic volcanic rocks in a volcaniclastic matrix

Tv **Volcanic and hypabyssal rocks (Miocene and Oligocene)**—Silicic and intermediate volcanic hypabyssal rocks and minor volcaniclastic sedimentary rocks; a potassium-argon sanidine age of 26.2±1.6 Ma was reported by Olmsted and others (1973) for welded tuff that is equivalent to the middle part of the unit

Tm **Monzogranite (Oligocene)**—Fine- to coarse-grained porphyritic monzogranite and minor aplite; correlated with subvolcanic rocks with potassium-argon hornblende, biotite, and sanidine ages between 21 and 26 Ma (Armstrong and Suppe, 1973; Miller and Morton, 1977; Crowe and others, 1979) that are exposed along the length of the Chocolate Mountains

Tts **Tuff and tuffaceous sandstone (Lower Oligocene)**—Thin-bedded white tuff, tuffaceous sandstone and siltstone, and a basal regolith of red breccia and conglomerate

TKg **Granite porphyry (Tertiary and (or) Cretaceous)**—Unfoliated to moderately foliated granite porphyry equivalent to the granite of Marcus Wash of Haxel and others (1985)

Mzo **Orocopia Schist (Upper Mesozoic)**—Micaceous quartzofeldspathic schist, interlayered mica schist, and subordinate metabasite, metachert, siliceous marble, and metaultramafic rock; protolith has a Late Jurrasic minimum age (Mukasa and others, 1984)

Jm **Monzogranite and diorite (Jurrasic?)**—Compositionally heterogeneous diorite intruded by slightly porphyritic biotite monzogranite

Jsv **Sedimentary and volcanic rocks (Jurrasic?)**—Weakly to moderately metamorphosed sedimentary and intermediate and silicic volcanic rocks of the Winterhaven Formation (Haxel and others, 1985) and underlying unnamed ash-flow tuffs; ash-flow tuffs are lithologically similar to quartz porphyry metavolcanic rocks of Early and Middle Jurassic age in Arizona and Sonora, Mexico (Anderson and Silver, 1976; Wright and others, 1981)

MzPg **Gneiss (Mesozoic and (or) Proterozoic)**—Biotite quartzofeldspathic gneiss, less common amphibolite gneiss, minor augen gneiss, rare muscovite gneiss and pegmatite

Contact—Solid where contact located with confidence; dashed where inferred or uncertain

Fault—Dashed where approximately located; dotted where concealed

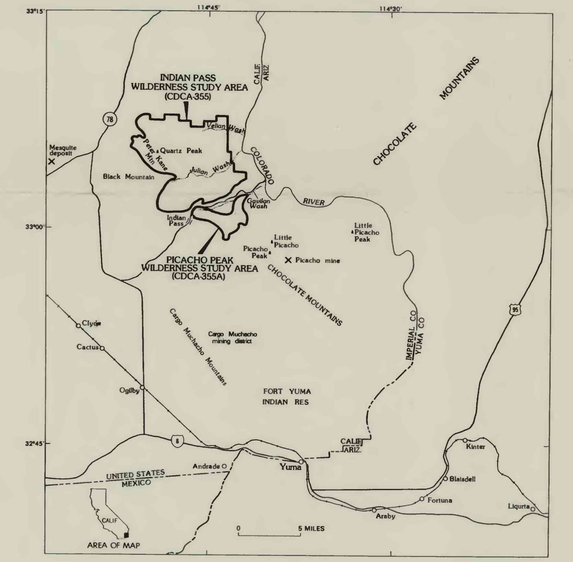
Thrust fault—Sawteeth on upper plate

Tectonic slide—Domes on upper plate

Mine without identified resources

Prospect without identified resources

Mineralized outcrop



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