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A listing and map showing molybdenum occurrences in Arizona

by

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INTRODUCTION

This report is a summary of molybdenum occurrences throughout Arizona prepared in part by the Arizona Bureau of Geology and Mineral Technology under a contract issued by the U.S. Geological Survey. Each entry in the included table (table 1) is listed in a form abbreviated from that in a prior publication wherein the entire MRDS (Mineral Resource Data System) record was published (see Wilt and others, 1984). The molybdenum occurrences shown on the accompanying 1:1,000,000-scale map (plate 1) are grouped by mineral, and by the age of the rocks or deposits which the molybdenum mineral(s) are in or associated.

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Table 1.-- Listing of Molybdenum occurrences in Arizona. Locality numbers are keyed to those shown on plate 1.

Locality number	County	District	Deposit Name	Township	Range	Section	1/4	Geologic associations	Molybdenum production	References
				Molybdenite in deposits in or associated with Precambrian host rocks						
1	Gila	Mazatzal Mountains	El Oso group	5 N.	10 E.	30		Tungsten veins at intersections of fissures which are intruded by pegmatite and aplite dikes. Minor amounts of molybdenite occur in quartz, with wolframite crystals coated with scheelite	--	Dale, 1961, p. 11-13; U.S. Geological Survey Mineral Resource Data System (MRDS) # MD03020
2	Gila	Pinal Mountains	Samsel mine	2 S.	14 E.	11	NW	Tungsten quartz vein is in shear zone. Near east-northeast Laramide dikes	--	Wilson, E. D., 1941, p. 28-29; Dale, 1961, p. 7-8; MRDS # M000364
3	Gila	Sierra Ancha	Hope mine	6 N.	14 E.	30	NE	Uraninite in brecciated hornfels of Dripping Spring Quartzite above diabase. Molybdenite rosettes occur in vugs on silicate minerals and some molybdenite is associated with pyrite and pyrrhotite	--	Granger and Raup, 1959, p. 464-465; 1969, p. 44-54; MRDS # M002877
4	Gila	Sierra Ancha	Suckerite mine	6 N.	13 E.	24	SC	Uraninite in bedding plane faults in Dripping Spring Quartzite above diabase. Molybdenite occurs with other base-metal sulfides	--	Granger and Raup, 1959, p. 469-470, 1969, p. 86; MRDS # MD03112
5	Gila	Sierra Ancha	Workman Creek mine	6 N.	14 E.	19	C	Uraninite in brecciated above hornfels of Dripping Spring Quartzite diabase. Molybdenite occurs in mobilized hornfels facies along with base-metal sulfides	--	Granger and Raup, 1959, p. 470-472; 1969, p. 86; MRDS # MD02876
6	Maricopa	Cave Creek	Gold Cliff mine	6 N.	4 E.	11		Tungsten in quartz veins at intersections of northeast and north-northeast fissures with chalcopyrite and minor molybdenite	--	Schaller, 1932, p. 234; Wilson, E. D., 1941, p. 26; MRDS # D000773
7	Yavapai	Bradshaw Mountains	Cornucopia mine	11 N.	1 W.	33	NC	Gold and molybdenite in vein in Brady Butte porphyritic granodiorite	--	Wilson and others, 1937, p. 55; Anderson and Blacet, 1972; MRDS # MD04333
8	Yavapai	Camp Wood	Black Pearl mine	15 N.	7 W.	7, 8, 18		Tungsten in quartz fissure vein in granite to alaskite with scheelite, chalcopyrite, and molybdenite.	--	Dale, 1961, p. 43; Wilson, E. D., 1941, p. 21; MRDS M003351
9	Yavapai	Cherry Creek	Black Hawk prospect	14 N.	3 E.	16		Gold in veins in quartz diorite, with molybdenite	--	Anderson and Creasey, 1958, p. 176; MRDS # MB00020
10	Yavapai	Cleator area	Kelley mine	10 N.	1 E.	2, 3		Gold, silver, lead, and molybdenum in pegmatite cut by quartz veins	--	U.S. Bureau of Mines unpub. data; MRDS # MD02357
11	Yavapai	Groom Creek	Prescott area	13 N.	2 W.			Flakes of molybdenite in quartz veins in Prescott Granodiorite	--	Kreiger, 1965, p. 105; MRDS # M030509
12	Yavapai	Groom Creek	Williams (Springtime) lode mine	13 N.	2 W.	22		Copper, gold, and molybdenum in quartz veins near Government Canyon Granodiorite in Green Gulch volcanic schist	--	U.S. Bureau of Mines unpub. data; Anderson and Blacet, 1972; MRDS # MD03376
13	Yavapai	Hassayampa	(?)Arizona Central (Kentuck) mine	12 N.	1 W.	19	WC	Copper, gold, silver, and molybdenite in Crooks Canyon Granodiorite near gabbro	--	Lindgren, 1926, p. 126; Jaggar and Palache, 1905; MRDS # 003493
14	Yavapai	Hassayampa	Twin Ledge prospect	12 N.	2 W.	33		Copper, gold, silver, and molybdenite in quartz veins in Government Canyon Granodiorite	--	Kirkemo, Anderson and Creasey, 1965, p. 32; King, 1969, p. 235; Anderson and Blacet, 1972; MRDS # MD03374
15	Yavapai	Hassayampa	Venasia	12 N.	2 W.	12		Molybdenite in quartz veins in Crooks Canyon Granodiorite	--	Lindgren, 1926, p. 24, 26, 114-126; Anderson and Blacet, 1972; MRDS # B00166
16	Yavapai	Kirkland	Fiesta group	12 N.	4 W.			Gold, silver, cerussite, and molybdenite(?) in quartz veins in quartz porphyry	--	Hicks, 1979, p. 25; MRDS # 030501
17	Yavapai	Peck	Blue Bird mine (Gold King group)	11 N.	1 W.	35		Molybdenite in gold, silver, and base-metal veins in Iron King Volcanics of Big Bug Group of Yavapai Schist	--	Anthony, Williams, and Sideaux, 1977 p. 142; Jaggar and Palache, 1905; MRDS # M800050
18	Yavapai	White Picacho	Picacho View mine	7 N.	3 W.	10	NW	Pyrite, molybdenite, galena, sphalerite, and rare earth elements in feldspar-bearing Precambrian pegmatites in Precambrian quartz-mica schist and amphibolite schist	--	Jahns, 1952, p. 90-93; MRDS # M003390
				Molybdenite in deposits in or associated with Jurassic host rocks						
19	Cochise	Warren	Bisbee Queen shaft	23 S.	24 S.			Rare molybdenite as films on pyritic ore. (See also no. 333)	--	Anthony, Williams, and Sideaux, 1977, p. 142, 156; Emmons and Becker, 1885; MRDS # K002911

Table 1.-- (cont'd)

20	Pima	Baboquivari	Arizona Molybdenum mine	20 S.	7 E.	2		Molybdenite and base-metal sulfides in pegmatitic veins and dikes in granitic to granodioritic rocks	Minor Mo conc. (1917)	Keith, S. B., 1974, p. 107; Haxel and others, 1980; MRDS # M000929
21	Pima	Baboquivari	Big Banana mine	17 S.	7 E.	32	NC	Tungsten, copper, molybdenite,and fluorite in fissure vein in altered intrusive rhyolite of the Ali Molina Formation	--	Keith, S. B., 1974, p. 108; Dale, Stewart, and McKinney, 1960, p. 67-69; MRDS # M050133
22	Pima	Baboquivari	Gold Bullion mine	20 S.	7 E.	2		Gold-pyrite quartz veins in fissures cutting pegmatites and metasediments	Several hundred tons high-grade molybdenum ore	Keith, S. B., 1974, p.109; King, 1969, p. 236; Anthony , Williams, and Bideaux, 1977 p. 141; MRDS # M050222
23	Pima	Cababi	Mildren mine	16 S.	4 E.	16	EC	A molybdenite specimen found on Beacon claim in gold-quartz vein in brecciated fissure vein cutting andesite. (See also no. 193)	--	Williams, 1962, p. 25, 46, 91; MRDS # M050610
24	Santa Cruz	Harshaw	Thunder mine	23 S.	16 E.	7	N	In shear zones in Triassic-Jurassic granite porphyry which intrudes Mt. Wrightson Formation. (See also no. 357).	--	Schrader, 1915, p. 256-257; MRDS # M030390
25	Yuma	Middle Camp	(?)Sugarloaf Peak area	3 N.	20 W.	3		Geochemical molybdenum anomaly in intense quartz-sericite-pyrite alteration in Dome Rock metamorphics. May be Laramide.	--	Crowl, 1979; Heineman, 1935, p. 138-139; Kerr, 1946; MRDS # D002156
								Molybdenite in post-Paleozoic uranium-bearing deposits on the Colorado Plateau		
26	Coconino	Grand Canyon	Orphan Lode mine	31 N.	2 E.	14	WC SW	Uraninite and base-metal sulfides in permeable areas of collapse breccia pipe. (See also nos. 190, 393)	--	Kofford, 1969, p. 190-194; Granger and Raup, 1962, p. 10; Gornitz and Kerr, 1970; MRDS # M001823
								Molybdenite associated with Laramide (71 to 50 m.y.) porphyry copper deposits		
27	Cochise	Cochise (Johnson Camp)	Johnson Camp mine	15 S.	22 E.	23	SE	Tungsten-copper-zinc skarn deposits are in middle member of Abrigo Formation near east side of 57-m.y.-old Texas Canyon Quartz Monzonite. Secondary copper oxide deposits in lower Abrigo Formation (See also no. 338)	--	Keith, S. B., 1973, p. 57; Clayton, 1978, p. 17-24; Backer, A., 1932; others, 1973, p. 21; Marvin, Naeser, and Mehnert, 1978, p. 250; Copper and Silver, 1964, p. 163-181; MRDS # M050007
28	Cochise	Cochise	Keystone mine (Hagerman mine) (Bannon group)	15 S.	22 E.	36	NW	Spotty molybdenite in Abrigo Formation in base-metal sulfide skarn of 53-m.y.-old Texas Canyon Quartz Monzonite	--	Keith, S. B., 1973, p. 57; Cooper and Silver, 1964, p. 173-174; Marvin and others, 1973, p.21; Marvin, Naeser, and Mehnert, 1978, p. 250; MRDS # M050006
29	Cochise	Cochise	Mammoth mine	15 S.	22 E.	23	SW	Molybdenite flakes disseminated through copper and zinc sulfides and skarn in top of middle member of Abrigo Limestone	--	Keith, S. B., 1973, p. 58; Cooper and Silver, 1964, p. 168; MRDS # M241085
30	Cochise	Cochise	Moore mine	15 S.	22 E.	23	SW	In fold flexures in skarn in an erratically garnetized and permeable limestone beneath an impermeable white tactite at the top of the middle member of Abrigo Limestone	--	Keith, S. B., 1973, p. 58; Cooper and Silver, 1964, p. 163-165; MRDS # M050014
31	Cochise	Cochise	Republic mine	15 S.	22 E.	36	EC	At fold flexures and intersection of northeast faults with favorably garnetized limestone beds in middle member of Abrigo Limestone below impermeable white tactite beds	--	Keith, S. B., 1973, p. 59; Cooper and Silver, 1964, p. 149, 165-168; MRDS # M050513
32	Cochise	Cochise	St. George mine	15 S.	22 E.	36	NW	Scarce molybdenite in garnet and lime silicates in copper and zinc sulfides in skarns in middle Abrigo Formation. Oxidized copper in Martin Formation	--	Keith, S. B., 1973, p. 59; Cooper and Silver, 1964, p. 174-175; MRDS # M050004
33	Gila	Banner	Chilito mine (Schneider group)	4 S.	15 E.	22		Disseminated copper sulfide in fractured Precambrian Apache Group sediments, diabase sills, and 1,400-m.y.-old granite, and in probable 63-m.y.-old quartz diorite porphyry	--	Eastlick, 1968, p. 1191-1210; Banks and Krieger, 1977, p. 3; Koski, 1978; Perry, 1968, 1969; MRDS # M000503
34	Gila	Banner	Christmas mine (Red Bird shaft) (Hackberry shaft)	4 S.	16 E.	29	NW	Disseminated along fractures in limestone beds garnetized by contact metamorphism near 62-m.y.-old quartz diorite stock	--	Eastlick, 1968, p. 1191-1210; Peterson and Swanson, 1956, p. 151-171; Tainter, 1948; Willden, 1964; p. 50-56; Koski, 1978; Perry, 1968, MRDS # M000635
35	Gila	Banner	79 mine	4 S.	15 E.	21	SE	Very rare molybdenite occurs as disseminated grains in the rhyodacite porphyry dikes. No molybdenite has been found in the lead-zinc deposit which may be the outer lead-zinc zone of the Christmas and Chilito deposits (See also no. 231)	--	Keith, S. B., 1972, p. 247-264; Wilson, W. E., 1972, p. 265-272; Kiersch, 1951, p. 66-83; 1949, p. 24-39; 1947; Banks and Krieger, 1977; MRDS # M000500

Table 1.-- (cont'd)

36	Gila	Miami	(?)Cactus deposit (Hamilton shaft) (Pinto shaft)	1 N.	13 E.	36		Molybdenum anomaly near supergene-enriched partly oxidized chalcocite blanket above gently dipping Cactus thrust fault with Schultze granite in vicinity	--	Arizona Bureau of Geology and Mineral Technology (ABGMT) unpub. data; Peterson, N. P., 1962, p. 95-97; MRDS # M002008
37	Gila	Miami	Castle Dome mine (Pinto Valley mine)	1 N.	14 E. between Copper Cities and Inspiration			Disseminated in steep east-northeast quartz veins, in Precambrian diabase sills, and in(?) 64-m.y.-old Lost Gulch quartz monzonite. Supergene enrichment is important (See also nos. 235, 361)	946,394 lbs (1948-1975)	Peterson, N. P., and others, 1951, Peterson, N. P., 1950, p. 820-840; 1952, p. 129-131; 1948, p. 195-205; MRDS # M002863
38	Gila	Miami	Copper Cities mine	1 N.	15 E.	7	WC	Disseminated in highly fractured zone in 64-m.y.-old Lost Gulch Quartz Monzonite especially along the contact of 62-m.y.-old Schultze Granite. Secondary enrichment is greater in more permeable quartz monzonite. (See also no. 362)	1,446,184 lbs (1967-1975)	Simmons and Fowells, 1966, p. 151-156; Peterson, N. P, 1954, p. 362-377, 1967, p. 88-94; Anderson, 1968; Creasey, 1965; Creasey and Kistler, 1962; MRDS # M003145
39	Gila	Miami	Inspiration mine	1 N.	14 E.	23-26		Disseminated in small fractures in porphyritic phase of 62-m.y.-old Schultze Granite, which is intruded along northeast schistosity in Pinal Schist. Supergene enrichment made high-grade chalcocite deposit. (See also nos. 340, 383.)	3,558,125 lbs (1958-1973)	Olmstead and Johnson, 1966, p. 143-150; Peterson, N. P., 1962; Anderson, 1968; MRDS # D000316
40	Gila	Miami	Miami mine	1 N.	14 E.	23-26		Is part of same ore body as Inspiration mine but owned by different company	2,177,876 lbs (1949-1959)	Peterson, N. P., 1962; Olmstead and Johnson, 1966, p. 143-150 MRDS M003084
41	Gila	Pinal Mountains	Madera prospect (Ellis vein)	1 S.	14-1/2 E.	18, 19	W	Disseminated in northwest fractures between 62-m.y.-old Schultze Granite and Madera diorite. (See also no. 363.)	--	Peterson, N. P., 1963, p. 14; ABGMT unpub. data; MRDS # M000365
42	Gila	Summit	Bronx property	1 S.	14 E.	6	S line	Molybdenite with chalcopyrite, pyrite, ferrimolybdenite, cerussite, azurite, and malachite, in shear zone or stockwork in Tertiary (58 to 62 m.y.-old) Schultze Granite. Large foliated masses of molybdenite occur with quartz between the middle part of the northeast veins and the muscovite envelope. (See also no. 364.)	50 t high-grade molybdenite stored but washed downstream in flood early in World War I	Norvill, 1939; Peterson, N.P., 1962, p. 133-134; 1963, p. 16-17; 1969, p. 235; Creasey and Kistler, 1962; King, 1970; MRDS # M001974
43	Gila	Summit	Powers Gulch area	Near northwest corner of Pinal Ranch quadrangle				Small scattered knots of molybdenite occur in glassy quartz veins	--	Peterson, N. P., 1962; Kerr, 1946;
44	Gila	Summit	Roscoe group	Northeast of Bronx property				Copper and molybdenite in veins in granite (probably the Schultze Granite of Tertiary (58 m.y. old) age		King, 1969, p. 235; MRDS # D000317
45	Graham	Lone Star (Safford)	Dos Pobres deposit	5 S.	26 E.	28		Disseminated in fracture intersections in Cretaceous andesite and 58 to 62-m.y.-old monzonite porphyry	--	ABGMT unpub. data; Greeley, 1978, p. 83-87; Langton and Williams, 1982; MRDS # M001628
46	Graham	Lone Star	Safford mine	6 S.	27 E.	5		Disseminated in Cretaceous porphyritic andesite where northeast faults and shears were intruded by rhyolite, latite, dacite, and 58-m.y.-old quartz diorite. 53-m.y.-old mineralization		Robinson and Cook, 1966, p. 250-266; Dunn, 1978,p. 9-15; Hornail, 1978, p. 241-243; MRDS # M001755
47	Graham	Lone Star	Sanchez mine	6 S.	27 E.	25, 26		Disseminated in quartz monzonite porphyry stock and especially in nearby andesites	--	Dunn, 1978, p. 9-15; Robinson and Cook, 1966; MRDS # M000791
48	Graham	Lone Star	San Juan mine	6 S.	26 E.	2		Disseminated in fractures and veins in 53-m.y.-old San Juan Quartz Monzonite porphyry stock, intruded into east-northeast shear zone.	--	Robinson and Cook, 1966; Dunn, 1978, p. 9-15; Blake, 1971; Hornail, 1978, p. 241-243; MRDS # M001715
49	Graham	Lone Star	Sol prospect	7 S.	28 E.	19		Disseminated in 60-m.y.-old diorite porphyry	--	Yarter, 1981; Dunn, 1978, p. 9-15;
50	Greenlee	Morenci	Morenci mine	4 S.	29 E.	8, 9, 15, 16		Disseminated in 55-m.y.-old quartz monzonite porphyry intruded into northeast Precambrian zone of weakness. 51-m.y.-old breccia pipes are in granite porphyry. Supergene enrichment is in porphyry, Precambrian plutonics, and Paleozoic limestones and quartzites. (See also no. 239.)	--	Moolick and Durek, 1966, p. 221-231; Lindgren, 1905a, 1905b; Butler and Wilson, 1938, p. 72-80; Reber, 1916, p. 529-573; Bennett, 1975; Langton, 1973; McDowell, 1971; MRDS # M002216
51	Mohave	Diamond Joe	American Molybdenum mine	17 N.	14 W.	29	WC	Quartz veins in 69-m.y.-old Diamond Joe quartz monzonite.	--	Anthony, Williams, and Bideaux, 1977, p. 141; Frondel and Wickman, 1970; MRDS # M030374
52	Mohave	Diamond Joe	Copper Canyon mines	17 N.	14 W.	19	E	Quartz veins in 69-m.y.-old Diamond Joe quartz monzonite.	--	Arizona Department of Mineral Resources, 1962; Hess, 1924, p. 13-14; MRDS # M030376

Table 1.-- (cont'd)

53	Mohave	Diamond Joe	Golden Comstock mine	17 N.	14 W.	29	EC	Quartz veins in 69- to 73-m.y.-old Diamond Joe quartz monzonite.	--	ABGMT unpub. data; Anthony, Williams and Bideaux, 1977, p. 141; MRDS # MD30346
54	Mohave	Diamond Joe	Leviathan mine	17 N.	14 W.	31	NE	Quartz veins cutting 69- to 73-m.y.-old Diamond Joe quartz diorite.	--	Hess, 1924, p. 14; King, 1969, p. 237; Anthony Williams and Bideaux, 1977; MRDS # MD03826
55	Mohave	Diamond Joe	Old Mill Site prospect	17 N.	14 W.	28	SW	Northwest shear zone in 72- to 73-m.y.-old Diamond Joe quartz monzonite porphyry stock	--	ABGMT unpub. data;
56	Mohave	Diamond Joe	Pasadena mine	17 N.	14 W.	30		Molybdenite and pyrite in Precambrian rhyolite and gneisses near Leviathan mine in Tertiary-Cretaceous quartz diorite.	--	ABGMT unpub. data; MRDS # MD04447
57	Mohave	Diamond Joe	(?)Waldron and Venture mines	17 N.	14 W.	29	C	Gold, silver, copper, molybdenum, lead, and zinc, in Diamond Joe quartz monzonite porphyry	--	ABGMT unpub. data; MRDS # MD30351
58	Mohave	Diamond Joe	Yellow Basin area (includes Leviathan)	17 N.	14 W.	20	W	Molybdenite and powellite(?).	--	Hicks, 1979, p. 18; MRDS # MD03826
59	Mohave	Eldorado	Black Mountain prospect (Downey and Galen)	27 N.	21 W.			Molybdenite, chalcocite, chrysocolla, and molybdenum geochemical anomaly. Cretaceous(?) intrusive.	--	ABGMT unpub. data; Blacet, 1975; MRDS # MD30369
60	Mohave	Gold Basin	O.K. claim	28 N.	18 W.	28	NW	Gold, tungsten, galena, and molybdenite in fissure veins in Precambrian granite with Late Cretaceous(?) porphyritic quartz monzonite nearby. Uncertain age.	--	Lemmon and Tweto, 1962; Blacet, 1975; Anthony, Williams, and Bideaux, 1977; MRDS MD04093
61	Mohave	Maynard	Blue Bell group	19 N.	15 W.	1, 2, 12		Pyrite, molybdenite, tungsten, and bismuth in quartz veins in northwest fissures in Precambrian granite gneiss and Cretaceous granite.	--	Dale, 1961, p. 91-93; MRDS # MD03906
62	Mohave	Maynard	Century mine	20 N.	15 W.	12	W	Pyrite and molybdenite in quartz veins in 65-m.y.-old quartz monzonite.	--	Vuich, 1974; Malach, 1977, p. 37; MRDS # MD30356
63	Mohave	Maynard	Gold Metal mine	20 N.	15 W.	24	NW	Disseminated in northeast fractures in Soap Wash fault zone in 65-m.y.-old quartz monzonite.	--	Malach, 1977; Vuich, 1974; MRDS # MD30357
64	Mohave	Maynard	Laxton property	20 N.	15 W.	26, 27	NE	Disseminated in pyritic quartz veins with tungsten, molybdenite, copper sulfides, galena, and sphalerite in 65-m.y.-old quartz monzonite.	--	Wilson, E. D., 1941, p. 15; Dale, 1961, p. 91; Vuich, 1974; MRDS # MD01794
65	Mohave	Maynard	Telluride Chief mine (Standard Minerals mine)	20 N.	15 W.	13	SE	Molybdenite, tungsten, gold, and silver in quartz veins in northeast fissures in 68-m.y.-old granite and pegmatite	Some production in World War I	Hewett and others, 1936, p. 16; Vuich, 1974; Malach, 1977, p. 60; King, 1970; Hicks, 1979, p. 19; MRDS # MD03914
66	Mohave	Maynard	Prospect west of Standard Minerals mine	20 N.	15 W.	13	SW	Pyrite, chalcopyrite, and molybdenite in quartz veins in Precambrian granite near 68-m.y.-old pegmatite.	--	Vuich, 1974; MRDS # MD04049
67	Mohave	Maynard	Prospect in Soap Canyon	20 N.	15 W.	23	E	Pyrite, chalcopyrite, and molybdenite in quartz veins in Soap Wash fault(?) zone in Precambrian granite and Cretaceous quartz monzonite.	--	Vuich, 1974; Malach, 1977, p. 23; MRDS # MD30360, MD30359
68	Mohave	Maynard	Prospect west of Odle Ranch	20 N.	15 W.	26	NE	Pyrite and molybdenite in north-northeast-striking quartz veins.	--	Vuich, 1974; Malach, 1977, p. 23; MRDS # MD30361
69	Mohave	Shannon Basin (Owens)	(?)Devils Canyon area	15 N.	14 W.	14		Copper and molybdenum in quartz veins in 58-m.y.-old quartz monzonite and dacite porphyry.	--	ABGMT unpub. data; MRDS # MD30347
70	Mohave	Shannon Basin (Owens)	Wikieup prospect	15 N.	13 W.	22, 15		Chalcopyrite and molybdenite disseminated in fractures and quartz veins in 58-m.y.-old quartz monzonite porphyry. (See also no. 365.)	--	ABGMT unpub. data; Hansen, 1977; MRDS # MD30373
71	Mohave	Wallapai (Mineral Park)	Mineral Park property Itaca Peak ore body	23 N. 23 N.	17 W. 17 W.	19 19	 W	Molybdenite, chalcopyrite, and chalcocite disseminated in 71-m.y.old Ithaca Peak quartz monzonite porphyry. Secondary enrichment. (See also nos. 243, 366.)	45,750,000 lb (1964-1979)	Eidel, Frost, and Clippinger, 1968, p. 1258-1281; Drake, 1972; Damon and Mauger, 1966; MRDS # MD04058
72	Mohave	Wallapai (Mineral Park)	Gross Copper prospects	23 N.	18 W.	25	NC	Disseminated in 71-m.y.-old Ithaca Peak granite.	--	Schrader, 1909, pl. 1; Dings, 1951, p. 154-155; Damon and Mauger 1966; MRDS # MD04206
73	Mohave	Wallapai (Mineral Park)	Gross Molybdenite prospects	23 N.	18 W.	25	C	Disseminated in quartz veinlets in 71-m.y.-old Ithaca Peak granite.	--	Dings, 1951, p. 154-155; Damon and Mauger, 1966; MRDS # MD04207
74	Mohave	Wallapai (Mineral Park)	Turquoise Mountain prospects	23 N.	18 W.	25	E	Molybdenum geochemical anomalies in 71-m.y.-old Ithaca Peak granite.	--	Eidel, Frost, and Clippinger, 1968, p. 1258-1291; Damon and Mauger, 1966; MRDS # MD30365
75	Mohave	Wallapai (Chloride)	Samoa mine	23 N. 23 N.	18 W. 17 W.	1 6	SE SW	Molybdenite in cross veinlets in granite 71-m.y.-old Ithaca Peak granite is nearby. No copper sulfides.	--	Schrader, 1909, p. 51-80; 1907, p. 63-64; Dings, 1951, p. 147; Damon and Mauger, 1966; MRDS # MD04035

Table 1.-- (cont'd)

76	Pima	Ajo	New Cornelia open pit mine (Ajo mine)	12 S.	6 W.	22 23 26 27	SE SW NW NE	Disseminated in 63-m.y.-old Cornelia quartz monzonite and bordering quartz diorite and in microfractures in rhyolites of Concentrator (Cretaceous?) volcanics.	Mo recovery circuit to be installed	Dixon, 1966, p. 123-132; Gilluly, 1946; 1937; Damon, Mauger, and Bikerman, 1964; Pay Dirt, 1974; MRDS # M000040, M002267, M002276
77	Pima	Catalina	Pontatoc mine	13 S.	14 E.	3	NE	Chalcopyrite and molybdenite along Santa Catalina fault and subsidiary faults between Catalina gneiss and Pantano conglomerate. Laramide Leatherwood quartz diorite is in vicinity.	--	Medhi, 1964; Keith, S. B., 1974, p. 113; Banks, 1976; Creasey and others, 1978; Keith, S. B., and others, 1980; Shakel, 1974; MRDS # M050656
78	Pima	Coyote	Bonanza mine	16 S.	8 E.	26	WC	In faulted metasomatized Paleozoic limestones in contact with Laramide aplitic to pegmatitic quartz monzonite. Pluton is 58-m.y.-old two-mica granite.	--	Keith, S. B., 1974, p. 116; Keith, W. J., 1976; Carrigan, 1971; Haxel and others, 1980; Wargo, 1954; Haxel and others, 1978; MRDS # M000118
79	Pima	Helvetia-Rosemont	Broad Top mine	18 S.	15 E.	24	EC	Disseminated in strongly brecciated Permian quartzite and silicated limestone next to 56-m.y.-old quartz latite porphyry.	--	Keith, S. B., 1974, p. 124; Heyman, 1958; Drewes, 1970; Johnson, V. H., 1941; Drewes, 1971; MRDS # M050524
80	Pima	Helvetia-Rosemont	Copper World mine (Black Horse shaft, Brunswick, Owasko)	18 S.	15 E.	13	SW	Chalcopyrite and sparse molybdenite in fractured, faulted, less recrystallized limestone above alaskite aplite dike. (See also no. 345.)	--	Keith, S. B., 1974, p. 124; Schrader, 1915, p. 99-106; Drewes, 1970; Dale, Stewart, and McKinney, 1961, p. 110; MRDS # M050038
81	Pima	Helvetia-Rosemont	Cuprite mine	17 S.	16 E.	28	NW	Chalcopyrite and molybdenite in Paleozoic marble overlying quartzite, and in strongly fractured Cretaceous sediments overlying a low-angle fault adjacent to Laramide quartz diorite stock.	--	Keith, S. B., 1974, p. 125; Schrader, 1915, p. 134-136; Finnell, 1971; Browne, 1958; Lee and Borland, 1935; MRDS # M050490
82	Pima	Helvetia-Rosemont	King-Exile mine group	18 S.	15 E.	24	EC	Disseminated in northeast fractures in contact-metamorphosed limestones, along gently dipping contacts where Laramide quartz latite (quartz monzonite) porphyry intruded a low-angle fault	--	Keith, S. B., 1974, p. 126; Schrader, 1915, p. 119; Drewes, 1960; Michel, 1959; Miller, M. A., 1955, Creasey and Quick, 1955, p. 312; MRDS # M050049
83	Pima	Helvetia-Rosemont	Leader mine	18 S.	15 E.	24	NW	Disseminated in silicated Paleozoic limestone in footwall of low-angle fault with Precambrian granite in hanging wall. (See also no. 347.)	--	Keith, S. B., 1974, p. 126; Schrader, 1915, p. 106-108; Drewes, 1970; Johnson, V. H., 1941, p. 85; Creasey and Quick, 1955, p. 316-318; MRDS # M050045
84	Pima	Helvetia-Rosemont	(?)New York mine	17 S.	16 E.	29	NE	Unspecified molybdenum mineral with chalcopyrite, galena, and sphalerite in shear zones in pyrometamorphosed Paleozoic limestone along contact with Laramide quartz monzonite	--	Keith, S. B., 1974, p. 127; Schrader, 1915, p. 137-138; Finnell, 1971; Browne, J. F., 1958, p. 36; Lee and Borland, 1936; MRDS # M050489
85	Pima	Helvetia-Rosemont	Pauline mine	17 S.	16 E.	27	C	Copper-lead-zinc sulfides in garnetized Cretaceous limestone in low-angle faults near quartz latite porphyry	--	Keith, S. B., 1974, p. 128; Schrader, 1915, p. 138; Finnell, 1971; Anthony, Williams, and Bideaux, 1977, p. 141; MRDS # M050492
86	Pima	Helvetia-Rosemont	Peach-Elgin deposit (West Helvetia deposit)	18 S.	15 E.	23 15	NW SE	Copper sulfides disseminated in pyrometamorphosed Pennsylvanian and Permian limestone (Horquilla and and Concha Limestones) in breccia near low-angle faults overlying Precambrian granite and near 56-m.y.-old quartz latite porphyry	--	Keith, S. B., 1974, p. 125, 128; Heyman, 1958; Drewes, 1970; Johnson, V. H., 1941; MRDS # M050164, M050039,
87	Pima	Helvetia-Rosemont	Ridley mine	18 S.	15 E.	21	SE	Copper, lead, and zinc sulfides in Tertiary(?) sheared quartz vein, associated with Laramide aplite dikes and stocks intruded into Precambrian Continental granodiorite porphry.	--	Keith, S. B., 1974, p. 128; Schrader, 1915, p. 126-127; Drewes, 1970; Johnson, V. H., 1941, p. 96; MRDS # M050161
88	Pima	Helvetia-Rosemont	Rosemont deposit (East Helvetia deposit)	18 S.	15 E.	25 36	SE NE	Copper sulfides and molybdenite disseminated in pyrometamorphosed Paleozoic limestones near 56-m.y.-old quartz latite porphyry intruding low-angle fault between unmineralized Cretaceous Bisbee Group clastics and underlying mineralized Paleozoic carbonates.	--	Drewes, 1970; Anamax, oral commun., 1979; Lovetrom, 1978; MRDS # M000917, D000804
89	Pima	Old Baldy	Jackson mine	19 S.	14 E.	24	SE	Chalcopyrite and molybdenite in veins in 68-m.y.-old Madera Canyon Granodiorite.	--	Hicks, 1979, p. 19; Keith S. B., 1974, p. 129; Schrader, 1915, p. 171-172; MRDS # M050172
90	Pima	Old Baldy	McLeary prospects	19 S.	14 E.	35	W	Chalcopyrite and molybdenite in quartz veins in 68-m.y.-old Madera Canyon Granodiorite and Elephant Head Quartz Monzonite. (See also no. 367.)	--	Drewes, 1971b; Schrader, 1915, p. 173-175; Schrader and Hill, 1910, p. 158-159; Keith, S. B., 1975, p. 61; MRDS # M030552
91	Pima	Old Baldy	(?)Old Baldy Copper mine	19 S.	14 E.	33	SW	Chalcopyrite, galena, and molybdenum in quartz vein in lamprophyric spotted porphyry intruded into micaceous quartz schist.	--	Schrader, 1915, p. 176-177; Schrader and Hill, 1910, p. 66;
92	Pima Santa Cruz	Old Baldy	Sun Lode Sun Lode Moly	19 S. 20 S.	14 E. 14 E.	35, 36 1, 2		Molybdenite in quartz vein along fault, and in diorite.	--	King, 1969, p. 236; MRDS # D000334

Table 1.-- (cont'd)

93	Pima	Oracle (Old Hat)	Stratton mine (Old Hat mine)	11 S.	16 E.	20	NW	Chalcopyrite and molybdenite disseminated and in fracture fillings in pyrometamorphosed lower Paleozoic limestone near 75 to 64-m.y.-old Leatherwood Quartz Diorite.	--	Keith, S. B., 1974, p. 131; Braun, 1969, p. 42-43; Peterson and Creasey, 1943, p. 10; Keith and others, 1980; MRDS # M050643
94	Pima	Pima	Copper Queen mine	18 S.	13 E.	6	NW	Copper sulfide and unspecified molybdenum along bedding planes and sheared contact in pyrametamorphosed Paleozoic limestone and Precambrian granite. (See also no. 349.)	--	Keith, 1974, p. 134; Ransome, 1922, p. 407-428; Cummings and Romslo, 1950; MRDS # M050378
95	Pima	Pima	Cowboy mine	18 S.	12 E.	7	SC	Weak and spotty copper and molybdenum minerals along fault zone in Laramide granodiorite and diorite	--	Keith, S. B., 1974, p. 134; MRDS # M000097
96	Pima	Pima	Daisy mine	16 S.	13 E.	36	SW	Copper, molybdenum, zinc, and lead sulfides in pyrometamorphosed Paleozoic limestone along the contact with Laramide quartz monzonite along Mineral Hill fault.	--	Keith, S. B., 1974, p. 138; Storms and Bowman, 1957; MacKenzie, 1959; Bowman, 1963; Cooper, 1960b; MRDS # M050385
97	Pima	Pima	Esperanza open pit mine	18 S.	12 E.	8	SE	Chalcopyrite, chalcocite, molybdenite, etc., disseminated in fractures in 58-m.y.-old Ruby Star Quartz Monzonite Porphyry and Triassic Ox Frame rhyolite. Secondary enrichment is in andesite porphyry. (See also nos. 368, 385.)	38,000,000 lbs (1959-1979)	Aikin and West, 1978; Lynch, 1966; Schmitt and others, 1959; Smith, V. L., 1975; Keith, S. B., 1974, p. 135; Cooper, 1973; Shafiqullah and Langlois, 1978; Creasey and Kistler, 1962; MRDS # M050391
98	Pima	Pima	Mineral Hill mine	16 S. 16 S.	12 E. 13 E.	35 31	S WC	Copper-lead-zinc sulfides in pyrometamorphosed Paleozoic limestones at fault or fracture intersections in Laramide granitic sill near Mineral Hill fault. Spotty scheelite and molybdenite with pyrite in garnetized zones. (See also no. 244.)	--	Keith, S. B., 1974, p. 135; Ransome, 1922, p. 419-422; Mayuga, 1942; Storms and Bowman, 1957, p. 1-6; MacKenzie, 1959; MRDS # M050359
99	Pima	Pima	Mission open pit mine	16 S.	12 E.	36	EC	Copper, lead, zinc, and molybdenum sulfides disseminated in Paleozoic and Triassic sediments pyrometamorphosed to tactite, hornfels and some argillite, especially at the unconformity on the Paleozoic and along faults.	10,660,000 lbs (1964-1979)	Richard and Courtright, 1959; Kinnison, 1966; 1963; Gale, 1965; Cooper, 1960b; Keith, S. B., 1974, p. 136; Thurmond, Heinrichs, and Spaulding, 1954; MRDS # M050387
100	Pima	Pima	New Years Eve mine	18 S.	12 E.	9	SC	Chalcopyrite and molybdenite disseminated in brecciated quartzitic rocks intruded by 53 to 58-m.y.-old granodiorite or quartz monzonite porphyry.	32,000 lbs (1900-1955) (now part of Esperanza mine)	Keith, S. B., 1974, p. 135; Lynch, 1966; King, 1969; Cooper, 1973; Anderson and Kupfer, 1944, 1943; MRDS # M800304
101	Pima	Pima	Old Esperanza mine group	18 S.	12 E.	8	S	Copper, lead, zinc, and molybdenum sulfides disseminated in brecciated 53-m.y.-old quartz monzonite porphyry and Cretaceous sediments.	-- (now part of Esperanza mine)	Keith, S. B., 1974, p. 135; Tainter, 1947; Ransome, 1922; Cooper, 1973; Anderson and Kupfer, 1943, 1944; MRDS # M050391
102	Pima	Pima	Palo Verde mine (Eisenhower group) (Pima, Mission, etc.)	16 S.	12 E.	36	NC	Copper, zinc, lead, and molybdenum sulfides disseminated in fractures and veinlets in brecciated tactite of Paleozoic limestone above low-angle fault contact with Precambrian granite and near Laramide quartz monzonite intrusive.	--	Keith, S. B., 1974, p. 136; Venable, 1963; Bowman, 1963; Gale, 1965; Langlois, 1978; MRDS # M050384
103	Pima	Pima	Pima open pit mine	16 S.	12 E.	36	S	Copper, zinc, lead, and molybdenum sulfides disseminated in fractures in Paleozoic hornfels, Mesozoic clastic rocks (Rodolfo Formation), Paleozoic quartzite, and Tertiary porphyry. Host rocks were pyrometasomatized earlier, possibly by Ruby Star granodiorite, and mineralized and altered by 56-m.y.-old quartz monzonite porphyry.	16,960,000 lbs (1967-1979)	Langlois, 1978; Himes, 1973, 1972; Cooper, 1971, 1973; Journeay and others, 1958; Journeay, 1959; Lacy, 1959; MacKenzie, 1959, 1963; Mayuga, 1942; Studebaker, 1960; Thurmond and Storms, 1958; Williamson and Muehler, 1977; Keith, S. B., 1974, p. 137; Shafiqullah and Langlois, 1978; Thurmond, Heinrichs, and Spaulding, 1951; MRDS # M050388
104	Pima	Pima	San Xavier open pit mine (San Xavier north)	16 S.	12 E.	23	NE	Chalcopyrite and molybdenite disseminated in fine grained clastic rocks of Bisbee group and in Laramide (58-m.y.-old) quartz monzonite porphyry.	--	King, J. R., 1978; Greeley, 1978, p. 83; Keith, S. B., 1974, p. 138; Shafiqullah and Langlois, 1978; MRDS # M050619
105	Pima	Pima	Serrita open pit mine	18 S.	12 E.	7	SE	Copper and molybdenum sulfides in seams and fractures in Triassic to Tertiary andesite porphyry, 58-m.y.-old quartz diorite and Ruby Star quartz monzonite porphyry.	133,030,000 lbs (1970-1979)	Aiken and West, 1978; Lynch, 1966, 1967; Keith, S. B., 1974, p. 138; Cooper, 1973; Hillman, 1972; Ilse and others, 1975, 1976; Savely, 1972; Smith, V. L., 1975; Creasey and Kistler, 1962; Shafiqullah and Langlois, 1978; MRDS # M050531
106	Pima	Pima	Twin Buttes open pit	18 S.	13 E.	5	SW	Copper and molybdenum sulfides in quartz veins and disseminated in skarns of Paleozoic carbonates and limy argillaceous beds and Mesozoic arkose that had been pyrometamorphosed by 58-m.y.-old quartz monzonite porphyry. Hydrothermal alteration and sulfide mineralization are about 54 m.y.	18,170,000 lbs Mo (1965-1979)	Barter, 1978, p. 115-116; Kelly, 1977, p. 110-116, 1975, 1976; Keith, S. B., 1974, p. 138; Cummings and Romslo, 1950; Greely, 1978; Kalt, 1968; Cooper, 1973; Eckel, 1930; Houser, 1949; Shafiqullah and Langlois, 1978; Damon and Mauger, 1966; MRDS # M050530

Table 1.-- (cont'd)

								old. Secondary enrichment has upgraded the quartz monzonite porphyry. (See also nos. 245, 351)		
107	Pima	Redington	Korn Kob mine	12 S.	17 E.	14 23	SC NC	Molybdenite disseminated in skarn near garnet in pyrometamorphosed Abrigo and Martin Formations probably mineralized by Laramide (65 to 70 m.y.-old) Leatherwood quartz diorite. Later fracturing localized secondary copper minerals. (See also no. 352)	--	Wilson, J. R., 1977; Creasey and Theodore, 1975; Keith, S. B., 1974, p. 141; Anthony, Williams, and Rideaux, 1977; Raabe, 1959; Schloderer, 1974; Keith and and others, 1980; MRDS # MD00134
108	Pima	Silver Bell	El Tiro mine (now part of Silver Bell mine)	11 S. 12 S.	8 E. 8 E.	33 4	SW NW	Molybdenite in sheared and garnetized Paleozoic limestone, and Laramide alaskite, dacite porphyry, and monzonite.	--	Keith, S.B., 1974, p. 143; King, 1969; Anthony, Williams and Rideaux, 1977, p. 141; Shoemaker and Somers, 1924; MRDS M050650
109	Pima	Silver Bell	(?)Mammoth mine	12 S.	8 E.	4	NE	Base-metal sulfides and carbonates in fissure veins and disseminated in pyrometamorphosed Paleozoic limestone blocks engulfed in Laramide dacite porphyry and monzonite intrusions along a major fault zone.	--	Keith, S. B., 1974, p. 143; Richard and Courtright, 1966, 1954; MRDS # M050652
110	Pima	Silver Bell	North Silver Bell deposit	11 S.	8 E.	33 32		Chalcopyrite and molybdenite disseminated in dacite porphyry, quartz latite porphyry, and quartz monzonite porphyry with large alteration pattern. Chalcocite blanket associated with gossan.	--	Guilbert and Davis, 1979; Banks and Dockter, 1976; MRDS # MD51069
111	Pima	Silver Bell	(?)Oxide mine (now part of Silver Bell mine)	12 S.	8 E.	10 11	NE NW	Copper carbonates in garnetized Paleozoic limestone (skarn) blocks engulfed in Laramide dacite porphyry and monzonite along a major fault zone.	--	Keith, S. B., 1974, p. 143; U.S. Geological Survey, 1905; Stewart, 1912; Stevens, 1906, p. 794-795; 1908, p. 1095; Weed, 1918, p. 532 Heikes, 1906; MRDS # M050651
112	Pima	Silver Bell	Silver Bell mine	12 S.	8 E.	4 11	NW C	Chalcopyrite, molybdenite, bornite, sphalerite, and galena are disseminated in Precambrian, Paleozoic, and Mesozoic rocks intruded by Laramide (63 to 67-m.y.-old) dacite porphyry and monzonite porphyry along a major west-northwest fault zone with east-northeast tensional dikes. Most of the ore is in two tabular chalcocite blankets beneath leached limonite caps formed by secondary enrichment (See no. 248).	6,000,000 lbs (1956-1979)	Richard and Courtright, 1966, 1954; Galey, 1979; Banks and Dockter, 1976; Banks and others, 1978; Edmiston, 1971; Engineering and and Mining Journal, 1957, p. 105-106; Kerr, 1951; Mauger, 1966; Mitcham, 1955; Stewart, 1912; Watson, 1964; Keith, S. B., 1974, p. 143; Greeley, 1978; Anthony, Williams, and Rideaux, 1977; MRDS # D002948
113	Pinal	Blackwater	Mineral Butte prospect	4 S.	7 E.	1	NE	Pyrite and chalcopyrite disseminated in Precambrian Oracle Granite, and Pinal Schist and Laramide (70-m.y.-old) biotite quartz monzonite.	--	Chaffee, 1976; Balla, 1972; Kuck, 1978; Wilson, E. D., 1969; MRDS # V504079
114	Pinal	Canada del Oro	Little Hills mine	10 S.	15 E.	5 8 10		Chalcopyrite, molybdenite, galena, and sphalerite, in Precambrian Oracle Granite, Pinal Schist, gneiss, alaskite, aplite pegmatite, and monzonite porphyry dike. Primary mineralization occurred after first movement on Mogul fault and before Tertiary rhyolite dikes. Presently mined oxide ore (chrysocolla, malachite, azurite, etc.) resulted from percolation of copper-bearing groundwaters through brecciated horsetails and sheare of Mogul fault.	--	Darning, 1972; Darning and Davis, 1978; Jinks, 1961; Wallace, 1951, 1955; MRDS # M030486
115	Pinal	Casa Grande	Francisco Grande	6 S. 6 S.	5 E. 4 E.	19 13 24		Coppper porphyry deposit.	--	Greeley, 1978, p. 83; Bergquist and Blacet, 1979; MRDS # M050669
116	Pinal	Casa Grande	Sacaton mine Casa Grande West open pit; Casa Grande East underground	5 S.	5 E.	26		Chalcopyrite and molybdenite disseminated in Precambrian Pinal Schist and Oracle Granite and Laramide 64-m.y.-old altered quartz monzonite porphyry, Sacaton Granite, and 71.3 m.y. old Three Peaks Monzonite Porphyry especially in northeast fractures. Secondary enriched chalcocite blanket was downdropped along Sacaton fault. Deposit covered by 100 to 600 feet of alluvium and Tertiary conglomerate	--	Paydirt, 1974, p. 1-27; Cummings, 1982 Greeley, 1978; Ullmer, 1978; Bergquist and Blacet, 1978, 1979a, 1979b; Banks and others, 1978, p. 439-445; Pushkar and Damon, 1974; Balla, 1972; MRDS # M050669
117	Pinal	Crozier Peak	Copper Hill mine	5 S.	14 E.	36	SE	Chalcopyrite and traces of molybdenite disseminated in Precambrian Ruin granite and Laramide (68-m.y.-old) granodiorite.	--	Evensen, 1961; Krieger, 1974c: Schmidt, 1971; Schwartz, R. J., 1954; Damon and Mauger, 1966; MRDS # M030480
118	Pinal	Florence	Poston Butte prospect	4 S.	9 E.	28		Copper and molybdenum sulfides disseminated in Laramide (63.4-m.y.-old) granodiorite and quartz monzonite porphyry	--	Yeend, 1976; Wilson, E. D., 1969; Kuck, 1978, p. 51; Greeley, 1978, p. 84; MRDS # M030478
119	Pinal	Mineral Creek	Ray mine	3 S.	13 E.	9 16 15 14 11 10	SE NE N1/2 S1/2	Chalcopyrite, molybdenite, bornite, etc., disseminated in highly fractured Precambrian diabase sills, Pinal Schist, Dripping Spring Quartzite, and Pioneer Shale and in Laramide (60 to 70-m.y.-old) Granite Mountain Porphyry and related rocks. Most ore has come from secondary-enriched chalcocite blanket mostly in Pinal Schist.	6,480,000 lbs (1967-1979)	Metz and Roue, 1966; Phillips, Gambell, and Fountain, 1974; Cornwall, Banks, and Phillips, 1971; Banks and Stuckless, 1973; Banks and others, 1972; Clarke, O. M., 1952; Gambell, 1978; Metz, Phillips, and Cavineas, 1968; Ransome, 1923, 1919, 1904, 1915;

Table 1.-- (cont'd)

										Phillips, Cornwall, and Rubin, 1971; MRDS # M000327
120	Pinal	Riverside	Rare Metals mine	4 S.	13 E.	8 9 15	SE SW	Chalcocite, molybdenite, ferrimolybdite, malachite, chrysocolla, and pyrite, in quartz fissure veins in Laramide (63-m.y.-old) Tea Cup Granodiorite intruding Precambrian Ruin Granite in wide shear zone. (See also no. 371)	--	King, 1969, p. 236; Kuck, 1978, p. 185; Hicks, 1979, p. 22; Cornwall and Krieger, 1975b; Schmidt, 1971; MRDS # M000334
121	Pinal	Saddle Mountain	Saddle Mountain group	4 S. 5 S.	16 E. 16 E.	35 2		Pyrite, galena, sphalerite, and chalcopyrite, in brecciated zones in Cretaceous Williamson Canyon volcanics and Laramide (62-m.y.-old) diorite porphyry and quartz diorite dike swarm.	--	Barret, 1972; Ross, 1925b; Willden, 1964; Schwartz, R. J., 1954; MRDS # M000645
122	Pinal	San Manuel	San Manuel mine (San Manuel-Kalamazoo deposit	8 S.	16 E.	34 35		Chalcopyrite and molybdenite disseminated in Precambrian Oracle Granite (a porphyritic quartz monzonite), and in Laramide (65-69-m.y.-old) porphyrytic quartz monzonite especially in closely fractured contact zones. Thin chalcocite blanket. Molybdenite occurs in narrow quartz veinlets and as fracture coatings.	65,710,000 lbs (1956-1979)	Thomas, 1966; Creasey and Pelletier, 1965; Creasey, 1967; Schwartz, G. M., 1949, 1953; Wilson, E. D., 1957; Lowell, 1968; Lowell and Guilbert, 1970; Buchanan and Buchella, 1960; Davis, J. D., 1974; Chaffee, 1976b; Knoerr, 1956; Pelletier and Creasey, 1965; MRDS # M050188
123	Pinal	Slate Mountains	Lakeshore mine	10 S.	4 E.	25	SE	Chalcopyrite and molybdenite disseminated in Laramide (67.3-m.y.-old) biotite quartz diorite to quartz monzonite porphyry. Higher grade, tabular tactite ore bodies occur with magnetite and silicates in Precambrian Mescal Limestone.	--	South, 1972; Harper and Reynolds, 1969; Johnston, 1972; Romslo, 1950; Greeley, 1978; Blacet, Bergquist, and Miller, 1978; MRDS # D000752
124	Pinal	Summit	Clark prospect	1 S.	13 E.	12	SE	Tungsten, pyrite, chalcopyrite, and molybdenite in shear zone cutting Laramide Schultze granite near contact with Pinal Schist.	--	ABGMT unpub. data; Peterson, D. W., 1963; MRDS # M030485
125	Pinal	Summit	(?)Rainbow group	1 S.	13 E.	12		Tungsten, copper, and molybdenum reported.	--	ABGMT unpub. data; Peterson, D. W., 1963; MRDS M000245
126	Pinal	Summit	Swede mine	1 S.	13 E.	12	NE	Tungsten, chalcopyrite, and molybdenite in northeast shear zone in Precambrian Pinal Schist at intersections of Laramide Schultze granite porphyry dikes.	--	ABGMT unpub. data; Peterson, N. P., 1963; MRDS # M000667
127	Pinal	Troy	Troy Ranch prospect (Mary Alice claims, nearby claims)	3 S.	14 E.	23	N1/2	Chalcopyrite-molybdenite veins in Laramide (70-m.y.-old) Rattler Granodiorite. Pyrite-chalcopyrite mineralization related to 63-m.y.-old rhyodacite porphyry dikes.	--	Keith, S. B., oral commun., 1979; Cornwall Banks, and Phillips, 1971; MRDS # M030475
128	Pinal	Vekol	Vekol Hills mine	10 S.	3 E.	4		Chalcopyrite and molybdenite disseminated and in fracture fillings in Precambrian diabase and lower Paleozoic sediments near contact with Laramide quartz monzonite porphyry.	Mo reserves	Chaffee, 1977; Greeley, 1978; Steele, 1978; Dockter and Keith, 1978; Greeley, 1978, p. 85; MRDS # M000009
129	Santa Cruz	Harshaw	Red Mountaine deposit	22 S.	16 E.	21	SW	Chalcopyrite, molybdenite, enargite, tetrahedrite, and sphalerite disseminated in Laramide intrusive breccia and quartz monzonite porphyry, and Laramide Red Mountain Volcanics. Strong alteration zones.	--	Corn, 1975; Bodnar, 1978; Simons, 1972; Schrader, 1915; MRDS # MB99921
130	Santa Cruz	Old Baldy	Carrie Nation mine	20 S.	14 E.	14	NE	Chalcopyrite, molybdenite, bornite, galena, ophalerite, and pyrite in quartz veins in shear zone in Laramide (67-m.y.-old) quartz diorite of Josephine Canyon and in (68-m.y.-old) Madera Canyon Granodiorite.	--	Keith, S. B., 1975, p. 61; ABGMT unpub. data; Schrader, 1915; Whitacre, 1964, p. 35; Drewes, 1971; Drewes, 1976; MRDS # M030416
131	Santa Cruz	Old Baldy	Daniels mine	20n S.	14 E.	1	NE	Molybdenum reported. Rocks mapped are dacite and latite of Mt. Wrightson Formation that were contact metamorphosed by Laramide (68-m.y.-old) Madera Canyon Granodiorite.	--	ABGMT unpub. data; Drewes, 1971; MRDS # M030415
132	Santa Cruz	Patagonia	Benton mine	24 S.	16 E.	15		Chalcopyrite and molybdenite disseminated in Laramide (58-m.y.-old) biotite hornblende granodiorite with a sericite zone, and molybdenite along a granite porphyry dike. Copper oxides.	--	Anthony, Williams, and Bideaux, 1977, p. 142; Schrader, 1915; Schrader and Hill, 1910; Simons, 1974; MRDS # M001447
133	Santa Cruz	Patagonia	Bonanza mine (Duquesne-Washington Camp group)	24 S.	16 E.	2	NW	Chalcopyrite, molybdenite, sphalerite, galena, and pyrite in skarn in cherty limestone and quartzite of Permian Epitaph Dolomite and Scherrer Formation near fault contact with Triassic-Jurassic Duquesne volcanics.	--	Lehman, 1978, p. 127, 139; Keith, S. B., 1975, p. 76; Simons, 1974; MRDS # M030399
134	Santa Cruz	Patagonia	Buens Vista mine	23 S.	15 E.	36	SW	Chalcopyrite, molybdenite, bornite, and pyrite in quartz-calcite fissure veins in Laramide (58-m.y.-old) hornblende-biotite granodiorite, with minor copper oxides.		Keith, S. B., 1975, p. 75; Schrader, 1915, p. 314-315; Simons, 1974; Carpenter, 1940; Baker, H. C., 1962; MRDS # M001429
135	Santa Cruz	Patagonia	Duquesne-Washington Camp group	23 S. 24 S.	16 E. 16 E.	34 2, 3		Chalcopyrite, molybdenite, sphalerite, galena, etc., in skarns in Permian Naco Group limestones pyrometamorphosed by Laramide (58-m.y.-old) biotite-hornblende granodiorite intrusion.	--	Keith, S. B., 1975, p. 76-79; Schrader, 1915, p. 321-343; Simons, 1974; Lehman, 1978; MRDS # M030397, M030399

Table 1.-- (cont'd)

136	Santa Cruz	Patagonia	Edna mine group	24 S.	15 E.	12	NE	Tungsten, molybdenite, and copper carbonates in shear zone cutting Jurassic granite at contact of Laramide (58-m.y.-old) biotite quartz monzonite.		Keith, S. B., 1975, p. 76; Dale, Stewart, and McKinney, 1960, p. 120-122; Simons, 1974; MRDS # M000232
137	Santa Cruz	Patagonia	Golden Rose mine	24 S.	16 E.	36		Chalcopyrite, molybdenite, galena, and pyrite in quartz veins in Jurassic granite of Comaro Canyon near contact with Laramide (58-m.y.-old) syenodiorite or quartz diorite.	--	Schrader and Hill, 1910, p. 159-160; Schrader, 1915, p. 312-313; Simons, 1974; MRDS # M001445
138	Santa Cruz	Patagonia	Gross copper prospect	23 S.	16 E.	36	NE	Chalcopyrite, molybdenite, and pyrite disseminated in Laramide (58-m.y.-old) quartz monzonite or biotite-hornblende granodiorite.	--	Schrader, 1915, p. 310-313; Simons, 1974; MRDS # M899911
139	Santa Cruz	Patagonia	Holland mine (Duquesne-Washington Camp group)	24 S.	16 E.	3		Chalcopyrite, sphalerite, galena, molybdenite, and powellite etc., in skarns of cherty limestone of Epitaph Dolomite underlying Scherrer Quartzite, especially at irregularities along marble-skarn contact. Laramide granodiorite dikes and porphyritic granite are nearby. (See also no. 353)	--	Lehman, 1978, p. 244; Keith, S. B., 1975, p. 77; Schrader, 1915, p. 338-340; Simons, 1974; Carpenter, 1940, p. 4; MRDS # M030397
140	Santa Cruz	Patagonia	Line Boy mine	24 S.	16 E.	22		Chalcopyrite and molybdenite crystals, bornite, pyrite, and minor chalcocite, in joints and fissures along contact of granite porphyry intrusion into Laramide (58-m.y.-old) quartz monzonite.	--	Anthony, Williams and Bideaux, 1977, p. 142; Schrader, 1915, p. 347-348; 1917, p. 258; Schrader and Hill, 1910, p. 161-162; Simons, 1974; Hicks, 1979, p. 24; MRDS # M001446
141	Santa Cruz	Patagonia	O'Connor prospect	24	16	3		Chalcopyrite, molybdenite, galena, and pyrite with drusy quartz in Laramide (58-m.y.-old) granite intruded by granite porphyry.	--	Schrader, 1915, p. 340-346; Schrader and Hill, 1910, p. 161; Simons, F. S., 1974; Department of Mineral Resources, 1962; MRDS # M030406
142	Santa Cruz	Patagonia	Providencia claim (Providencia Canyon)	23 S.	15 E.	35 36		Chalcopyrite, molybdenite, pyrite, and bornite disseminated in Laramide (58-m.y.-old) granite-quartz monzonite-biotite hornblende granodiorite and syenodiorite.	--	Schrader, 1915, p. 310; Schrader and and Hill, 1910, p. 159; Simons, F. S., 1974; Anthony, Williams, and Bideaux, 1977, p. 141; Guild, 1907, p. 455-457; MRDS # M030403
143	Santa Cruz	Patagonia	Santo Nino mine	24 S.	16 E.	9	NW	Molybdenite crystals and masses in quartz veins, with pyrite and chalcopyrite in fissures and joints in Laramide (58-m.y.-old) biotite hornblende granodiorite or quartz monzonite.	200 t Mo ore concentrated to 16 t MoS_2 conc. (1930's)	Anthony, Williams and Bideaux, 1977, p. 142; King, R. B., 1969, p. 236; Blanchard and Boswell, 1935, p. 315-316; Frondel and Wickman, 1970; Keith, S. B., 1975, p. 82; Kuck, 1978, p. 187-188; Kupfer, 1965, p. 14-16; Baker, R. C., 1962, p. 194, 202, 254; King, 1970; MRDS # M000982
144	Santa Cruz	Patagonia	Simplot mine (Duquesne-Washington Camp group)	23 S.	16 E.	34	C	Chalcopyrite, galena, sphalerite, pyrrhotite, argentite, pyrite, and molybdenite in skarns in Permian Concha Limestone at contact with Triassic-Jurassic Duquesne Volcanics near Laramide porphyritic andesite sills.	--	Lehman, 1978, p. 132-139, 245; Simons, 1974; MRDS # M030398
145	Santa Cruz	Tyndall	Alto vein swarm	21 S.	14 E.	12 13	S1/2 N1/2	Chalcopyrite, molybdenite, galena, sphalerite, pyrite, argentite, and tetrahedrite in quartz fissure veins in Cretaceous Salerno Formation volcanics and Laramide (63-67-m.y.-old) Josephine Canyon diorite, with some oxidation and supergene enrichment.	--	Keith, S. B., 1975, p. 83; Schrader, 1915, p. 197-203; Drewes, 1971, p. 12-14, 1971; Stevens, 1902; MRDS # M030411
146	Santa Cruz	Tyndall	Casanega-Daly mine	near Amadoville				Copper-, lead-, and molybdenum-sulfides, silver, and gold in ore shoots in monzonite.	--	ABGMT unpub. data; Weed, 1918, p. 498;
147	Santa Cruz	Tyndall	Edwards group (St. Marys group)	8 mi east of Amado in Agua Caliente Canyon				Molybdenite.	--	Hicks, 1979, p. 23; MRDS # 030457
148	Santa Cruz	Tyndall	Elephant Head group	20 S.	14 E.	4 5 8	SW SE NE	Chalcopyrite, molybdenite, galena, and sphalerite in quartz fissure veins, and disseminated in Laramide (68-m.y.-old) quartz monzonite of Quantrell stock of Elephant Head Quartz Monzonite, and minor copper carbonates.	--	Drewes, 1971b; 1976; Keith, S. B., 1975, p. 85; Schrader, 1915, p. 182-183; 1917, p. 256; Weed, 1918, p. 501; MRDS # M030413
149	Santa Cruz	Tyndall	Tiajuana mine	20 S.	14 E.	26	NE	Chalcopyrite, molybdenite, galena, sphalerite, pyrite, and chalcocite in quartz fissure veins in Laramide (61- to 67-m.y.-old) fine-grained quartz monzonite of Josephine Canyon Diorite.	--	Keith, S. B., 1975, p. 87; Schrader, 1915, p. 191-193; Drewes, 1971b; MRDS # M030410
150	Yavapai	Eureka	Bagdad mine	14 N.	9 W.	4		Chalcopyrite, molybdenite, galena, and sphalerite, etc., disseminated in fractures and intersecting faults and dike swarms in Laramide quartz monzonite. (See also no. 380)	13,720,000 lbs (1944-1979)	Anderson, C. A., and Creasey, S. C., 1955, Butler and Wilson, 1938, p. 98-103; Anderson, 1948, 1950; Anthony, Williams, and Bideaux, 1977, p. 142; Huttl, 1943; MRDS # W002114, W002659, M003467
151	Yavapai	Eureka	Copper Ridge prospect	14 N.	10 W.	14 15 22 23		Molybdenite reported.	--	

152	Yavapai	Minnehaha	"Smokey's" Copper Basin	9 N	1 W.	10		Chalcopyrite and molybdenite in Laramide(?) quartz monzonite.	--	MRDS # D000349
153	Yavapai	Squaw Peak	Squaw Peak min	13 N.	5 W.	30 31		Chalcopyrite and molybdenite, rare bornite, and pyrite, disseminated in quartz veins and fractures in Precambrian granodiorite at contact with Laramide Squaw Peak Quartz Monzonite intrusion. Intensity of1.2 mineralization directly related to fracture density.	6,000 lbs (1944-1946)	Roe, 1976; Greeley, 1978; Anthony, Williams, and Bideaux, 1977; King, R. B., 1969; Kirkemo, Anderson, and Creasey, 1965; King, 1970; MRDS # D000350
154	Yavapai	Turkey Creek	Pine Flat deposit	12 N.	1 W.	22 27		Chalcopyrite, molybdenite, etc., disseminated in highly brecciated zones in Precambrian Spud Mountain Volcanics (Schist) close to Laramide Pine Flat intrusive complex of quartz latite porphyry, dacite porphyry and monzonite porhyry. Strong alteration pattern.	--	Spatz, 1974; Anderson and Blacet, 1972; Lindgren, 1926, p. 149-152; Greeley, 1978; Blacet, 1968; 1964; MRDS # M003365
155	Yuma	Middle Camp (Oro Fino)	Topaz claims	4 N.	20 W.	22	SE	Gold in quartz veins with molybdenum, and tungsten, and with limonite and copper staining. In mid-Jurassic Middle Camp quartz monzonite, intruded by Laramide(?) Diablo Quartz Monzonite.	--	Crowl, 1979; Keith, S. B., 1970, p. 289; 1978, p. 161-162; Ashwill, 1955; MRDS # M030338
								Molybdenite from breccia pipes associated with Laramide porphyry copper deposits		
156	Pinal	Bunker Hill	American Eagle Basin	8 S.	18 E.	11		Chalcopyrite, molybdenite, bornite, galena, sphalerite, and pyrite, in breccia pipe in Laramide (68-m.y.-old) granodiorite and dacite porphyry with strong alteration pattern.	--	Guthrie and Moore, 1978, p. 25; Kuhn, 1941, 1951, 1938; Simons, 1964, p. 154; Creasey and Kistler, 1962; MRDS # M050121
157	Pinal	Bunker Hill	Childs-Aldwinkle mine	8 S.	18 E.	11	EC	Molybdenite, bornite, chalcopyrite, tennantite, pyrite, chalcocite, and enargite in fracture intersections in breccia pipes in Laramide (68-m.y.-old) Copper Creek Granodiorite. Alteration pattern, some oxidation. (See also nos. 369, 386)	4,176,000 lbs (1933-1965)	Guthrie and Moore, 1978; Kuhn, 1941, 1951, 1938, 1940; Simons, 1964; MRDS # M050120
158	Pinal	Bunker Hill	Copper Creek area (includes 162-167)	8 S.	18 E.	10		Molybdenite, chalcopyrite, bornite, and other sulfides in joint sets of breccia pipes in Laramide (68-m.y.-old) Copper Creek Granodiorite District zoning with Mo in center, surrounded by Cu, then by Pb-Ag-Cu. (See also no. 370).	7,000,000 lbs est. (1933-1938)	Guthrie and Moore, 1978; Kuhn, 1941, 1951, 1938, 1940; Simons, 1964; Ulmer, 1978, p. 160-164; MRDS # M050128, M050109, M050129, M050110
159	Pinal	Bunker Hill	Copper Prince mine	8 S.	18 E.	10	NE	Chalcopyrite, molybdenite, tungsten and pyrite at fault intersections in breccia pipe in Laramide (68-m.y.-old) Copper Creek Granodiorite in the porphyritic quartz monzonite phase.	Mined in 1937 by Arizony Moly Corp.	Anthony, Williams, and Bideaux, 1977; Simons, 1964, p. 158-160; Guthrie and Moore, 1978; Kuhn, 1938, 1951, 1941, 1940; King, 1970; MRDS # M050127
160	Pinal	Bunker Hill	Glory Hole mine (Globe mine)	8 S.	18 E.	3 10	C of S line	Copper and molybdenum in joint intersections in breccia pipe in andesite and tuff (hornfels of Glory Hole Volcanics, 66 m.y. old), and probably underlain by Laramide (68-m.y.-old) Copper Creek Granodiorite.	--	Kuhn, 1941, 1951, 1938; Simons, 1964, p. 160-162; Weed, 1913; Guthrie and Moore, 1978; MRDS # M050125
161	Pinal	Bunker Hill	Old Reliable mine	8 S.	18 E.	10	C	Molybdenite, pyrite, sparse chalcopyrite, secondary enriched copper sulfides, etc., in breccia pipes near contact of altered Glory Hole Volcanics and Laramide (68-m.y.-old) Copper Creek Granodiorite.	--	Anthony, Williams and Bideaux, 1977; Simons, 1974; Denton, 1947; Kuhn, 1941, 1938, 1951; Weed, 1913; Greeley, 1978, p. 86; MRDS # M050126
162	Pinal	Mineral Creek	Calumet mine	3 S.	13 E.	11 12	line	Chalcopyrite, molybdenite and pyrite, in breccia pipe in Precambrian diabase, Pinal Schist, Pioneer Shale and Scanlon Conglomerate, and Laramide (63-m.y.-old) Granite Mountain Porphyry.	--	Metz and Rose, 1966, p. 182; Metz, Phillips and Caviness, 1968; Ransome, 1923; Cornwall, Banks, and Phillips, 1971; MRDS # M030472
163	Santa Cruz	Palmetto	Ventura mine group	23 S.	15 E.	1	C	Chalcopyrite, molybdenite, pyrite, chalcocite, etc., in fissures and joints in breccia pipe in Triassic Mt. Wrightson Formation and Jurassic (160±20-m.y.-old) granite of Comoso Canyon near Laramide (58- to 63-m.y.-old) biotite hornblende granodiorite.	Mo reserves	Keith, S. B., 1975, p. 74; Schrader, 1915, p. 291-292; King, 1969, p. 236; Carpenter, 1940, p. 6; Simons, 1974; Graybeal, 1972, p. 36; Moger, 1969, p. 3; MRDS # M030395
164	Santa Cruz	Patagonia	Four Metals mine	23 S.	16 E.	29	WC	Chalcopyrite, molybdenite, pyrite, chalcocite, galena, sphalerite, argentite, tungsten, and gold in breccia pipe in Laramide (58-m.y.-old) biotite hornblende granodiorite with strong alteration pattern. (See also no. 372)	--	Graybeal, 1972, p. 36-43; Keith, S. B., 1975, p. 80; Schrader, 1915, p. 317-320; 1917, p. 261; Simons, 1974; Browne, M. R., 1968, p. 449; Heikes, 1906, p. 156; MRDS M030400
165	Yavapai	Copper Basin	Boston-Arizona mine	13 N.	3 W.	7		Chalcopyrite, molybdenite, pyrite, bornite and oxidized minerals in breccia pipe in Precambrian metasediments and Laramide (73-75-m.y.-old) Copper Basin stock of quartz latite porphyry. (See also no. 375)	--	Johnston and Lowell, 1961; Johnston, W. P., 1955; Christman, 1978; Anthony, Williams, and Bideaux, 1977, p. 141; MRDS # M003569

166	Yavapai	Copper Basin	Commercial mine	13 N.	3 W.	20		Chalcopyrite, molybdenite, pyrite, bornite, and oxidized minerals in breccia pipe in Laramide (73-75-m.y.-old) Copper Basin stock of quartz monzonite and quartz monzonite porphyry, quartz latite porphyry and latite. (See also no. 376)	--	Johnston and Lowell, 1961; Johnston, 1955; Christman, 1978; Kirkemo, Anderson, and Creasey, 1965; Greeley, 1978; Blake, 1889; MRDS # M800029
167	Yavapai	Copper Basin	Copper Basin deposit	13 N.	3 W.	16 17 20 21		Chalcopyrite, molybdenite, and pyrite disseminated in brecciated collapse structure related to north-northeast fault-controlled intrusion of quartz latite porphyry of Laramide (75-73-m.y.-old) Copper Basin stock of granodiorite, quartz diorite, and quartz monzonite porphyry intruded into Precambrian quartz diorite	Mo reserves	Christman, 1978; Johnston, 1955; Johnston and Lowell, 1961; Greeley, 1978, p. 86; MRDS # M*.6056
168	Yavapai	Copper Basin	Copper Hill mine	13 N.	3 W.	20	NW	Chalcopyrite, molybdenite, pyrite, bornite, and oxidized minerals in breccia pipes in Precambrian quartz diorite and Laramide (75 to 73-m.y.-old) quartz monzonite porphyry. Secondary enriched chalcopyrite blanket and molybdenum as ferrimolybdite. (See also no. 377)	--	Johnston and Lowell, 1961; Johnston, 1955; Anthony, Williams, and Bideaux, 1977; Kirkemo, Anderson and Creasey, 1965; Anderson, 1968, p. 1181; Christman, 1978; MRDS # M003750
169	Yavapai	Copper Basin	Loma Prieta mine	13 N.	3 W.	21		Chalcopyrite, molybdenite, pyrite, bornite, and oxidized minerals in breccia pipe in Laramide (75-73-m.y.-old) quartz monzonite and associated quartz latite porphyry dikes. (See also no. 378)	--	Johnston, 1955; Johnston and Lowell, 1961; Christman, 1978; Gambell, 1973; Blake, 1889; Anderson, 1945; MRDS # M003742
170	Yavapai	Copper Basin	(?)Schruber mine	13 N.	3 W.	21	C	Copper, molybdenum, gold, and silver	--	ABGMT unpub. data; MRDS #
171	Yavapai	Copper Basin	U.S.Navy mine	13 N.	3 W.	19		Chalcopyrite, molybdenite, pyrite, bornite, and oxidized minerals in breccia pipe in Laramide 75-73-m.y.-old) Copper Basin stock (quartz monzonite and quartz monzonite porphyry). See also no. 379)	--	Johnston, 1955; Johnston and Lowell, 1961; Christman, 1978; Thomsen and Stulike, 1978; MRDS # M003571
172	Yavapai	Eureka	Black Mesa prospect	15 N.	9 W.	32		Chalcopyrite, molybdenite, and pyrite in breccia pipe in Laramide quartz monzonite porphyry, especially the western margin of the pipe.	--	Anderson and Creasey, 1955, p. 75; MRDS # M003350
173	Yavapai	Eureka	Mammoth prospect (Hubbard)	14 N.	9 W.	7		Chalcopyrite, molybdenite, pyrite, and oxidized minerals in breccia pipe in Precambrian rhyolite and alaskite and Laramide quartz monzonite stocks and dikes, especially in northeast fractures where closely spaced.	--	Anderson, C. A., and Creasey, S. C., 1955, p. 93; MRDS # M003405
								Molybdenite associated with mid-Tertiary igneous rocks		
174	Cochise	Middlepass	Abril mine	17 S.	23 E.	34		Sphalerite, chalcopyrite, galena, molybdenite, silver, and ferrimolybdite in replacement bodies in tactite metamorphosed from Mississippian Escabrosa Limestone to marble and hornfels by Tertiary (26-m.y.-old) Stronghold Granite and lamprophyre dikes. (See also no. 381)	--	Perry, 1964; Wilson, E. D., 1950, p. 23-26; Keith, S. B., 1973, p. 68; Damon and Bikerman, 1964; MRDS # M001415
								Molydenite from deposits of uncertain age (possibly Laramide)		
175	Cochise	Dos Cabezas	Silver Bell mine	14 S.	29 E.	29 30	C	Tungsten replacement veins with scheelite, molybdenite, and base-metal sulfides in northeast striking quartz veins in Paleozoic limestones (possibly Laramide).	--	D. Silver, oral commun., 1979; MRDS # M030564
176	Gila	Miami	Tungsten No. 1	1 N.	14 E.	14		Molybdenum occurs with tungsten in mineralized fault in diabase (possibly Laramide).	--	U.S. Bureau of Mines unpub. data; Peterson, 1962; MRDS # M002858
177	Gila	Summit	Falcon Tungsten mine	1 S.	15 E.	6		Tungsten in quartz vein (possibly Laramide).	--	U.S. Bureau of Mines unpub. data; MRDS # D000761
178	Mohave	Boriana	Boriana mine	18 N.	15 W.	18, 8		Tungsten in quartz fluorite veins in schist near granite, with wolframite mineralization followed by scheelite, and then by chalcopyrite and molybdenite. Muscovite age of 72 m.y.	--	Dale, 1961, p. 73-84; Hobbs, 1944, p. 247-264; T. Heidrick, oral commun., 1979; Dale, 1961, p. 84-87; Hewett and others, 1936, p. 14; MRDS # D000847
179	Mohave	Boriana	Bull Canyon group	18 N.	15 W.	7, 18		Tungsten in quartz fluorite vein in granite and schist as in Boriana mine.	--	Dale, 1961, p. 84-87; Hewett and others, 1936, p. 14; MRDS # M003786
180	Yavapai	Black Hills	Burnt Canyon prospect	15 N.	2 E.	28		Molybdenite crystals in quartz vein in granodiorite porphyry dikes in Buzzard Rhyolite (Granodiorite dikes may be Laramide). (See also no. 356)	--	Anderson and Creasey, 1958, p. 92, 178; 1967; MRDS # M030497
								Wulfenite from oxidized areas of veins in or associated with Precambrian host rocks		
181	Maricopa	Cave Creek	Maricopa mine	6 N.	4 E.	8	E1/2	Gold with oxidized lead minerals (molybdenum and vanadium also reported) in fissure veins in silicified and brecciated north-striking fault zone between altered andesite and schist (Precambrian Yavapai Schist(?)) intruded by dikes of granite porphyry and rhyolite porphyry and small diorite stocks. (See also no. 384)	--	Wilson, Cunningham, and Butler, 1934, p. 164; ABGMT unpub. data; MRDS M002782

Table 1.-- (cont'd)

182	Maricopa	Hieroglyphic Mountains	Prince of Arizona mine	5 N.	1 W.	16	NW	Lead and zinc oxidation products, with lead and zinc sulfides, horn silver and ruby silver, vanadinite, wulfenite, bismuth and uranium oxides, and descloizite in east-west ledges in Precambrian Yavapai schist.	--	AbGMT unpub. data; Willis, 1920, p. 38; MRDS # M004277
183	Maricopa	White Picacho	Lucky Strike claim	7 N.	3 W.	6		Galena, chalcopyrite, wulfenite, chrysocolla, chalcocite, willemite(?), and pyromorphite(?) in quartz-calcite fissure vein in Precambrian Yavapai Schist.	--	AbGMT unpub. data; Granger and Raup, 1962, p. A-16; Granger, 1950; MRDS # M001826
184	Pinal	Campo Bonito (Old Hat)	Bear Cat claims	10 S. 16 E. 4 mi south Oracle by road				Tungsten (scheelite), sparse wulfenite, vanadinite and pyrite in north-northeast quartz veins in Precambrian granite and in diorite porphyry dike of unknown age.	--	Wilson, E. D., 1941, p. 34; Ludden, 1950; MRDS # M050214
185	Yavapai	Blue Tank	Genung Spring mine	14 mi northeast of Wickenburg				Galena and wulfenite at contact of diabase and gneiss.	--	Hicks, 1979, p. 26; MRDS # 030503
186	Yavapai	Blue Tank	Great Southern mine	8 N.	3 W.	32	NW	Galena, cerussite, anglesite, and wulfenite in quartz veins in porphyritic granite and diabase. Age may be mid-Tertiary.	--	AbGMT unpub. data; Keith S. B., oral commun., 1979; Shannon, D. oral commun., 1979; MRDS # 030502
187	Yavapai	Eureka	Tungatona mine	15 N.	9 W.	24		Tungsten, lead, bismuth, molybdenum, vanadium and beryl in quartz veins in Precambrian (1,400-m.y.) Lawler Peak Granite. Aplite dikes.	--	Dale, 1961, p. 53-57; Anderson, Scholz, and Strobell, 1955, p. 97; MRDS # M001168
188	Yavapai	White Picacho	Outpost mine	8 N. 7 N.	3 W. 3 W.	34 3		Bismuth minerals in brecciated quartz-rich pegmatite in gneiss.	--	Jahns, 1952, p. 93-97; MRDS # M003394, M003391
189	Yavapai	White Picacho	Picacho View mine	7 N.	3 W.	10	NW	Supergene minerals including wulfenite along fractures in zone of feldspar-bearing pegmatite.	--	Jahns, 1952, p. 90-93; MRDS # M003390
190	Coconino	Grand Canyon	Orphan Lode mine	31 N.	2 E.	14	WC SW	Uraninite and base-metal sulfides in permeable areas of collapse breccia pipe in Pennsylvanian Supai Formation collapsed into Mississippian Redwall Limestone. Hydrothermal deposition, bacterial action, and deposition from groundwater. (See also nos. 26, 393).	--	Kofford, 1969, p. 190-194; Granger and Raup, 1962, p. 20; Keith, S. B., 1970; Gornitz, 1969; Brundy, 1977; Gornitz and Kerr, 1970; MRDS # M001823
			Wulfenite from oxidized areas of veins in or associated with Jurassic host rocks							
191	Cochise	Warren	Campbell orebody of Bisbee mine	23 S.	24 S.	15		Oxidized copper, lead, and zinc minerals (malachite, azurite, cerussite, smithsonite, mimetite), small crystals of wulfenite on 1,700-2,500 level, in replacement bodies in lower Paleozoic limestones related to Jurassic (180-m.y.-old) porphyry dikes and sills.	--	Anthony, Williams, and Rideaux, 1977, p. 205; Ransome, 1904b; Bryant and Metz, 1966; Emmons, and Becker, 1885; MRDS # M241089, K002911
192	Pima	Cababi	Chicago mine	16 S.	4 E.	23 26	SW NW	Abundant wulfenite is associated with cerussite and malachite in brecciated quartz fissure veins in Jurassic amygdaloidal andesite flows. (See also no. 358)	--	Williams, 1962, p. 25, 4b, 91; 1963; Hazel and others, 1978;
193	Pima	Cababi	Mildren mine	16 S.	4 E.	16	EC	Abundant wulfenite, associated with vanadinite, cerussite, mimetite, and chrysocolla in brecciated quartz fissure veins in Jurassic amygdaloidal andesite flows. (See also nos 23, 360)	--	Williams, 1962, p. 25, 35, 91; 1963; Hazel and others, 1978; MRDS # M050610
194	Pima	Cababi	Sunset mine	16 S.	4 E.	21	NW	Lead, copper, silver, molybdenum, and gold in quartz vein in Jurassic andesite.	--	AbGMT unpub data; MRDS # M800103
195	Pima	Papago	Abe Lincoln mine group	17 S.	10 E. 11 E.	26 34	SW	Galena, sphalerite, cerussite, oxidized copper, lead and zinc minerals (molybdenum and bismuth reported) in replacement deposits in metamorphosed Paleozoic quartzites and Mesozoic sediments and volcanics.	--	Keith, S. B., 1974, p. 132; Stevens, 1905; Ransome, 1922, p. 418; Heikes, 1906; MRDS # M800305
196	Santa Cruz	Palmetto	Domino mine group	22 S.	15 E.	35	SW	Argentiferous galena, cerussite, with minor oxidized copper minerals, wulfenite, and native silver in east-west veins at strong shear zone between Precambrian hornblende-rich metamorphics and Jurassic 160±20-m.y.-old intrusive granite of Comoro Canyon. Mineralization may be Laramide.	--	Keith, S. B., 1975, p. 73; Schrader, 1917; 1915, p. 287-288; AbGMT unpub. data; Anthony, Williams, and Rideaux, 1977; Simons, 1974; MRDS # M030392
197	Santa Cruz	Palmetto	Jarillas mine group	23 S.	15 E.	9	SE	Argentiferous galena with minor chalcopyrite, wulfenite, cerussite, malachite, and horn silver in east-northeast fissure veins in fault zones parallel to diorite dikes and to contact between Precambrian hornblende-rich metamorphics and the Jurassic (160±20-m.y.-old) intrusive granite of Comoro Canyon. Mineralization may be Laramide.	--	Keith, S. B., 1975, p. 73; Schrader, 1915, p. 288-290; Moger, 1969, p. 52; Simons, 1974; AbGMT unpub. data; MRDS # M030393
198	Santa Cruz	Palmetto	Tres de Mayo mine group	23 S.	15 E.	3 10	SW N	Argentiferous galena, chalcopyrite, and sphalerite, with sulfenite, vanadinite, cerussite, cerasgyrite, in northeast fissure veins in Precambrian hornblende-rich metamorphics and biotite-quartz monzonite and Jurassic (160±20-m.y.-old) granite of Comoro Canyon. High-grade wulfenite and vanadinite are on La Palma ground. Mineralizaiton may be Laramide.	--	Carpenter, 1940, p. 6; Keith, S. B., 1975, p. 74; Schrader, 1915, p. 290; Moger, 1969; Simons, 1974; MRDS # M000429

Table 1.-- (cont'd)

199	Yuma	Ellsworth	Desert mine	5 N.	14 W.	21	C	Gold, oxidized copper minerals, and wulfenite following schistosity of metamorphosed Mesozoic arenaceous shales and argillites, rhyolite and phonolite extrusives and aplite and basic dikes. Granite Wash Pass intrusion (Late Cretaceous) is in vicinity so deposit may be Laramide.	--	Keith, S. B., 1978, p. 148; Bancroft, 1911, p. 102; Weed, 1918, p. 556; MRDS # M003794
200	Yuma	Gila Bend Mountains	Yellow Breast prospect	2 S.	11 W.	15	SW	Galena, anglesite, cerussite, wulfenite, and yellow lead oxide in fissure vein in calcareous schist with fluorite gangue in southwest fault.	--	Wilson, 1933, p. 1465; Keith, S. B., 1978, p. 150-151; MRDS # 003682
201	Yuma	La Cholla	Cinnabar mine	3 N. 2 N.	20 W. 20 W.	31 9	NE NE	Cinnabar, metacinnabar, malachite, chrysocolla, wulfenite, magnetite, magnanese oxides, gold and silver values in a fault fissure in metamorphosed Mesozoic schist (Livingston Hills Formation).	--	Keith, S. B., 1978, p. 156; Bancroft, 1910, p. 151-153; 1911, p. 82-84; Lausen and Gardner, 1927, p. 27-31; Robison 1979; Crowl, 1979; MRDS # M055134
202	Yuma	Dome	McPhaul copper prospect	8 S.	21 W.	14	NC	Chrysocolla, malachite, limonite, hematite, gold, and wulfenite (as abundant small crystals in cavities and fissures near the walls and surface). In quartz fissure veins in strike fault with Mesozoic schist footwall and marble hanging wall.	--	Wilson, E. D., 1961, p. 18-21; 1933, p. 201, 181-189, 202-210; Johnson, 1972, p. 67-69; Keith, S. B., 1978, p. 145; Olmsted, 1973; Loeltz, and Irelan, MRDS # M002579
203	Yuma	Mohawk	Unnamed mine	10 S.	13 W.	8	NE	Elements reported include silver, lead, barium, gold, copper, molybdenum, and fluorine in quartz veins in Mesozoic granitic gneiss and schist with granite porphyry dikes.	--	ABGMT unpub. data; MRDS # M030343
204	Yuma	Mohawk	Unnamed prospect	11 S.	12 W.	23 24	line	Lead, molybdenum, and silver reported. Wulfenite in vuggy quartz veins in southeastern Mohawk Mountains from Mesozoic granite.	--	Keith, S. B., 1978, p. 163; Wilson, E. D., 1933, p. 148-154; ABGMT unpub. data; MRDS # M030302
			Wulfenite from oxidized areas of Late Cretaceous (80-70-m.y.-old) lead-zinc-silver districts							
205	Cochise	Tombstone	Emerald-Silver Plume mine group	20 S.	22 E.	23	NW	Galena, wulfenite, horn silver, chalcocite, malachite, and azurite, in brecciated fissure zone in Cambrian Abrigo Limestone and Bolsa Quartzite. Considerable wulfenite is present in open spaces in oxidized material	--	Church, 1903, p. 6, 29; Butler and others, 1938, p. 55, 71-72, 107; Keith, S. B., 1973, p. 75; Williams, 1980; MRDS # M050352, M001472
206	Cochise	Tombstone	Empire mine	20 S.	22 E.	11	EC	Oxidized base-metal sulfides (cerussite, anglesite, horn silver, pyryite, and wulfenite) in northeast fissures in brecciated Cretaceous Bisbee Group limestones and anticlinal rolls under metamorphosed shale, sandstone, and quartzite.	--	Butler and others, 1938, p. 27, 84, 86, 89, 98; Church, 1903; Keith, S. B., 1973, p. 75; Anthony, Williams, and Bideaux, 1977; Williams, 1980; MRDS # M050016, M002173
207	Cochise	Tombstone	Grand Central mine (Contention)	20 S.	22 E.	14 11	NE SE	Wulfenite crystals in gossany, leached quartz.	--	Williams, 1980; Keith, S. B., 1973, p. 74; MRDS # M050475
208	Cochise	Tombstone	Tribute mine	20 S.	22 E.	11	SC	Oxidized argentiferous and auriferous base-metal sulfides (Pb, Cu, Mo) near northeast fissures and folds in Cretaceous Bisbee Group shales intersected by dikes of granodiorite to diorite related to Uncle Sam porphyry (72 m.y. old).	--	Butler and others, 1938, p. 28, 89, 91, 93, 96, 103; Keith, S. B., 1973, p. 80; Church, 1903; Newell, 1974; Williams, 1980; MRDS # M001735
209	Cochise	Turquoise	Defiance mine	19 S.	25 E.	32	NW	Cerussite, anglesite, malachite, smithsonite, cerargyrite, and pyrolusite, etc; large amounts of magnificent wulfenite specimens lining solution cavities and in oxidized lead, magnagese, and iron. Orebodies are in Pennsylvanian-Permian Naco Group limestones where fractures intersect or change dip or are parallel to bedding. Aplite dikes are related to Sugarloaf Quartz Latite Porphyry of Cretaceous (75-m.y.-old) age. Some think age is possibly Jurassic.	--	Keith, S. B., 1973, p. 81; Gilluly, 1956, p. 152-157; Bideaux, and Williams, 1960; Wilson, E. D., 1927, p. 75-76; McRae, 1966, p. 133-138; Marvin, Neeser and Mehnert, 1978; Ransome, 1913; Anthony, Williams, and Bideaux, 1977, p. 205; Thompson, 1980; MRDS # M002139
210	Cochise	Turquoise	Mystery mine	19 S.	25 E.	29 32	SE NE	Oxidized lead, zinc, and copper minerals with wulfenite and minor chalcopyrite and pyrite. Ore bodies in Permian Naco Group limestones in fractures. Quartz monzonite is cut by monzonite porphyry. Very similar to Silver Bell mine, which connects with it. Possibly Jurassic age.	--	Anthony, Williams, and Bideaux, 1977, p. 205; Bideaux and Williams, 1960; Wilson, E. D., 1927, p. 77-78; Keith, S. B., 1973, p. 84; Ransome, 1913; MRDS # 030581
211	Cochise	Turquoise	Silver Bill mine	19 S.	25 E.	32	NC	Oxidized base-metal sulfides and wulfenite, as at Mystery mine, in Pennsylvanian-Permian Naco Group limestones in contact with quartz monzonite dikes. Some think age is Jurassic.	--	Anthony, Williams, and Bideaux, 1977, p. 205; Bideaux and Williams, 1960; Wilson, 1927, 74-75; Ransome, 1912; Keith, S. B., 1973, p. 84; MRDS # M800140
212	Cochise	Turquoise	Tom Scott mine	19 S.	25 E.	32	C	Oxidized lead, zinc, and copper minerals and wulfenite in breccia-filled solution cavities in Pennsylvanian-Permian Naco Group limestones near quartz monzonite dikes (Sugarloaf Quartz Latite) of Cretaceous (75-m.y.-old) age. Some think mineralization is Jurassic.	--	Keith, S. B., 1973, p. 84; Wilson, E. D., 1927, p. 72-74; Anthony, Williams, and Bideaux, 1977; Bideaux and Williams, 1960; Ransome, 1913; MRDS # M800142
213	Pima	Amole	Old Yuma mine	13 S.	12 E.	9	C	Base-metal sulfides, cerussite, wulfenite, and vanadinite in fissure vein in Cretaceous andesite.	5,700 t ore average 0.3 percent Mo	Anthony, Williams, and Bideaux, 1977, p. 205; Guild, 1910, 1911; Keith, S. B., 1974, p. 102; Jenkins and Wilson, 1920, p. 16-17; MRDS # M050625

Table 1.-- (cont'd)

214	Pima	Amole	Papago Queen mine (Saginaw Hill group)	15 S.	12 E.	12	WC	Cuprite, malachite, minor molybdenum oxides, cerussite, and galena in fissure veins in quartz porphyry stock (Saginaw Hill latite porphyry) of Cretaceous age and at rhyolite-limestone contact.	--	Keith, S. B., 1974, p. 102; Allen, 1920, p. 21; Kinnison, 1958, p. 109-110; MRDS # 030513
215	Pima	Empire	Gopher mine (Hiltano or State of Maine group)	18 S.	17 E.	7	NE	Anglesite, cerussite, wulfenite, copper carbonates, minor galena, chalcopyrite, and pyrite in replacement bodies in fissure veins in Permian Concha limestone and quartzite with some contact metamorphism adjacent to Cretaceous (71-m.y.-old) Sycamore Canyon quartz monzonite.	--	Keith, S. B., 1974, p. 118; Schrader, 1915, p. 148; Feiss, 1929; Alexis, 1939; Alberding, 1938; Finnell, 1971; Marvin, 1942; Marvin, Naeser, and Mehnert, 1978, p. 247; MRDS # M050523
216	Pima	Empire	Prince mine (Hilton or Lead Mountain mine; Hiltano group)	18 S.	17 E.	18	C	Cerussite, anglesite, smithsonite, wulfenite, copper carbonates, minor copper,and lead-zinc sulfides in small packets along fissures and solution cavities in Permian Concha and Rain Valley limestones near dioritic sill or dike related to Cretaceous (71 m.y. -old) Sycamore Canyon quartz monzonite.	--	Keith, 1974, p. 119; Feiss, 1929; Alexis, 1939; Wilson, E. D., 1951a, p. 54-55; Finnell, 1971; MRDS # M050521, M001572
217	Pima	Empire	Total Wreck mine	18 S.	17 E.	3	EC	Cerussite, wulfenite, cerargyrite, copper oxide minerals, vanadinite, and minor copper and lead sulfides in replacement veins in fissures in Permian Concha and and Rain Valley limestones overlying quartzite with Cretaceous (71-m.y.-old) diorite stringers and dikes and Sycamore Canyon quartz monzonite.	8 t Mo conc. shipped in 1918	Keith, S. B., 1974, p. 119; Anthony, Williams, and Bideaux, 1977, p. 205; King, 1969, p. 236; Schrader, 1915, p. 142; Wilson, E. D. 1951a, p.52-53; Alberding, 1938; Finnell, 1971; MRDS # M050896
218	Pima	Empire	Verde Queen mine	18 S.	17 E.	17	WC	Lead and copper carbonates, silver chlorides and wulfenite in replacement bodies in fissure veins in Permian Concha limestone and Scherer Formation near Cretaceous (71-m.y.-old) Sycamore Canyon quartz monzonite.	--	Keith, S. B., 1974, p. 119; Schrader, 1915, p. 148-149; Alexis, 1939; Finnell, 1971; MRDS # M050401
219	Pinal	Vekol	Pomona mine	10 S.	2 E.	2		Lead, silver, molybdenum, zinc, vanadium, and gold in veins in Mississippian Escabrosa Limestone and Cretaceous(?) Vekol Formation, Chiapuk Rhyolite, and Phanodoree Formation(?).	--	ABGMT unpub. data; Dockter and Keith, 1978; MRDS # M000011
220	Santa Cruz	Harshaw	Hardshell mine	23 S.	16 E.	4	C	Argentiferous cerussite, anglesite, cerargyrite, smithsonite, wulfenite, pyromorphite, etc., in fissure vein in silicified fault breccia, especially at contact of Cretaceous quartzite and porphyry. (Mineralization may be Laramide porphyry copper related).	--	Keith, S. B., 1975, p. 58; Koutz, 1984, in progress; Jones, E. L., and Ransome, 1920, p. 174-177; Wilson, E. D., and Butler, 1930, p. 91-94; Farnham, Stewart, and Delong, 1961, p. 170-171; Simons, 1974; Davis, S. B., 1975; Schrader, 1915, p. 265-271; MRDS # M030387
221	Santa Cruz	Harshaw	Hermosa mine	23 S.	16 E.	4	SE	Cerargyrite, other silver chlorides, minor molybdenum staining (also manganese, lead, copper, gold) in fracture fillings along a fault zone in Jurassic rhyolite and latite porhyry breccia near Cretaceous pyroxene monzonite. (Mineralization may be Laramide porphyry copper related).	--	Keith, S. B., 1975, p. 58; Schrader, 1915, p. 272-274; Moores, 1972; Simons, 1974; MRDS # M030389
222	Santa Cruz	Pajarito	Sunset mine group	24 S.	12 E.	3	NE	Argentiferous galena, cerussite, minor chalcopyrite, wulfenite, vanadinite, and uranium in fissure zones in Cretaceous quartz latite and brecciated rhyolite porphyry with an oxidized pyrite gossan, with gold and silver pockets.	--	Keith, S. B., 1975, p. 72; Robison, R. L., 1954; Webb and Coryell, 1954; MRDS # M030420
223	Santa Cruz	Tyndall	Glove mine	20 S.	14 E.	30	C and SW	Argentiferous galena, sphalerite, spectacular wulfenite, pyrite, chalcopyrite, cerussite, anglesite, smithsonite, and rare vanadinite in permeable zones at fault intersections and bedding plane faults, especially in Pennsylvanian-Permian Horquilla Limestone (Naco Group) where a latite porphyry sill was emplaced along the fault and acted as a deflecting barrier for solutions. Associated igneous rocks include Jurassic quartz monzonite, Tertiary quartz latite dikes, and Cretaceous volcanics of Salero Formation. See (1964, p. 68) suggested the source of molybdenum in the groundwater was the molybdenite-bearing alaskite-pegmatite dikes in Agua Caliente Canyon.	Wulfenite went to concentrator with lead ore	See, 1964; Olson, 1966, 1961; Anthony, 1951; Anthony, Williams, and Bideaux, 1977, p. 206; Drewes, 1971; Keith, S. B., 1975, p. 85; Schrader, 1915, p. 185; Whitacre, 1964; MRDS # D000342

Wulfinite from oxidized areas of lead-zinc-silver deposits in Laramide (71-50 m.y.) porphyry copper districts

224	Gila	Banner	C&B Vanadium mine	3 S.	15 E.	32	NE	Vanadinite, descloizite, mimetite, wulfenite on cerussite, lanarkite, anglesite, and galena in northwest fissure veins at contact between Precambrian diabase and Mescal Limestone.	--	Trebiskey and Keith, 1975, p. 109; Cornwall and Krieger, 1978; Ross, 1925b, p. 69; Crowley, 1980; MRDS # M000497

Table 1.-- (cont'd)

225	Gila	Banner	Iron Spike vein	4 S.	15 E.	?		Wulfenite, vanadinite, and copper staining in ferruginous quartz at contact between Precambrian diabase and Mescal Limestone.	--	Ross, 1925b, p. 68; MRDS # 030437
226	Gila	Banner	Kullman-McCool group (Reagan Camp prospects)	4 S.	15 E.	28	SW	Galena, anglesite, cerussite with wulfenite vanadinite, descloizite, and copper carbonates in east-northeast-striking fissure veins that juxtapose Williamson Canyon volcanics with Pennsylvanian Horquilla Formation.	3 less than 1-t-lots of Mo-V concentrates produced in 1934	Anthony, Williams and Bideaux, 1977, p. 205; Banks and Krieger, 1977; Kiersch, 1951, p. 81-82; Ransome, 1923 a; Eastlick, 1968, p. 1197; Hicks, 1979, p. 16; Keith, S. B., written commun., 1979; MRDS # MD00498, M030433
227	Gila	Banner	London-Arizona mine (London Range and Curtin)	4 S.	15 E.	27 26	NE NW	Malachite, cerussite, anglesite, smithsonite, hemimorphite, chalcocite, wulfenite, rhodochrosite, and sparse galena in fissure vein with garnet, specularite, and quartz limestone replacements in O'Carroll ore bed of Devonian Percha Shale and Martin Formation in the east hanging wall of the Chocolate fault about 0.5 mi southeast of the Tertiary (63-m.y.-old) quartz-mica diorite stock at Chilito.	--	Anthony, Williams, and Bideaux 1977, p. 205; Eastlick, 1968, p. 1100; Banks and Krieger, 1977; Ross, 1925b, p. 61-62; Willden, 1964; Ransome, 1923a, p. 23; Elsing and Heineman, 1936, p. 92; Wilson, 1951b, p. 82-83; MRDS # MD02098
228	Gila	Banner	McHur prospect	4 S.	15 E.	21	SE?	Vanadinite, wulfenite, and siderite, in irregular masses of gossanlike material in Pennsylvanian Horquilla Limestone near Tertiary quartz latite porphyry.	--	Anthony, Williams, and Bideaux 1977, p. 205; Ross, 1925, p. 68; MRDS # MD00501
229	Gila	Banner	Overland mine	4 S.	15 E.	28	SE	Galena, cerussite, anglesite with wulfenite, vanadinite, descloizite, copper carbonates, and manganese oxides in limestone replacement veins in Pennsylvanian Horquilla Limestone buried by Williamson Canyon volcanics.	--	Banks and Krieger, 1977; MRDS # MD30434
230	Gila	Banner	Premier group (Santa Monica camp or Santa Monica camp)	4 S.	15 E.	13	SW	Cerussite, anglesite, galena, with wulfenite, vanadinite, gold hemimorphite, and copper carbonates in heavily iron stained replacement veins in Mississippian Escabrosa Limestone on south side of west-northwest fault and near Tertiary dike of quartz porphyry (rhyodacite porphyry).	--	Banks and Krieger, 1977, p. 3, 4; Anthony, Williams, and Bideaux, 1977, p. 205; Ross, 1925b, p. 69; MRDS # MD00499
231	Gila	Banner	79 mine	4 S.	15 E.	21	SE	Galena, sphalerite, pyrite, and cerussite with a large variety of secondary minerals including wulfenite, in permeable zones such as breccias, fractures, and shear zones especially as bedded and vein replacements, in favorable rock types such as contact metmorphosed Pennsylvanian Naco limestone and silicified rhyolite porphyry dikes of probable Tertiary (62 m.y. old) age. (See also no. 35)	--	Keith, S. B., 1972; Wilson, W. E., 1972; Kiersch, 1951, 1949, 1947; Eastlick, 1968; Anthony, Williams, and Bideaux, 1977, p. 205; Ross, 1925b, p. 66-67; Willden, 1964; Ransome, 1923a; Elsing and Heineman, 1936, p. 92; Banks and Krieger, 1977; MRDS # MD00500
232	Gila	Globe Hills	Albert Lea property	1 N.	15-1/2 E.	22	S line	Cerussite with galena, massicot, hemimorphite, descloizite, vanadinite, and wulfenite, in fissure veins in brecciated Precambrian Troy Quartzite and diabase with diorite porphyry.	--	ABGMT unpub. data; Peterson, N. P., 1962, p. 124-126; 1950, p. 105-107; MRDS # MD03136
233	Gila	Globe Hills	Apache mine (Defiance mine, Vanadium mine)	1 N.	15 E.	2	NW	Vanadinite, cerussite, and anglesite, with wulfenite, matlockite, brochantite, boleite, malachite, mottramite, descloizite, etc., in fissure vein in center of fault zone in clay fault gouge with fragments of Precambrian quartzite of Pioneer Formation and diabase.	--	Wilson, W. E., 1971; Peterson, N. P., 1962, p. 126-128; Jones, B., 1979, p. 64; Thomssen, 1957; Bideaux and Williams, 1960 p. 55; Anthony, Williams, and Bideaux, 1977, p. 197, 205; Peterson, 1950, p. 101-105; MRDS # MD02970
234	Gila	Globe Hills	Doughboy shaft	1 N.	15 E.	11 14	SE NE	Wulfenite, vanadinite, descloizite, mottramite, copper carbonates and silicates, in fissure vein on walls of fractures with vuggy and drusy quartz and manganese oxides in Precambrian diabase, Dripping Spring Quartzite, and Pioneer Formation.	--	ABGMT unpub. data; Peterson, N. P., 1962, p. 128; MRDS # MD03150
235	Gila	Miami-Inspiration	Castle Dome mine (Pinto Valley mine)	1 N.	14 E. between Copper Cities and Inspiration	27		Wulfenite occurs with libethenite, having been deposited very late (post oxidation of galena) in a fault zone in Precambrian diabase and Tertiary (64?-m.y.-old) Lost Gulch quartz monzonite. (See also no. 37)	--	Peterson, Guilbert, and Quick, 1951; Peterson, N. P., 1950, p. 820-840; Peterson, N. P., 1952, p. 128-131; 1948, p. 195-205; MRDS # MD02863
236	Gila	Miami-Inspiration	Crown Point mine	1 N.	13 E.	25 36		Cerussite, galena, vanadinite and wulfenite in slightly mineralized fissure vein in Precambrian diabase overlain by thrust fault of Pinal Schist and Whitetail Conglomerate (post-32 m.y. old).	--	ABGMT unpub. data; Peterson, N. P., 1962, p. 129; MRDS # MD02957
237	Gila	Miami-Inspiration	Day Peaks area veins	1 N.	14 E.	1		Molybdian stolzite (wulfenite), with cerussite and scheelite in fissure vein in east-striking fracture zones in Precambrian diabase near the edge of the dacite that caps Day Peak. Wulfenite occurs in cavities in quartz and disseminated in wulfenite.	--	Peterson, N. P., 1962, p. 129; Dale, 1961, p. 19-20; Faick and Hildebrand, 1958, p. 156-159; ABGMT unpub. data; MRDS # MD30554
238	Gila	Miami-Inspiration	Sleeping Beauty Mountain (?Slumbering Beauty mine or? Honey Metal mine?)	1 N.	14 E.	uncertain		Wulfenite as the variety chillagite.	--	Anthony, Williams, and Bideaux, 1977, p. 205; MRDS # 030450

Table 1.-- (cont'd)

239	Greenlee	Morenci	Morenci mine	4 S.	29 E.	8, 9, 15, 16	I	One small specimen of clear wulfenite reported very rare. Stolzian wulfenite. (See also no. 40)	--	Phillips, K., oral commun., 1979; Department of Mineral Resources; Bideaux, R. A., oral commun., 1979; MRDS # MD02216
240	Mohave	Owens(?)	Midwest mine (Shannon Basin Moly mine)	15 N.	13W.	?8 ?17	uncertain	Galena, cerussite, and wulfenite in quartz vein with "black" calcite in granite gneiss several miles from Tertiary (58-m.y.-old) intrusion.	--	Hicks, 1979, p. 18; MRDS # MD30370
241	Mohave	Wallapai (Chloride subdistrict)	Empire mine	24 N.	18 W.	35		Pyrite, tennantite, proustite, arsenopyrite, sphalerite, galena; reportedly 2 percent V and Mo and 2 to 14 percent Au and Ag (?)with quartz.	--	Malach, 1977, p. 40; Bastin, 1925, p. 21; Schrader, 1909, p. 61-62; Willis, 1920, p. 41; MRDS # M004230
242	Mohave	Wallapai (Chloride subdistrict)	New Tennessee mine (Bryan, Oversight claims)	23 N.	18 W.	3	EC	Reported lead, zinc, copper, gold, silver, and molybdenum from northwest veins in Precambrian amphibolite schist and undifferentiated granite, gneiss, and schist near Laramide (71.5-m.y.-old) Ithaca Peak quartz monzonite.	--	ABGMT unpub. data; Schrader, 1909, pl. 3; Dings, 1951; MRDS # M004153
243	Mohave	Wallapai (Mineral Park subdistrict)	Mineral Park	23 N.	17 W.	19	W	Squat dipyramids and acicular-shaped wulfenite on cerussite or chalcocite. (See no. 71 for description of geology of deposit)	--	University of Arizona micromount collection; Wilkinson, Roe, and Williams, 1980; MRDS # D000322
244	Pima	Pima	Mineral Hill mine	16 S. 17 S.	12 E. 12 E.	35 2	S1/2 N1/2	Rare wulfenite with partly oxidized copper, lead, and zinc minerals i garnetized or brecciated Paleozoic limestone at fault intersections near Mineral Hill thrust fault and Laramide intrusive granitic sill. (See also no. 98)	--	Keith, S. B., 1974, p. 135; Kansome, 1922, p. 419-422; Mayuga, 1942; Storms and Bowman, 1957, p. 1-6; MacKenzie, 1959; MRDS # M050359
245	Pima	Pima	Twin Buttes mine	18 S.	13 E.	5 6	SW NE	Rare wulfenite occurs with mimetite in oxidized coatings on galena cores in fractures in a lead-zinc breccia pipe separate from the main ore bodies. (See also no. 106)	--	Barter, 1978; Kelly, 1977, 1976, 1975; Keith, 1974; Keith, S. B., oral commun., 1979; MRDS # M050530
246	Pima	Redington	Lucky Strike No. 1	11 S	18 E.	24 32		Copper and lead oxides, wulfenite, and vanadinite, in Paleozoic(?) limestone and porphyritic igneous rocks of intermediate composition.	--	Hicks, 1979, p. 20; Creasey and Theodore, 1975; MRDS # M002259
				4 mi northwest of Redington						
247	Pima	Silver Bell	Magonigal mine	11 S.	7 E.	34	EC	Copper oxides and sulfides with wulfenite, and manganese and iron oxides, along a fault zone cutting Paleozoic and Cretaceous limestone and sediment and volcanics, and apparently peripheral to Tertiary mineralization at Silver Bell.		Keith, S. B., 1974, p. 143; Clark, C. W., 1966; ABGMT unpub. data; MRDS # M051113
248	Pima	Silver Bell	Silver Bell mine	12 S.	8 E.	11	C	Wulfenite occurs sparsely with fluorite in Tertiary (63-m.y.-old) copper sulfide mineralization. (See also no. 112)	--	Anthony, Williams, and Bideaux, 1977, p. 205; Richard and Courtright, 1966; Galey, 1979; Banks and Dockter, 1976; MRDS # D002948
249	Pima	Waterman	Indiana-Arizona mine	12 S.	8 E.	25	NE	Galena, cerussite, sphalerite with chalcopyrite, chalcocite, wulfenite, mimetite, copper carbonates, silver, and anglesite, in vein replacements along breccia zones, strong faults, and fissure intersections in Paleozoic (Cambrian) quartzites, and less favorable intersections in Tertiary(?) Waterman alaskite. Wulfenite and mimetite occur on quartz, and postdate galena altered to anglesite.	--	Keith, S. B., oral commun., 1979; Keith S. B., 1974, p. 144; Ruff, 1952; McClymonds, 1957, 1958, 1959; Knudsen, P., oral commun., 1979; MRDS # M050601
250	Pinal	Bunker Hill (Copper Creek)	Blue Bird mine	8 S.	18 E.	2	SE	Lead, zinc, and copper sulfides and oxided minerals, as cerussite, anglesite, malachite, cerargyrite, wulfenite, and descloizite in northeast fissure veins in recrystallized limestone adjacent to Laramide (68-m.y.-old) Copper Creek granodiorite, intruded by small andesite dikes. Wulfenite occurs with limonite, partly filling open spaces in a quartz network.	--	Guthrie and Moore, 1978; Kuhn, 1941, p. 529; 1951, 1938; Simons, 1964; Anthony, Williams, and Bideaux, 1977, p. 206; MRDS # MD30468
251	Pinal	Campo Bonita (Old Hat)	Old Maudina mine	10 S.	16 E.	20 17		Tungsten as scheelite, with cerussite, wulfenite, vanadinite, and minor lead and copper- sulfides in replacement veinlets and masses in a fault block of marble and silicified Mississippian Escabrosa Limestone adjacent to the Mogul fault. Cretaceous(?) Rice Peak granodiorite porphyry is in area.	--	Creasey, 1967, p. 84-87; Wilson, E. D., 1941, p. 32-34; Bromfield, 1950; Dale, 1959, p. 52, 61; Lemmon and Tweto, 1962; Ludden, 1950; Hill, 1946; Tenney, 1936; Keiser, 1945, p. 663-664; MRDS # MD30487
252	Pinal	Silver Reef(?)	Orizaba mine	9 S.	4 E.	25	NW	Silver-bearing cerussite, limonite, and chrysocolla (molybdenum reported) in fault zone of Cambrian and Devonian quartzite and Permian sandstone near Tertiary-Cretaceous diorite porphyry dike (porphyritic biotite-horneblende quartz monzonite).	--	Tenney, 1927-29; ABGMT unpub. data; Blacet, Bergquist, and Miller, 1978; Tenney, 1934; MRDS # MD30492
253	Pinal	Silver Reef	Turning Point mine	9 S.	4 E.	36	SE	Copper silicate and iron staining, with silver, lead, gold, and wulfenite also reported, from replacements in Mississippian Escabrosa Limestone in strong fault zones near andesite porphyry dikes of Tertiary age.	--	Blacet, Bergquist, and Miller, 1978, Tenney, 1934, p. 22; Tenney, 1927-1929; Hammer, 1961; MRDS # MD00048

Table 1.-- (cont'd)

254	Pinal	Troy	Elder Gulch prospects	3 S.	14 E.	29		Galena with cerussite, wulfenite, sphalerite, smithsonite, etc., in east-northeast veins crosscutting Cretaceous (70-m.y.-old) Tortilla Quartz Diorite and Pennsylvanian Horquilla Limestone. Veins are mineralized faults and fissures associated with Tertiary (63-m.y.-old) east-northeast rhyodacite porphyry dikes. In the outer lead-zinc zone north of the Troy-Buckeye-Alice copper belt.	--	Keith, S. B., oral commun., 1979; Ransome, 1923a; Cornwall, Banks, and Phillips, 1971; MRDS # M030474
255	Pinal	Troy	Grayhorse Vanadium prospects	4 S.	14 E.	3	SW	Vanadinite and descloizite with wulfenite, galena, and cerussite in east-northeast fissure veins in Precambrian Mescal Limestone inclusion in Precambrian diabase. In the outer lead-zinc zone south of the Troy-Buckeye-Alice copper belt.	--	Ransome, 1923a, p. 24; Cornwall and Krieger, 1975a; Clark and Fleck, 1980; Newhouse, 1934; AEGMT unpub. data; MRDS # M030473
256	Pinal	Troy	Ninety-one mine	3 S.	14 E.	27	SW	Oxidized copper, lead, molybdenum, and vanadium minerals, in replacement lenses along N. 80° E. fault vein structures and bedding planes in inclusions of Precambrian Mescal Limestone in Precambrian diabase. Wulfenite occurs in joints in fractured Precambrian Dripping Spring Quartzite. Tertiary (63-m.y.-old) rhyodacite porphyry dikes are in area.	--	Ransome, 1923a, p. 24; Cornwall, Banks, and Phillips, 1971; Keith, S. B., written commun., 1979; MRDS # M000385
257	Pinal	Ripsey	Florence Lead-Silver mines	5 S.	13 E.	12	SE	Silver-bearing galena, sphalerite, pyrite, tennantite with cerussite, wulfenite, hemihedrite, willemite, vauquelinite, minium and mimetite along a sheared and mineralized east-west-striking fault zone separating Mississippian Escabrosa Limestone and quartzite. Wulfenite formed after cerussite, during and after formation of hemihedrite. Lead-zinc mineralization may be Late Cretaceous rather than Laramide porphyry copper.	--	Anthony, Williams, and Bideaux, 1977, p. 205; Williams and Anthony, 1970, p. 1088-1102; Cornwall and Krieger, 1975a; Schmidt, 1971; Ransome, 1923; MRDS # M030467
258	Santa Cruz	Patagonia	Mowry mine	23 S.	16 E.	15	NW	Argentiferous galena, cerussite, and anglesite, with minor copper, bindheimite, wulfenite, vanadinite, and manganese oxides in replacement of Mississippian Escabrosa Limestone along strong east-northeast fault zones and fissures in quartz monzonite.	--	Keith, S. B., 1975, p. 81; Schrader, 1915, p. 296-306; 1917, p. 250-252; Simons, 1974; Smith, G. E., 1956; Prout, 1907; Brinsmade, 1907; Carpenter, 1940; Farnham, Stewart, and Delong, 1961, p. 159-162; Wilson, E. D., and Butler, 1930, p. 94; MRDS # M899923
259	Santa Cruz	Tyndall	Ivanhoe mine (Commercial shaft)	21 S.	15 E.	34	S1/2	Chalcopyrite, galena, tetrahedrite, silver halides and chlorides, cerussite, wulfenite, and copper carbonates in east-west quartz fissure veins in Jurassic (161-m.y.-old) Squaw Gulch granite associated with Tertiary (Paleocene) fault system and alteration and quartz veins.	--	Keith, S. B., 1975, p. 85; Drewes, 1967, p. 175-182; Schrader, 1915, p. 216-218; Elsing and Heineman, 1936, p. 100; MRDS # M050441
260	Santa Cruz	Wrightson	Gringo mine	21 S.	15 E.	36	NW	Native gold, and minor silver, with wulfenite, sparse copper and lead sulfides and malachite stains in east-west Tertiary quartz veins related to nearby dacite porphyry phase of Gringo Gulch pluton (60 m.y. old) which intrudes Cretaceous Bathtub Formation andesites. Mineralization may be Late Cretaceous rather than Laramide porphyry copper.	--	Keith, S. B., 1975, p. 89; Schrader, 1915, p. 222-226; Anthony, Williams, and Bideaux, 1977, p. 206; Drewes, 1971b; MRDS # M030418
261	Yavapai	Eureka	Mountain Spring mine	14 N.	9 W.	17		Galena, sphalerite, chalcopyrite, and pyrite, with cerussite, anglesite, wulfenite, chrysocolla, malachite, and hemimorphite, in quartz veins on south end of Mountain Spring fault in Precambrian Hillside Mica schist, and Lawler Peak Granite, with Laramide mineralization as in nearby Bagdad.	--	Anderson C. A., and Creasey, S. C., 1955, p. 93; MRDS # M800182
			Wulfenite from oxidized areas of lead-zinc-silver districts in or associated with mid-Tertiary igneous rocks							
262	Cochise	California	Hilltop mine	17 S. 16 S.	30 E. 30 E.	3, 4, 5 32, 33, 34		Galena, cerussite, sphalerite with scheelite, wulfenite, anglesite, smithsonite, malachite, and manganese oxides in northeast fissure veins in Permian limestone and quartzite in association with mid-Tertiary porphyry and felsite dikes probably related to Jhus Canyon pluton (31 m.y. old).	--	Anthony, Williams, and Bideaux, 1977, p. 205; Keith, B., 1973, p. 52; Papke, 1952; Drewes and Williams, 1973, p. 37; Dale, Stewart, and McKinney, 1960, p. 17-18; Brittain, 1954; Shafiqullah and others, 1978; MRDS # M002167
263	Cochise	California	Hilltop Extension	16 S.	30 E.	28 34	SE SW	Base-metal sulfides and carbonates in quartz veins, and contact metamorphic deposits in Paleozoic limestones, cut by intrusives and dikes. Paleozoic rocks and Cretaceous Bisbee Group rocks are juxtaposed by northwest-striking, 30-45°-southwest-dipping thrust fault.	--	AEGMT unpub. data; U.S.Geological Survey Mineral Resources, 1923, 1926-1928; Weed, 1926, 1931; Keith, S. B., 1973, p. 52; MRDS # M241042
264	Cochise	Middle Pass	Escapule property (Garnet and Moonlight groups)	18 S.	23 E.	24		Oxidized lead and zinc minerals with wulfenite, vanadinite, and minor copper.	--	Keith, S. B., 1973, p. 68; AEGMT unpub. data; Wilson, E. D., 1950, p. 28; Cederstrom, 1946b, p. 80; MRDS # M000921

Table 1.-- (cont'd)

265	Cochise	Middle Pass	Middlemarch mine	18 S.	23 E.	12		Chalcopyrite, sphalerite, galena, pyrrhotite, and sparse scheelite, with enriched copper, copper carbonates, and trace wulfenite in a 45°-west-plunging pipelike structure in Glance Conglomerate made of limestone cobbles in the Cretaceous aged Bisbee Group. The rocks have been contact metamorphosed to wollastonite and garnet skarns along faults and near the mid-Tertiary (25.9-m.y.-old) Stronghold Granite. (See also no. 355)	--	Cederstrom, 1946a, p. 87-88; Keith, S. B., 1973, p. 68; Tenney, 1927-29, p. 218-219; Sousa, 1979; Marvin and others, 1973; Damon and Bikerman, 1964; MRDS # MD30567
266	Cochise	Pearce	Pearce mine (Commonwealth mine)	18 S.	25 E.	5	NE	Silver and gold halides, sulfosalts, native gold and silver, wulfenite, and some base-metal sulfides in fissure veins and fault breccia zones in mid-Tertiary rhyolite and andesite of Pearce Volcanics. Wulfenite occurs lining cavities and with embolite.	--	Anthony, Williams, and Bideaux, 1977, p. 205; Scott, 1916, p. 187-188; Endlich, 1897; Smith, L. A., 1927; Keith, S. B., 1973, p. 69; Howell, 1977; MRDS # 030569
267	Cochise	Swisshelm	Chance mine	20 S.	27 E. 22 E.	12 16		Galena, cerussite, pyrite, vanadinite, wulfenite, and mimetite, in replacement deposits in Pennsylvanian-Permian Naco group limestones above a tabular body of Tertiary or Cretaceous diorite porphyry, intruded along a strong northwest-striking thrust fault. (Associated with 30-m.y.-old Elfrida stock)	--	Galbraith and Loring, 1951; Keith, S. B., 1973, p. 70-71; Dfery, 1964; Loring, 1947; Cooper, 1960a; Dale, Stewart, and McKinney, 1960, p. 58; Shafiqullah and others, 1978; McGaw, P., oral commun., 1981; MRDS # MD02185, M241077
268	Graham	Aravaipa	Brooker T. Washington claim	5 S.	20 E.	30	NW	Galena, malachite, chrysocolla, and wulfenite along northwest fracture veins in Pennsylvanian Horquilla Limestone with nearby rhyolite dikes of probable Tertiary age.	--	Simons, 1964, p. 143; Ross, 1925a; Denton, 1947; ABGMT unpub. data; MRDS # MD50084
269	Graham	Aravaipa	Dogwater mine (near Silver Cable mine)	6 S.	20 E.	33	NW	Cerussite and galena, with some anglesite, argentite, wulfenite, and copper oxides in silicified fault breccia along the Grand Reef structure between Tertiary (25-m.y.-old) Horse Mountain Volcanics ands Goodwin Canyon Quartz Monzonite and Precambrian Pinal Schist.	--	Anthony, Williams and Bideaux, 1977, p. 205; Simons, 1964, p. 147-148; Wilson, E. D.,1950, p. 61; Ross, 1925a, Denton, 1947; Creasey and Krieger, 1978 MRDS # MD50154
270	Graham	Aravaipa	Fairview prospect	5 S.	19 E.	25 26	S 1/4	Cerussite, anglesite, and chrysocolla, with very scarce wulfenite, in north fracture veins in porphyritic andesite of Horse Mountain Volcanics of probable mid-Tertiary age.	--	Simons, 1964, p. 133; ABGMT unpub. data; MRDS # MD50101
271	Graham	Aravaipa	Grand Reef mine	6 S.	20 E.	29		Galena, sphalerite, chalcopyrite with cerussite, wulfenite, anglesite, malachite, azurite, and chrysocolla, in silicified breccia in northwest-striking fissure veins along the Grand Reef fault in rhyolite porphyry of mid-Tertiary Horse Mountain Volcanics intruded by mid-Tertiary (25-m.y.-old) Goodwin Canyon Quartz Monzonite.	--	King, 1969, p. 235; ABGMT unpub. data; Simons, 1964, p. 146-147; Ross, 1925a, p. 82; Wilson, E. D., 1950; Rehrig and Reynolds, 1980; Jones, 1980; MRDS # MD50152
272	Graham	Aravaipa	Ionia claim	5 S.	20 E.	30	NE	Galena, sphalerite, johannsenite, anglesite, wulfenite, and copper staining in limestone replacement deposits in lower Paleozoic Bolsa Quartzite, Martin Formation, and Escabrosa Limestone, near Iron Cap thrust fault.	--	ABGMT unpub. data; Simons, 1964, p. 144; MRDS # MD50082
273	Graham	Aravaipa	Silver Coin mine (Quinn mine)	7 S.	20 E.	11	E 1/2	Galena, anglesite, cerussite, wulfenite, plumbojarosite(?), and sparse copper staining in east-northeast fissure vein in silicified and brecciated fault zone between a plug of biotite quartz latite on north and volcanics of Cretaceous(?) Buford Canyon Formation on south with some slivers of Precambrian Pinal Schist.	--	Anthony, Williams, and Bideaux, 1977, p. 205; Simons, 1964, p. 148; Ross, 1925a, p. 82, 85, 87; Mining World, 1948, p. 59; MRDS # MD50156
274	Graham	Aravaipa	Sinn Fein mine	5 S.	20 E.	19 30	line	Galena, chalcopyrite, sphalerite, fluorite, anglesite, cerussite, malachite, azurite, and wulfenite in fissure vein along fault contact between Mississippian Escabrosa Limestone and Pennsylvanian Horquilla Limestone, and mid-Tertiary Horse Mountain Volcanics with a quartz porphyry dike (porphyritic dacite) intruding the fault. Small wulfenite crystals are fairly common in open spaces in upper part of mine.	--	Simons, 1964, p. 137-141; Ross, 1925, p. 100; ABGMT unpub. data; MRDS # MD50096
275	Maricopa	Painted Rock	Rowley mine	4 S.	8 W.	24 25	E 1/2	Barite, wulfenite, cerussite, base-metal sulfides, (secondary minerals include a cerussite-anglesite suite, a wulfenite suite, a caledonite suite, and a vanadinite suite) in northwest fissure veins in mid-Tertiary andesite and rhyolite flows and dikes. (See also no. 382)	130 t wulfenite concentrate shipped to California (18.26 percent MoO_3)	Wilson, W. E., and Miller, 1974, p. 14; Anthony, Williams, and Bideaux, 1977; MRDS # D000321
276	Maricopa	Vulture	Vulture mine	6 N.	5 W.	25, 26 35, 36		Gold, oxidized lead, galena, sphalerite, wulfenite, vanadinite, pyrite, and chalcopyrite in east-west to west-northwest fissure veins in Precambrian quartz-sericite schist in vicinity of granite porphyry dikes or rhyolite intrusion of uncertain age (Precambrian or Tertiary).	--	Wilson, Cunningham, and Butler, 1967, p. 157-162; Tenney 1927-1929; Hutchinson, 1921; Lefty, 1912; Dinsome, 1911; Hafer, 1911; McClintock, 1928 Moore, 1902; Purington, 1907; Thompson, 1930; Metzger, 1938; Rehrig, Shafiqullah, and Damon, 1980; MRDS # MD03317
				6 N.	6 W.	30 31	SW W 1/2			

277	Mohave	Oatman	Aztec shaft of Tom Reed mine	19 N.	20 W.	23	SE	Gold, with thin film of wulfenite, in fissure veins in mid-Tertiary Oatman Andesite (between 10 and 22 m.y. old) near the Gold Road Latite.	--	Lausen, 1931, p. 60, 74-80; Ransome, 1923, p. 39-45; Wells, 1937, p. 9-10; Thorson, 1971; MRDS # M004493
278	Mohave	Oatman	Big Jim mine (part Tom Reed vein)	19 N.	20 W.	23	SW	Gold, in fissure veins, with specimens on dump containing thin film of wulfenite. Ore occurs in fissure veins in mid-Tertiary Oatman Andesite near Gold Road Latite.	--	Lausen, 1931, p. 60, 76-87, 105, 109-110; Ransome, 1923, p. 39-45; Schrader, 1909, p. 180-183; Malach, 1977, p. 15; Thorson, 1971; MRDS # M004495
279	Mohave	Oatman	Pioneer vein (German-American vein)	19 N.	20 W.	21	E 1/2	Gold, with thin film of wulfenite, in fissure veins along contact of mid-Tertiary Oatman Andesite and Alcyone Trachyte.	--	Ransome, 1923, p. 50; Lausen, 1931, p. 60, 84; Schrader, 1909, p. 186-190; 1907, p. 80; MRDS # M004486
280	Pinal	Bunker Hill	Table Mountain mine	7 S.	18 E.	15 22	SE NE	Chrysocolla, wulfenite, vanadinite, gold in quartz, and secondary copper minerals, in fissure veins and jasperoid breccia associated with Mississippian Escabrosa Limestone, and overlain by mid-Tertiary (29-m.y.-old) lower andesite of Galiuro Volcanics. Deposit is derived from erosion of nearby oxidized lead-silver and copper deposits.	--	Simons, 1964, p. 150-152; Kuhn, 1941, 1938; 1951; Guthrie and Moore, 1978; Thomssen, Williams, and Bideaux, 1958; Keith, S. B., written commun., 1979; MRDS # M050053
281	Pinal	Mammoth	Mammoth-St. Anthony mine (at Tiger)	8 S.	16 E.	26	SW	Wulfenite, vanadinite, gold in quartz, galena, sphalerite, anglesite, cerussite, and many oxidized minerals, in west-northwest sheer zones intruded by mid-Tertiary (22-m.y.-old) rhyolite, with widest fissure veins occurring in quartz monzonite (Precambrian) most intensely shattered and brecciated. Deposit was oxidized and faulted, thin wulfenite and vanadinite were deposited with later oxidation.	6,314,822 lbs MoO_3 (1881-1947)	Anthony, Williams, and Bideaux 1977, p. 21-23, 205; Creasey, 1950, p. 63; 1967; Peterson, N. P. 1938a; 1938b; 1938c; Bideaux, 1980; Creasey, 1965; MRDS # M050189
282	Yuma	Castle Dome	Adams mine group	4 S.	18 W.	31	SW	Galena, anglesite, cerussite, vanadinite, wulfenite, lead- and copper- oxides, in north-northwest-striking fissure veins in brecciated slate of Mesozoic(?) age with diorite porphyry dikes and quartz porhpyry dikes and quartz porphyry, in region of major mid-Tertiary volcanism.	--	Keith, S. B., 1978, p. 117; Wilson, E. D., 1933, p. 101-102; Wilson, 1951, p. 113; MRDS # M002517
283	Yuma	Castle Dome	Buckeye vein group	4 S.	19 W.	25 36	SC C	Argentiferous galena, fluorite, anglesite, cerussite, wulfenite, vanadinite, and lead- and zinc-oxide minerals, in south-southeast fissure veins in Mesozoic (?) shale near or on contact between large diorite porphyry dikes and quartz porphyry dikes.	--	Keith, S. B., 1978, p. 119; Wilson, E. D., 1933, p. 95-96; Wilson, 1951a, p. 110-111; Blake, 1881; Nevius, 1912; MRDS # M030339
284	Yuma	Castle Dome	Castle Dome mine group	4 S. 4 S. 5 S.	19 W. 18 W. 19 W.	24, 25 36 30, 31 1		Argentiferous galena, anglesite, cerussite, smithsonite, wulfenite, vanadinite, and mimetite in fissure veins in Mesozoic(?) slates metamorphosed to mica schists, with dike swarms of intrusive diorite porphyry dikes and quartz porphyry dikes.	--	Keith, S. B., 1978, p. 118-121, 21-26; Wilson, E. D., 1933, 1951a; Allen, and Butler, 1921, p. 6-7; Foshag, 1919, p. 149-150; Blake, 1880-1881; Moore, R. T., 1969, p. 200; Van Alstine and Moore, 1969; MRDS # M001813
285	Yuma	Castle Dome	Cleveland-Chicago group	4 S.	18 W.	30 31	SW NW	Argentiferous galena in south-southeast fissure veins in Mesozoic(?) shale and limestone near dikes of quartz porphyry and diorite porphyry. Molybdenum, vanadium, zinc, gold, barium, and fluorine are also reported.	--	Keith, S. B., 1978, p. 119; Wilson, E. D., 1933, p. 100-101; p. 112-113; MRDS # M030318
286	Yuma	Castle Dome	Colorado or Lincoln group	5 S.	19 W.	12	EC	Argentiferous galena, oxidized lead and copper staining, in fissure veins in Mesozoic(?) shale and limestone near diorite porphyry dikes. Molybdenum, vanadium, zinc, gold, fluorine, and barium also reported.	--	Keith, S. B., 1978, p. 120; Wilson, E. D., 1933, p. 102; 1951a, p. 114; MRDS # M899962
287	Yuma	Castle Dome	Flora Temple claim	4 S.	19 W.	36	NC	Rich argentiferous galena, cerussite, anglesite, wulfenite, vanadinite, mimetite, smithsonite, and hydrozincite in north-northwest fissure veins in Mesozoic (?) slate and quartz porphyry dikes and diorite porphyry dike with stronf cross fractures.	--	Keith, S. B., 1978, p. 119; Wilson, E. D., 1933, p. 90-92; 1951a, p. 106-107; Blake, 1881; MRDS # M030315
288	Yuma	Castle Dome	Hauk mine group	4 S. 4 S.	19 W. 18 W.	25 31	SE NW	Argentiferous galena, and oxidized lead, zinc, and copper minerals in fissure veins in Mesozoic(?) shale and diorite and quartz porphyry dikes. Elements reported also include molybdenum, vanadium, gold, arsenic, selenium, beryllium, tin, barium, and fluorine.	--	Keith, J. B., 1978, p. 119; Wilson, E. D., 1933, p. 9; MRDS # M030327
289	Yuma	Castle Dome	Hull mine group (Rialto group)	4 S.	19 W.	24 25	SW NC	Argentiferous galena, oxidized lead minerals, wulfenite, vanadinite, and mimetite, in north-northwest fissure veins in Mesozoic(?) shale, limestone, and sandstone, with diorite porphyry dikes.	--	Keith, S. B., 1978, p. 120; Wilson, E. D., 1933, p. 99-100; 1951a, p. 111-112; Blake, W. P., 1881; Nevius, 1912; MRDS # M030326
290	Yuma	Castle Dome	Little Dome mine (Linda Extension)	4 S.	19 W.	36	SE	Argentiferous galena, anglesite, and cerussite, in west-northwest-striking fissure veins in Mesozoic(?) shale cut by diorite porphyry dikes, that one cut by quartz porphyry dikes. Elements reported also include molybdenum, vanadium, gold, zinc, barium, fluorine, copper, arsenic, tin, selenium, and beryllium.	--	Keith, S. B., 1978, p. 120; Wilson, E. D., 1933, p. 96-99; 1951a, p. 110; MRDS # M001817, M241394, M030341

Table 1.-- (cont'd)

291	Yuma	Castle Dome	Mabel mine group	4 S.	18 W.	31	WC	Argentiferous galena (partly oxidized), wulfenite, and vanadinite, in vugs and solution channels in fissure veins in Mesozoic(?) shales and diorite porphyry and quartz porphyry dikes.	--	Keith, S. B., 1978, p. 122; Wilson, E. D., 1933, p. 102; 1951a, p. 113-114; MRDS # M030324, M002611
292	Yuma	Castle Dome	Senora mine group	4 S. 5 S.	19 W. 19 W.	36 1	SC NC	Argentiferous galena, cerussite, anglesite, wulfenite, fluorite, hydrozincite, and smithsonite, in north-northwest fissure veins in Mesozoic(?) shale and diorite porphyry and quartz porphyry dikes.	--	Keith, S. B., 1978, p. 121; Wilson, E. D., 1933, p. 92-95; 1951a, p. 107-108; Burchard, 1934; MRDS # M030325
293	Yuma	Harquahala	Socorro mine	5 N.	12 W.	25	SW	Galena with pyrite, anglesite, cerussite, wulfenite and oxidized copper minerals, in fissure veins in subconcordant fault zone in Paleozoic and Mesozoic quartzite, limestone, and shale near mid-Tertiary microdiorite dike swarm.	--	Keith, S. B., 1978, p. 154; Bancroft, 1911, p. 111-113; Rehrig and Reynolds, 1980; Varga, 1977; Wilson, Cunningham, and Butler, 1934, p. 131; Smith, 1907; Pratt, 1902; MRDS # M003687
294	Yuma	Muggins	Red Knob mine	8 S.	19 W.	10		Uranium minerals with wulfenite, vanadinite, and cuprite, in high-grade pockets in mid-Tertiary (22-m.y.-old) volcanics, opalized mudstone and sandstone.	--	Keith, 1978, p. 164; Anthony, Williams, and Bideaux, 1977, p. 207; Honea, 1959; Wilson, E. D., 1933, p. 218-220; Keith, S. B., 1970, p. 257; MRDS # M030319
295	Yuma	Santa Maria	Copper Penney mine	10 N.	17 W.	35 36		Chrysocolla, malachite, azurite, tenorite, wulfenite, chalcocite, pyrite, and limonite in shattered, chloritized, pyritized lower plate mylonite, especially immediately below a mid-Tertiary (18-15-m.y.-old) dislocation surface	--	Heidrick, 1980, p. 38-51; Wilkins, J., oral commun., 1979; Rehrig and Reynolds, 1980; Davis and others, 1980;
296	Yuma	Santa Maria	Planet mine	10 N. 11 N.	16 W. 16 W.	6 31	NW SC	Copper carbonates and silicates, wulfenite, specular hematite, copper sulfides and pyrite in brecciated Paleozoic limestone and shale along a mid-Miocene dislocation surface above Precambrian metamorphics.	--	Keith, S. B., 1978, p. 173; Bancroft, 1911, p. 47-55; Harrer, 1964, p. 130-133; Heidrick, 1980 p. 38-51; MRDS # M003887
297	Yuma	Santa Maria	Swansea mine (Signal mine group)	10 N.	15 W.	32	NC	Oxidized copper minerals, specular hematite, wulfenite, chalcopyrite, pyrite, and bornite, in upper plate Paleozoic limestones along a strong flat fault zone overlying lower plate Precambrian gneiss. The dislocation surface was probably mid-Tertiary (17-m.y.-old).	--	Keith, S. B., 1978, p. 174 Bancroft, 1911, p. 62-65; Heidrick, 1980; p. 38-61; Harrer, 1964, p. 134-135; Stevens, 1910-1911, p. 1557, 1635, 912-913; Weed, 1918, p. 360-361; 1922, p. 392; MRDS # M003777
298	Yuma	Silver	Black Rock mine	4 S.	23 W.	11 12	S	Silver-bearing quartz, fluorite, willemite, cerussite; smithsonite, wulfenite, and iron- and manganese-oxides in west-northwest fissure veins in Mesozoic(?) quartzite, schist, and granite, intruded and metamorphosed by Tertiary(?) granodiorite. Area is major center of probable mid-Tertiary volcanism.	--	Keith, S. B., 1978, p. 175; Wilson, E. D., 1933, p. 67-69; Wilson E. D., 1951a, p. 93-94; Parker, 1966; Dohms, and others, 1980, p. 316; MRDS # M002447
299	Yuma	Silver	Chloride, Mandarin, Cash Entry claims	4 S.	22 W.	6 7		Barite and fluorite with galena, lead oxide, wulfenite, smithsonite, cerussite, chrysocolla, and malachite in north-northwest fissure veins in probable mid-Tertiary trachytic to andesitic lavas, tuffs, and breccias.	--	Wilson, E. D., 1933, p. 60-62; MRDS # M002423
300	Yuma	Silver	Geronimo mine	3 S.	23 W.	34	E1/2	Argentiferous anglesite and cerussite, with wulfenite, vanadinite, galena, smithsonite, lead oxides, quartz, fluorite, and manganese oxides, in north-northwest fissure veins in probable mid-Tertiary rhyolite tuffs and andesite flows faulted against granodiorite.	--	Keith, S. B., 1978, p. 176; Wilson, E. D., 1933, p. 64-65; Parker, 1966; MRDS # M002459
301	Yuma	Silver	Hamburg claim	4 S.	23 W.	1	C	Argentiferous cerussite and anglesite, galena, argentite, cerargyrite, wulfenite, vanadinite, quartz, barite, and fluorite, in north-northwest fissure veins in Mesozoic(?) schist, correlative with Orocopia schist and granite and probable mid-Tertiary volcanics.	--	Anthony, Williams, and Bideaux 1977, p. 20 ; Wilson, E. D., 1933, p. 63-64; Keith, S. B., 1978, p. 177; Parker, 1966; Blake, W. P., 1880-1881; Haxel and Dillon, 1978; MRDS # M002446
302	Yuma	Silver	Melissa claim	near Red Cloud mine				Wulfenite specimens exhibit unusual crystal forms.	--	Anthony, Williams, and Bideaux, 1977, p. 207;
303	Yuma	Silver	Papago mine	4 S.	23 W.	11	C	Cerargyrite, cerussite, smithsonite, pyrolusite, anglesite, wulfenite, vanadinite, malachite, and galena, in north-trending fissure veins in probable mid-Tertiary volcanic tuffs and andesite flows faulted against granodirite.	--	Keith, S. B., 1978, p. 177; Wilson, E. D., 1933, p. 70; Parker, 1966; Wilson, 1951a, p. 96; MRDS # M002445
304	Yuma	Silver	Princess mine	4 S.	23 W.	1	C	Anglesite, cerussite, fluorite, barite with yellow lead oxide, vanadinite, wulfenite, smithsonite, galena, argentite, and cerargyrite in north-northwest fissure veins in fault separating Mesozoic schist from probable mid-Tertiary andesite and granite.	--	Keith, S. B., 1978, p. 177; Wilson, E. D., 1933, p. 63; Parker, 1966; Emmons and Becker, 1885, p. 52; MRDS # M002448

Table 1.-- (cont'd)

305	Yuma	Silver	Red Cloud mine	4 S.	23 W.	2	SE	Argentiferous galena, anglesite, fluorite, cerussite, cerargyrite with wulfenite, pyrolusite, vanadinite, malachite, and silver bromide in north-northwest fissure veins in probable mid-Tertiary andesite, breccia, dacite porphyry, rhyolitic to dacitic tuffs, and lapilli tuffs, and faulted against granodiorite to quartz diorite with best ore at intersections of fault and cross fractures. Wulfenite crystals up to 2 in. on an edge.	--	Keith, S. B., 1978, p. 178; Wilson, E. D., 1933, p. 65-67; Parker, 1966; Anthony, Williams, and Bideaux, 1977, p. 207; Blake, 1880-1881; Foshag, 1919; Thompson, 1925; Silliman, 1881; Wilson, E. D., 1951a, p. 90-93; Edson, 1980; MRDS # M002442
306	Yuma	Silver	Saxon mine (Padre Kino mine)	3 S.	23 W.	36	SW	Argentiferous cerussite and smithsonite, celestite, wulfenite, willemite, barite, manganiferous calcite, quartz, gypsum, and iron oxides in fissure vein between Mesozoic metamorphics and granite, and probable mid-Tertiary dacitic and andesitic lavas, rhyolite tuffs, and lapilli tuffs	--	Wilson, E. D., 1933, p. 62-63; Keith, S. B., 1978, p. 178; Keith S. B., oral commun., 1979; Shannon, D., written commun., 1980;
307	Yuma	Silver	Silver Glance claim	4 S.	23 W.	11	NE	Galena, cerussite, anglesite, wulfenite, yellow lead oxide, quartz, limonite, and manganiferous calcite, in south-southwest fissure veins in Mesozoic quartz sericite schist correlative with Orocopia schist, and probable mid-Tertiary lavas and tuffs.	--	Keith, S. B., 1978, p. 178; Wilson, E. D., 1933, p. 68-70; Parker, 1966; Haxel and Dillon, 1978; MRDS # M002452
308	Yuma	Silver	Silver King claim	4 S.	23 W.	1	NC	Galena, anglesite, cerussite, yellow lead oxide, wulfenite, and manganese and copper staining, in quartz fluorite fissure veins in probable mid-Tertiary andesite flows and granite.	--	Keith, S. B., 1978, p. 178; Wilson, E. D., 1933, p. 64; Parker, 1966; Stewart and Pfister, 1960; MRDS # M002449
								Wulfenite from deposits of unclassified age		
309	Cochise	Cochise	Tungsten King mine	16 S.	22 E.	1 6		Scheelite, pyrite, galena with tetradymite, beryl, chalcopyrite, wulfenite, and copper staining, in north-trending quartz veins along contact of Precambrian schist and granite in a mineralized fault zone.	--	Keith, S. B., 1973, p. 60; Dale, Stewart, and McKinney, 1960, p. 43-45; Meeves, 1966, p. 56-58; Wilson, 1941, p. 43-44; Cooper and Silver, 1964; MRDS # M050021
310	Gila	Payson	Ox Bow mine	10 N.	10 E.	32	NW	Gold in quartz veins with wulfenite, cuprodescloizite, dioptase, malachite, chrysocolla, and fluorite, in ox-bow-shaped fault fissures in porphyritic hornblende diorite and granite porphyry dikes.	--	Lausen and Wilson, 1925, p. 37-41; Lausen and Wilson, 1927, p. 12-14; MRDS # M241207
311	Gila	Payson (Green Valley)	Silver King mine	10 N.	10 E.	7	EC	Elements reported include gold, silver, lead, and molybdenum.	--	Willis, 1935, p. 12; MRDS # M241206
312	Mohave	Gold Basin	Climax mine	30 N.	17 W.	33	SE	Gold-bearing quartz-carbonate-sulfide veins occur in Precambrian amphibolite metasediments and granitoid plutonic rocks. Disseminated gold occurs in medium-grained porphyritic leuco-syenite with several percent interstitial fluorite. Wulfenite occurs in mine.	--	Anthony, Williams, and Bideaux, 1977, p. 205; Blacet, 1975, 1969, p. 1-2; Theodore and others, 1982; MRDS # M030383
313	Mohave	Maynard	Kaaba mine	20 N.	14 W.	26	NE	Gold-rich vanadinite produced vanadium; other elements reported include silver, copper, and molybdenum.	--	Malach, 1977, p. 23; MRDS # M030378
314	Mohave	Artillery Peak	Rawhide mine	11 N. 11 N.	13 W. 14 W.	18 13	NW NE	Anglesite, cerussite with silver, wulfenite, dioptase, chrysocolla, and shattuckite.	--	Anthony, Williams, and Bideaux, 1979, p. 205; Jones, B., oral commun., 1979; MRDS # M030385
315	Mohave	Owens	Doyle Vanadium mine	1 to 2 mi north of Bill Williams River				Elements reported include vanadium, molybdenum, gold, silver, lead, zinc, copper, tungsten, and arsenic.	--	Malach, 1977, p. 53;
316	Mohave	Owens	Sally Ann mine	8 mi west of Alamo Crossing				Elements reported include gold, silver, copper, lead, and molybdenum.	--	Malach, 1977, p. 49;
317	Mohave	Owens	Lone Eagle prospect	?				Reported gold, and silver, values; with wulfenite, barite, and fluorite.	--	Hicks, 1979, p. 18;
318	Pima	Papago (Sierrita)	Aguinaldo mine group	17 S.	10 E.	26	SE	Galena, manganese oxides, pyrite, chalcopyrite, wulfenite, azurite, and malachite in replacement veins in fractured and metamorphosed Devonian Martin Formation and Mississippian Escabrosa Limestone with dioritic offshoots from a nearby mass of granite that could be related to Jurassic Sierrita granite or to Tertiary-Cretaceous Ruby Star granite of Twin Buttes district.	Some handpicked wulfenite produced	Keith, S. B., 1974, p. 131; Ransome, 1922, p. 416-417; Farnham, Stewart, and Delong, 1961, p. 119-121; Drewes and Cooper, 1973, MRDS # M050526
319	Pima	Papago (Sierrita)	Big Johnny-Little Johnny mine	17 S.	10 E.	23	SC	Argentiferous galena, chalcopyrite, pyrite, wulfenite, and manganiferous silver ore in west-northwest fractures in metamorphosed Mississippian Escabrosa Limestone and Mesozoic (?) rhyolite and intrusives.	--	Keith, S. B., 1974, p. 132; Drewes and Cooper, 1973; Ransome, 1922, p. 417 MRDS # M050577
320	Pinal	Pioneer	Black Prince mine	?				Vanadinite and wulfenite crystals.	--	Blake, 1880-1881, p. 235; Penfield, 1886; Anthony, Williams, and Bideaux, 1977, p. 207; MRDS # M050195

Table 1.-- (cont'd)

321	Pinal	Pioneer	Prudential mines	1 S.	12 E.	20 21 28 29		Copper, lead, and molybdenum reported from lead-zinc veins.	--	MRDS # MD00236
322	Pinal	Riverside	Meybee group	5 mi south of Ray				Wulfenite along with lead, silver, and gold.	--	Hicks, 1979, p. 22;
323	Santa Cruz	(?)Santa Rita Mountains	J. C. Holmes claims	near Patagonia				Wulfenite with vanadinite, descloizite, and cerussite on fracture planes in quartz vein filling. Probable Late Cretaceous age	--	Anthony, Williams, and Bideaux, 1977, p. 207-207; Pelligrin, 1911, p. 450; MRDS # 030421
324	Yavapai	Eureka	Bevering Gulch area about 34°34'N. 113°12'30"W.	west of Bevering Gulch				Wulfenite occurs in small veins. Probable Laramide porphyry copper.	--	Krieger, 1965, p. 106;
325	Yavapai	Mineral Point	United States mine	18 N.	1 E.	27		Galena in calcite veins with wulfenite and vanadinite, in Mississippian Redwall Limestone.	--	Krieger, 1965, p. 106
326	Yuma	Wellton	McMahan prospect	10 S.	18 W.	15 22	SC	Wulfenite, copper-stained silica, iron oxide and sericite in vugs in calcite in quartz vein in fissure vein in Mesozoic gneiss.	--	Wilson, E. D., 1933, p. 175-176; Wallaby Ent., data base; MRDS # M002541
			Powellite from deposits in or associated with Precambrian rocks							
327	Maricopa	White Picacho	Little San Domingo mine	7 N.	3 W.	15 22	SW	Scheelite and powellite with pyrite, chalcopyrite iron oxides, copper carbonates, and gold in contact metamorphic garnet-epidote zones of Precambrian(?) hornblende-biotite schist, with granite and pegmatite dikes cutting the veins.	--	Bell, 1947; Dale, 1959; Jahns, 1952; Anthony, Williams, and Bideaux, 1977, p. 156; Wilson, E. D., 1941; MRDS # M800237
328	Maricopa	White Picacho	Tamarack group (Morristown area)	7 N. 8 N.	3 W. 3 W.	15, 16 22		Scheelite and powellite in contact metamorphic garnet-epidote zones within Precambrian schist and limestone (?), with Precambrian(?) granite and pegmatite dikes cutting veins.	--	Dale, 1959, p. 33-34; Bell, 1947; Anthony, Williams, and Bideaux, 1977, p. 156; Jahns, 1952; Wilson, E. D., 1941; MRDS # 002844
329	Pinal	Antelope Peak	Gold Circle group	7 S.	14 E.	13	approx	Wolframite, scheelite, and powellite in fissure veins containing quartz and gold in Precambrian Ruin Granite and muscovite granite with Tertiary-Cretaceous(?) dikes in area.	--	Anthony, Williams, and Bideaux 1977, p. 156; 1959; Wilson, E. D., 1941, p. 35; Krieger, 1974b; MRDS # MD30490
330	Pinal	Antelope Peak	Upshaw Tungsten mines group	7 S.	14 E.	11		Powellite, wolframite, and scheelite in gold-bearing quartz fissure veins in Precambrian Oracle (Ruin) granite with Tertiary-Cretaceous(?) dikes in area.	--	Wilson, E. D., 1941, p. 35; Anthony Williams, and Bideaux, 1977, p. 156; Dale, 1959; Krieger, 1974b, MRDS # MD50213
331	Yavapai	White Picacho	Buena Vista mine (Starlight mine)	7 N.	3 W.	1 2		Scheelite, powellite, pyrite, chalcopyrite, azurite, malachite, gold, and iron oxides in quartz veins. Tungsten is disseminated in garnet-epidote schist bands within Precambrian hornblende biotite schist, and higher grade zones conform to schistosity.	--	Dale, 1959; 1961, p. 39; Wilson, E. D., 1941, p. 24; Jahns, 1952; Bell, 1947; MRDS # MD01108
332	Yavapai	White Picacho	Climax mine	8 N.	3 W.	351		Scheelite with powellite, pyrite, chalcopyrite, lead, gold, iron oxides, and copper carbonates, disseminated in quartz veins in epidote-garnet zone of hornblende-biotite schist (Precambrian) with Precambrian(?) aplite dikes and monzonite porphyry dikes cutting the veins.	--	Dale, 1961, p. 38; Wilson, E. D., 1941, p. 24; Jahns, 1952; Bell, 1947; Anthony, Williams, and Bideaux 1977, p. 156; MRDS # MD03416
			Powellite from deposits in or associated with Jurassic rocks							
333	Cochise	Warren	Bisbee Queen shaft	23 S.	east of Warren 24 E.	9	SW	Powellite reported. (See also no. 19)	--	Anthony, Williams, and Bideaux 1977, p. 156; Emmons and Becker, 1885; MRDS # K002911
334	Pima	Baboquivari	Giant mine (Grand Mountain claim)	20 S.	7 E.	30	NC	Spotty scheelite and powellite with minor chrysocolla and malachite in irregular, disconnected quartz lenses in Jurassic quartzitic beds of the metamorphic rocks of Chutum Vaya with Jurassic aplite dikes.	--	Keith, S. B., 1974, p. 108; Dale, Stewart, and McKinney, 1960, p. 78-81; Haxel and others, 1980; MRDS # MD50227
			Powellite from deposits in or associated with Late Cretaceous rocks							
335	Maricopa	Vulture	Flying Saucer group	6 N.	6 W.	12	NW	Powellite and scheelite disseminated in granitic rocks and dikes of Cretaceous (68-m.y.-old) age (granodiorite of biotite granite porphyry).	--	Mahrig, Shafiqullah, and Damon 1980; Dale, 1959, p. 37; Anthony, Williams, and Bideaux, 1977, p. 156; MRDS # MD02742
336	Pima	Empire	Hilton tungsten claims	18 S.	17 E.	4, 8, 9		Scheelite, powellite, disseminated in marble and garnetiferous Pennsylvanian-Permian limestone beds of Horquilla and Earp Formations adjacent to Cretaceous (71-m.y.-old) quartz monzonite intrusive of the Sycamore Canyon stock.	--	Anthony, Williams, and Bideaux 1977, p. 156; 1974, p. 118; Wilson, E. D., 1941, p. 36; Dale, Stewart and McKinney, 1960, p. 107-109; Finnell, 1971; Schrader, 1915; MRDS # MD01572
			Powellite from deposits in or associated with Laramide (71-50-m.y.-old) porphyry copper deposits							
337	Cochise	Cochise	Donna Anna workings	15 S.	22 E.	26 27	SW SE	Huebnerite with scheelite and powellite, pyrite, galena, and chalcopyrite in northeast to east-northeast-striking quartz fissure veins in Precambrian Pinal Schist (sericite schist and metagraywacke) near Tertiary (53-m.y.-old) Texas Canyon Quartz Monzonite.	--	Keith, S. B., 1973, p. 56; Cooper and Silver, 1964, p. 187-188; Wahab, 1974; MRDS # MD50025

Table 1.-- (cont'd)

338	Cochise	Cochise	Johnson Camp mine	15 S.	22 E.	23	SE	Scheelite and powellite occur in copper-zinc sulfide skarn deposit, in tactite metasomatized from middle member of Cambrian Abrigo Formation near east side of Tertiary (53-m.y.-old) Texas Canyon Quartz Monzonite. (See also no. 27)	--	Clayton, 1978; Keith, S. B., 1973, p. 57; Dale, Stewart and McKinney 1960; Cooper and Silver, 1964, p. 163-181; MRDS # M050007
339	Cochise	Cochise	Standard prospect	16 S.	23 E.	6	SW	Sphalerite, chalcopyrite, bornite, chalcocite, and powellite in skarns in Cambrian Abrigo Limestone near Tertiary (53-m.y.-old) Texas Canyon Quartz Monzonite.	--	Warner and others, 1959, p. 98; Cooper, and Silver, 1964, p. 171-181; Keith, S. B., 1973, p. 59; MRDS # M050018
340	Gila	Miami-Inspiration	Inspiration mine	1 N.	14 E.	23, 24 25, 26		Powellite occurs as crusts of tiny crystals in a seam adjacent to veins containing molybdenite and lindgrenite. Disseminated porphyry copper deposit is in Tertiary (62-m.y.-old) porphyritic Schultze Granite. (See also nos. 39, 383)	--	Anthony, Williams, and Bideaux 1977, p. 156; Olmstead and Johnson, 1966, p. 143-150; Peterson, N. P., 1962; Dale, 1961, p. 94; MRDS # MD03084
341	Mohave	Wallapai	Cerbat range	22 N.	17 W.	7		Powellite reported from Cerbat Range.	--	Anthony, Williams, and Bideaux, 1977, p. 156; Wickes, 1917; MRDS # MD03997
342	Pima	Gunsight	(?)Ajo Gunsight mine	15 S.	4 W.	11	WC	Gold, silver, oxidized copper, tungsten, and molybdenum reported from fissure veins in Cretaceous-Tertiary granitic intrusive. Tertiary basaltic andesite is in area.	--	Keith, S. B., 1974, p. 122; Weed, 1920, p. 288-289 MRDS # MD02267
343	Pima	Gunsight	Black Bess mine group	15 S.	4 W.	1 2	SW SE	Oxidized copper, gold, scheelite,and powellite, in fissure zones in decomposed Laramide (Cretaceous-Tertiary) granitic rock near contact with Tertiary basaltic andesite.	--	Keith, 1974, p. 122; Weed, 1920, p. 248; MRDS # MD02286
344	Pima	Helvetia-Rosemont	C&H mine group (Copper Alex, Black Horse, Nevada, Green Monument, Coyote)	17 S.	16 E.	21	SC	Copper carbonates, chalcopyrite, pyrite, scheelite, and powellite in pyrometasomatic deposits in brecciated Cretaceous conglomerates and Cambrian limestones in contact with dikes and stocks of Laramide quartz monzonite or quartz diorite.	--	Keith, S. B., 1974, p. 124; Schrader, 1915, p. 136-137; Lee and Borland, 1935; Dale, Stewart, and McKinney, 1960, p 111-112; Finnell, 1971; Drewes, 1976; Marvin and others, 1973; MRDS # MD50491
345	Pima	Helvetia	Copper World mine (Brunswick, Owasko, Little Dave)	18 S.	15 E.	13 24	SW SW	Chalcopyrite and chalcocite with cupriferous pyrite and molybdenite; powellite is disseminated with scheelite in garnetiferous contact zones in shattered Paleozoic limestones underlain by quartzites or aplite dikes of probable Laramide age. (See also no. 80)	--	Keith, S. B., 1974, p. 124; Schrader, 1915, p. 99-106; Drewes, 1970; Dale, Stewart, and McKinney, 1960, p. 110; Johnson, V. H., 1941; MRDS # MD50038
346	Pima	Helvetia-Rosemont	Isle Royale mine	18 S.	15 E.	24	NW	Cupriferous pyrite, chalcocite, and copper carbonates with powellite in altered Paleozoic limestones along a low-angle fault with Precambrian Continental granodiorite in hanging wall and Pennsylvanian Horquilla Limestone in footwall.	--	Keith, S. B., 1974, p. 126; Schrader, 1915, p. 108-110; Drewes, 1970; Johnson, V. H., 1941, p. 97, 79-80; Creasey and Quick, 1955, p. 312, 320; MRDS # MD50044
347	Pima	Helvetia-Rosemont	Lauder mine	18 S.	15 E.	24 13	N1/2 SE	Disseminations and stringers of scheelite and powellite occur in garnetiferous contact zones associated with molybdenite in brecciated and silicified Pennsylvanian Horquilla Limestone in the footwall of a thrust with Precambrian Continental granodiorite in the hanging wall. (See also no. 83)	--	Keith, S. B., 1974, p. 126; King, 1969, p. 236; Anthony, Williams, and Bideaux, 1977, p. 141; Frondel and Wickman, 1970; Creasey and Quick, 1955, p. 316-318; Schrader and Hill, 1910, p. 156-157; Schrader, 1915, p. 106-108; Johnson, V. H., 1941, p. 85; Wilson, E. D., 1941, p. 36; MRDS # MD50045
348	Pima	Helvetia-Rosemont	Omega tunnel	18 S.	15 E.	24	WC	Chalcopyrite, pyrite, powellite, and sphalerite in magnetite-garnet gangue along contact of Tertiary (56-m.y.-old) aplite dikes intruded into thrust fault between Devonian Martin Formation-Mississippian Escabrosa Limestone and Precambrian Continental granodiorite	--	Johnson, V. H., 1941, p. 77; Keith, S. B., 1974, p. 127; Schrader, 1915, p. 115-117; Creasey and Quick, 1955, p. 320; Drewes, 1970; MRDS # MD50179
349	Pima	Pima	Copper Queen mine	18 S.	13 E.	6	NW	Copper-lead-zinc sulfides with molybdenum, tungsten, gold, and silver also reported from pyrometamorphosed Paleozoic limestones and Precambrian granite. (See also no. 94)	--	Keith, S. B., 1974, p. 134; Ransome, 1922, p. 425-426; Brown, R. L., 1926; Whitcomb, 1948; Cummings and Romslo, 1950; Weed, 1926, p. 247-248; MRDS # MD50378
350	Pima	Pima	Senator Morgan mine	18 S.	12 E.	1 2	SW SE	Chalcopyrite and pyrite with scheelite, and powellite in quartz veins in fractured and garnetized Paleozoic limestones along a fault contact with Cretaceous quartzites and closely associated with a Laramide granodiorite porphyry dike	--	Keith, S. B., 1974, p. 138; Ransome, 1922, p. 425-427; Mayuga, 1942; Dale, Stewart, and McKinney, 1960, p. 85-92; Anthony, Williams, and Bideaux, 1977, p. 156; Brown, R. L., 1926; Whitcomb, 1948; Wilson, E. D., 1941, p. 44-46; MRDS # MD50383
351	Pima	Pima	Twin Buttes mine	18 S.	13 E.	5 6	SW NE	Tungsten, in the form of scheelite and powellite, is rather uniformly scattered throughout the skarns in small amounts. (See nos. 106, 245)	--	Kelly, 1977; MRDS # MD50530
352	Pima	Redington	Korn Kob mine	12 S.	17 E.	14 23	line	Powellite generally appears to be reaction rims around molybdenite. (See no. 107)	--	Wilson, J.R., 1977; Keith, S. B., 1974, p. 141; Raabe, 1959; MRDS # MD00134
353	Santa Cruz	Patagonia	Holland mine	24 S.	16 E.	3		Powellite and scheelite occur with base-metal sulfides in skarns in Permian Naco group at limestone-quartzite contacts with nearby Tertiary (58-m.y.-old) granodiorite dikes and sills. (See no. 139)	--	Lehman, 1978, p. 244; Keith, S. B., 1975, p. 77; Schrader, 1915, p. 338-340; Simons, 1974; Carpenter, 1940, p. 4; MRDS # MD30397

Table 1.-- (con.'d)

Powellite from deposits in or associated with mid-Tertiary rocks										
354	Cochise	California	King-Ainsworth mine	17 S.	31 E.	4 5		Galena, chalcopyrite, scheelite, and powellite(?) in replacement deposits in Cambrian limestone and quartzite	--	Keith, S. B., 1973, p. 53; Gale, Stewart, and McKinney, 1960, p. 15-16; Weed, 1926, p. 202; Drewes and Williams, 1973; MRDS # M241030
355	Cochise	Middle Pass	Middlemarch mine	18 S.	23 E.	12		Sparse scheelite with powellite component occurs with base-metal sulfides and oxides in skarns of limestone of lower Paleozoic and Cretaceous age that were contact metamorphosed by mid-Tertiary (26-m.y.-old) Stronghold Granite and related dikes. (See no. 265)	--	Sousa, 1979; Cedarstrom, 1946a, p. 87-88; Tenney, 1928-1929, p. 218-219; Keith, S. B., 1973, p. 68; MRDS # M030567
Ferrimolybdite from deposits in or associated with Precambrian rocks										
356	Yavapai	Black Hills	Burnt Canyon prospect	15 N.	2 E.	28		Coatings of ferrimolybdite, malachite, and limonite in quartz vein with scattered molybdenite crystals. (See no. 180)	--	Anderson and Creasey, 1958, p. 92, 178; Lindgren, 1926, p. 97-102; MRDS # M030497
357	Yavapai	White Picacho	Picacho View mine	7 N.	3 W.	10	NW	Oxidized minerals, including molybdite in fractures in pegmatite of Precambrian age. (See no. 18)	--	Jahns, 1952, p. 90-93; MRDS # M003390
Ferrimolybdite from deposits in or associated with Jurassic rocks										
358	Pima	Cababi	Chicago mine	16 S.	4 E.	23 26	SW NW	Ferrimolybdite occurs as an oxidation product of wulfenite on the dumps of the Chicago mine. (See no. 192)	--	Williams, 1962, p. 25, 46, 91; 1963;
359	Pima	Cababi	Little Mary mine (Steppe claim)	16 S.	4 E.	23 26	SW NW	Ferrimolybdite was found as a common mineral on the 80-ft level of the Little Mary mine, where it stains gangue minerals	--	Anthony, Williams, and Bideaux, 1977, p. 102; Williams, 1962, 1963; Haxel and others, 1978; MRDS # M050622
360	Pima	Cababi	Mildren group	16 S.	4 E.	16	EC	Ferrimolybdite was found at the Mildren mine in brecciated quartz fissure veins in Jurassic amygdaloidal andesite flows containing molybdenite and wulfenite with other base-metal sulfides and oxidation products. (See nos. 23, 193)	--	Williams, 1962, 1963; Anthony, Williams, and Bideaux, 1977, p. 102; Haxel and others, 1978; MRDS # M050610
Ferrimolybdite from deposits in or associated with Laramide (71-50-m.y.-old) porphyry copper districts										
361	Gila	Miami	Castle Dome mine (Pinto Valley mine)	1 N.	14 E.	27		Ferrimolybdite, wulfenite, and lindgrenite are very rare. (See nos. 37, 235)	--	Peterson, Gilbert, and Quick, 1951, p. 66; MRDS # M002863
362	Gila	Miami	Copper Cities mine	1 N.	15 E.	7	WC	Ferrimolybdite occurs along with oxidized copper minerals, malachite, azurite, and turquoise. (See no. 38)	--	Simmons and Fowells, 1966, p. 151-156; Peterson, N. P., 1954, 1972; MRDS # M003145
363	Gila	Pinal Mountains	Madera prospect (Ellis vein)	1 S.	14-1/2 E.	18 W. 19	W	Ferrimolybdite present along with a relatively large proportion of fine- and coarse-grained molybdenite. (See no. 41)	--	Peterson, N. P., 1963, p. 14; MRDS # M000365
364	Gila	Summit	Bronx property	1 S.	14 E.	6	S line	Powdery masses of ferrimolybdite occur in a few places as a result of oxidation of molybdenite. (See no. 42)	--	Peterson, N. P., 1962, p. 133-134; King, 1969, p. 235; Norvil, 1939; Peterson, N. P., 1963, p. 16-17; MRDS # M001974
365	Mohave	Shannon Basin	Wikieup prospect	15 N.	13 W.	22, 14 15		Ferrimolybdite present, as well as bornite, chalcocite, and magnetite. (See no. 70)	--	Hansen, 1977; ABGMT unpub. data; MRDS # M030373
366	Mohave	Wallapai (Mineral Park)	Mineral Park property (Ithaca Peak orebody)	23 N.	17 W.	19		Ferrimolybdite present, as well as copper enrichment products. (See nos. 71, 243)	--	Eidel, Frost, and Clippinger, 1968; Anthony, Williams, and Bideaux, 1977, p. 105; MRDS # M004058
367	Pima	Old Baldy	McLeary prospects	19 S.	14 E.	35	W	Ferrimolybdite reported. (See no. 90)	--	Schrader, 1915; Anthony, Williams, and Bideaux 1977; MRDS # M030552
368	Pima	Pima	Esperanza open pit mine	18 S.	12 E.	8	SE	Ferrimolybdite reported, as well as oxidized copper minerals. Molybdenite is widespread in fractures and quartz veinlets. (See no. 97)	--	Lynch, 1966; Aiken and West, 1978; MRDS # M050391
369	Pinal	Bunker Hill	Childs-Aldwinkle mine	8 S.	18 E.	11	EC	Ferrimolybdite occurs as a yellow powder and radiating crystal aggregates. (See nos. 157, 386)	--	Guthrie and Moore, 1978; Kuhn, 1938, 1941, 1951; Simons, 1964; MRDS # M050120
370	Pinal	Bunker Hill	Copper Creek area	8 S.	18 E.	10 11		Ferrimolybdite present. (see no. 158)	--	Guthrie and Moore, 1978; Kuhn, 1938, 1941, 1951; Anthony, Williams, and Bideaux, 1977; MRDS # M050128, M050109, M050115, M050116, M050108, M050129, M050110, M050114
371	Pinal	Riverside	Rare Metals mine	4 S.	13 E.	8 9 15	SE SW	Ferrimolybdite present. (See no. 120)	--	Anthony, Williams, and Bideaux, 1977, p. 102; MRDS # M000334
372	Santa Cruz	Patagonia	Four Metals mine	23 S.	16 E.	29	WC	Ferrimolybdite present. (See no. 164)	--	Graybeal, 1972, p. 36-43; Keith, S. B., 1975, p. 80; MRDS # M030400

Table 1.-- (cont'd)

373	Santa Cruz	Patagonia	Red Racer	23 S.	16 E.	31		Talc and ferrimolybdite	--	Hicks, 1979, p. 24; MRDS # M030405
				15 mi east of Nogales						
374	Santa Cruz	Patagonia	Red Mountain mine	22 S.	16E	21		Ferrimolybdite reported	--	Anthony, Williams, and Bideaux, 1977, p. 102; Schrader, 1915; MRDS # M899921
375	Yavapai	Copper Basin	Boston-Arizona mine	13 N.	3 W.	7		Ferrimolybdite reported. (See no. 165)	--	Johnston, and Lowell, 1961; Johnston, W. P., 1955; MRDS # M003569
376	Yavapai	Copper Basin	Commercial mine	13 N.	3 W.	20		Ferrimolybdite reported. (See no. 166)	--	Johnston, and Lowell, 1961; Johnston, W. P., 1955; MRDS # M800029
377	Yavapai	Copper Basin	Copper Hill mine	13 N.	3 W.	20	NW	Ferrimolybdite reported as a bright yellow oxide in a zone of secondary enrichment of molybdenum just above and in the upper part of the zone of copper enrichment. (See no. 168)	--	Johnston, and Lowell, 1961; Johnston, W. P., 1955; MRDS # M003750
378	Yavapai	Copper Basin	Loma Prieta mine	13 N.	3 W.	21		Ferrimolybdite reported. (See no. 169)	--	Johnston, and Lowell, 1961; MRDS # M003742
379	Yavapai	Copper Basin	U.S. Navy mine	13 N.	3 W.	19		Ferrimolybdite reported. (See no. 171)	--	Johnston, and Lowell, 1961; MRDS # M003571
380	Yavapai	Eureka	Bagdad mine	14 N.	9 W.	4		Ferrimolybdite reported. (See no. 150)	--	Anderson, and Creasey, 1955; Fleischer, 1959; MRDS M003467
								Ferrimolybdite from deposits in or associated with mid-Tertiary rocks		
381	Cochise	Middlepass	Abril mine	17 S.	23 E.	34		Ferrimolybdite reported. (See no. 174)	--	Perry, 1964; MRDS # M001415
382	Maricopa	Vulture	Rowley mine	4 S.	8 W.	24 25	E1/2	Ferrimolybdite forms a thin partial coating on the walls of the main shaft from the surface to a depth of 50 ft. (See no. 275)	--	Wilson, E. D., and Miller, 1974, p. 14; MacKallor, 1965; MRDS # D000321
								Lindgrenite from Laramide porphyry copper districts		
383	Gila	Miami	Inspiration mine	1 N.	14 E.	23-26		Lindgrenite in Live Oak pit as platy aggregates in hydrothermally altered schist, also in seams with molybdenite and, rarely, associated with powellite. (See nos. 39, 340)	--	Anthony, Williams, and Bideaux 1977, p. 130; Pough, 1941;
384	Maricopa	Cave Creek	Cave Creek district (Maricopa and Phoenix mines)	6 N.	4 E.	8		Lindgrenite occurs with cuprotungstite, oxidized lead minerals, and gold, with quartz in silicified breccia zones in Precambrian schist intruded by dikes of granite porphyry. (See no. 181)	--	Anthony, Williams, and Bideaux, 1977, p. 130; Schaller, 1932, p. 234-237; Wilson, Cunningham, and Butler, 1934, p. 164; Lewis, 1920; MRDS # M002740, M002782
385	Pima	Pima	Esperanza mine	18 S.	12 E.	8	SE	Lindgrenite occurs very sparsely at the Esperanza mine. (See no. 97)	--	Anthony, Williams, and Bideaux, 1977, p. 130; Lynch, 1968; MRDS # M050391
386	Pinal	Bunker Hill	Childs-Aldwinkle mine	8 S.	18 E.	11		Lindgrenite occurs at Childs-Aldwinkle. (See nos. 158, 369)	--	Anthony, Williams, and Bideaux, 1977, p. 130; MRDS # M050120
387	Pinal	Bunker Hill	Hull claims	3 S.	13 E.	23?		Lindgrenite sample from Hull claims is in Harvard mineral collection. (H# 108666)	--	Anthony, Williams, and Bideaux, 1977, p. 130;
					south of Ray					
388	Pinal	?	Superior area	1 S.	12 E.			Lindgrenite sample from Superior is in Harvard mineral collection. (H# 105628)	--	Anthony, Williams, and Bideaux, 1977, p. 130; MRDS # M899880
								Ilsemannite		
389	Apache	Monument Valley	Monument No. 2	41 N.	23 E.	29 32	WC NC	Powdery blue ilsemannite coats and impregnates friable conglomerate and is associated with uranium minerals and pyrite, but no primary molybdenum minerals (in Triassic Chinle Formation).	--	Johnson, 1963; King, 1969, p. 235; Anthony, Williams, and Bideaux, 1977, p. 121; Keith, S. B., 1970, p. 214; Witkind and Thaden, 1963; MRDS # M002989
390	Coconino	Cameron	Alyce Tolino mine	29 N.	9 E.	24	EC	Uranium minerals, umohoite, ilsemannite, and cobalt-rich pyrite in carbonaceous materials in Triassic Chinle Formation. (See also no. 395)	--	Bollin and Kerr, 1958, p. 166; Keith, S. B., 1970, p. 221; Hamilton and Kerr, 1959; King, 1969, p. 235; MRDS # M002678
391	Coconino	Cameron	Huskon #10 mine	28 N.	10 E.	29	N1/2	Uranium minerals and ilsemannite in carbonaceous material at permeability contrasts in Triassic Chinle Formation.	--	Isachsen and Evensen, 1956; Keith, S. B., 1970, p. 225; Bollin and Kerr, 1958; Anthony, Williams, and Bideaux, 1977; Hinckley, 1957; MRDS # M003675
392	Coconino	Cameron	Huskon #11 mine	28 N. 27 N.	10 E. 10 E.	33 4	S edge	Uranium minerals, ilsemannite and jordisite, with carbonized plant remains in channel in Triassic Chinle Formation. Ilsemannite occurs with marcasite in sandstone as inky blue masses and stains. (See also no. 396)	--	Anthony, Williams, and Bideaux 1977, p. 121; Keith, S. B., 1970, p. 225; Bollin and Kerr, 1958; Peterson, Hamilton and Myers, 1959; MRDS # M002406
393	Coconino	Grand Canyon	Orphan Lode mine	31 N.	2 E.	14	SW	Uranium minerals, base-metal sulfides, and their oxidation products in breccia pipe in Paleozoic limestones and shales with a 101-m.y.-old or older age date on mineralization. Molybdenite, wulfenite, and ilsemannite are present. (See nos. 26, 190)	--	Kofford, 1969; Miller, D. S., and Kulp, 1963; Granger and Raup, 1962, p. 10; Keith, S. B., 1970, p. 263; Gornitz, 1969; Billingsley, 1974; MRDS # M001823

Table 1.-- (cont'd)

394	Coconino	Vermilion Cliffs	Sun Valley mine	39 N.	6 E.	32	WC	Uranium minerals with ilsemannite, jordisite(?), and rare base-metal sulfides in channel in Triassic Chinle Formation; ilsemannite forms on walls of older mine workings and associated with rhenium. (See also no. 397)	--	Peterson, Hamilton, and Myers, 1959; Keith, S. B., 1970, p. 218; Peterson, R. G., 1957, p. 153; King, 1969, p. 235; Anthony, Williams, and Bideaux, 1977, p. 121-123; MRDS # M002734
								Umohoite		
395	Coconino	Cameron	Alyce Tolino mine	29 N.	9 E.	24	EC	Umohoite occurs as blue-black isotropic mineral contained in sooty masses and carbonaceous replacements. (See no. 390)	--	Bollin and Kerr, 1958, p. 166; Keith, S. B., 1970, p. 221; MRDS # M002678
								Jordisite		
396	Coconino	Cameron	Huskon #11 mine	28 N. 27 N.	10 E. 10 E.	33 4	S edge	Jordisite with ilsemannite. (See no. 392)	--	Anthony, Williams, and Bideaux, 1977, p. 121; MRDS # M002406
397	Coconino	Vermilion Cliffs	Sun Valley mine	39 N.	6 E.	32	WC	Jordisite(?). (See no. 394)	--	Peterson, Hamilton, and Myers, 1959; MRDS # M002734
								Unspecified molybdenum minerals in uranium deposits		
398	Coconino	Vermilion Cliffs	Jasper group	39 N.	6 E.	27	SW	Uranium minerals and copper carbonates and unspecified molybdenum in carbonaceous material near base of Triassic Chinle Formation.	--	Keith, S. B., 1970, p. 219; Peterson, R. G., p. 152-154; Holen and Twitchell, 1955; MRDS # M002731
399	Coconino	Vermilion Cliffs	Vermilion No. 1 mine	38 N.	5 E.	20	NE	Metatorbernite, copper carbonates, and unspecified molybdenum at base of Triassic Chinle Formation.	--	Keith, S. B., 1970, p. 219; Peterson, R. G., 1957; MRDS # M002733
400	Navajo	Monument Valley	Mitchell Mesa	41 N. 41 N.	20 E. 21 E.	13 18		Uranium minerals, with copper carbonates and unspecified molybdenum mineral.	--	King, 1969, p. 235; Witkind and Thaden, 1963, p. 139-142; Keith, S. B., 1970, p. 215; Witkind, 1956, p. 107; MRDS # M800298
401	Navajo	Monument Valley	Monument No. 1	41 N.	19 E.	24	NE	Uranium minerals, copper carbonates and unspecified molybdenum and vanadium minerals near silicified wood aqnd with carbonaceous matter in basal conglomerate of Triassic Chinle Formation.	--	King, 1969, p. 235; Witkind, 1956, p. 233-237; Witkind and Thaden, 1963, p. 129; Keith, S. B., 1970, p. 216; MRDS # M003052
								Unspecified molybdenum minerals		
402	Cochise	Dos Cabezas	Elma mine	14 S.	27 E.	9		Chalcopyrite, pyrite, and magnetite, in limestone and granite, diabase dikes and quartz porphyry. (no published reference to Mo)	--	Weed, 1925, p. 278; 1926, p. 239; Tenney, 1927-1929, p. 226-227; AZ. Department of Mineral Resources, 1962; Keith, S. B., 1973, p. 61; MRDS # M002125
403	Cochise	Turquoise	Gold Camp mines area (Golden Crown)	20 S.	24 E.	15 16		Oxidized copper and lead minerals, reported gold, silver, and molybdenum in Triassic-Jurassic (178- and 181-m.y.-old) Gleeson Quartz Monzonite.	--	Keith, S. B., 1973, p. 82; Anderson, 1968, p. 1167; Drewes, 1976; Creasey, 1965; MRDS # M241165
404	Maricopa	Vulture	Black Hawk mine	5 N.	6 W.	1	W1/2	Lead, molybdenum, and gold reported from 11-ft-wide vein about 1 mi south of Vulture mine.	--	ABGMT unpub. data; Moore, 1902; MRDS # M800239
405	Pima	Baboquivari	Lost Horse group	18 S.	7 E.	24	C	Copper, lead, zinc sulfides, silver, gold, and molybdenum in Tertiary-Cretaceous sediments and metamorphosed sediments oxidized to shallow depths along strong fault zones.	--	ABGMT unpub. data (Keith, S. B., file card for Pima County); MRDS # M030519
406	Pima	Cababi	High Card mine (Faro Bank group)	17 S.	5 E.	4	SW	Base-metal sulfides with some molybdenum in assay; in oxidized and weathered quartz veins along a fissure zone cutting Laramide granitic rocks.	--	ABGMT unpub. data; Keith, S. B., 1974, p. 111; Bryner, 1959; Department of of Mineral Resources, 1962; MRDS # M030517
407	Pima	Quijotoa	Black Prince mine	14 S.	1 E.	24 13	C C	Base-metal sulfides and carbonates, with argentite, native silver, molybdenum(?), and gold values in quartz veins in Jurassic, Cretaceous, and Tertiary limestone, gneiss, schist and muscovite quartz monzonite in a strong fault zone.	--	Keith, S. B., 1974, p. 140; ABGMT unpub. data; Kytuba and others, 1978, Weed, 1922, p. 288; MRDS # 030536
408	Pinal	Goldfields	Mammoth group	1 N.	8 E.	1		Gold and molybdenum reported from north-south fault planes and southeast-northwest fractures in Precambrian and Tertiary pegmatite granite, andesites, rhyolites, dacite, and minor monzonite.	--	ABGMT unpub. data; Johnson M. G., 1972; Wilson, Cunningham, and Butler, 1967, p. 167-168; Tenney, 1927-1929, p. 344-345; MRDS # M002831
409	Santa Cruz	Patagonia	Coronado mines, Inc. (Buena Vista mine, King prospect, and Red Mountain mine)	15 mi northeast of Nogales				Copper, gold, silver, molybdenum, and tungsten.	--	MRDS #M001224
410	Yavapai	Black Hills	Unnamed prospect	15 N.	2 E.	27	C	Molybdenum reported.	--	ABGMT unpub. data; MRDS # M002655, M030497
411	Yavapai	Eureka	Black Diamond prospect	15 N.	7 W.	7, 17, 18		Tungsten, gold, silver, and molybdenum.	--	Dale, 1961, p. 50, 51; MRDS # M003328

Table 1.-- (cont'd)

412	Yavapai	Mazatzal	Blue lode	9 N.	7 E.	13		Molybdenum.	--	MRDS # M002826
413	Yavapai	Thumb Butte	Unnamed prospect	13 N.	3 W.	7		Molybdenum.	--	MRDS # M003568
414	Yuma	Wellton (La Posa)	Betty Lee mine	11 S.	17 W.	2	NW	Chrysocolla and malachite in fissure veins as lensing, coarsely crystalline quartz-hematite-sericite veins in Mesozoic granite. Other elements reported include silver, molybdenum, vanadium, gold, uranium, and iron	--	Keith, S. B., 1978, p. 160; Wilson, E. D., 1933, p. 166-167; Wallaby Ent., data base 1979; MRDS # M002516
415	Yuma	Wellton	Poorman mine	10 S.	18 W.	2	NW	Gold, silver and molybdenumm in fissure vein in west-northwest fault zone filled with quartz, gouge, and breccia and in Mesozoic gneiss with nearby aplitic dikes	--	Keith, S. B., 1978, p. 160; Wilson, E. D., 1933, p. 174; Wallaby Ent., data base, 1979; MRDS # M002526
416	Yuma	Wellton	Smith claims	11 S.	17 W.	12	SW	Chrysocolla, copper pitch, hematite, and gold (also reported silver and molybdenum) in pockets of brecciated coarse-grained quartz in north-northwest fissure vein in granite and pegmatite dikes	--	Wilson, E. D., 1933, p. 167; MRDS # M002530
417	Yuma	Wellton	Unknown name for this prospect	10 S.	18 W.	22	NC	Copper, iron, lead, and molybdenum reported	--	Wallaby Ent., data base, 1979; MRDS # M030301

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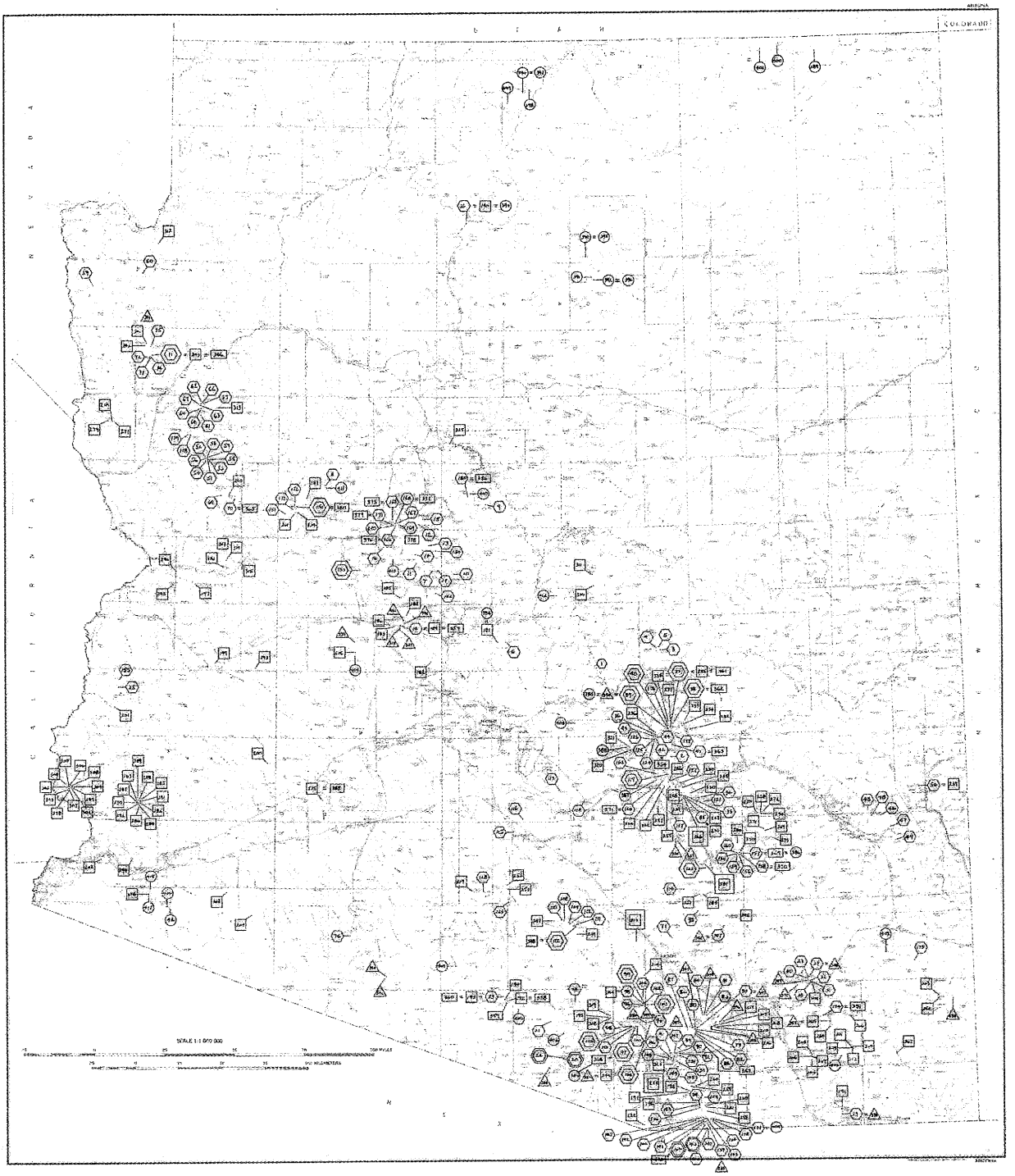

MOLYBDENITE
in or associated with

- MID-TERTIARY ROCKS
- BRECCIA PIPES IN PORPHYRY COPPER DEPOSITS (LARAMIDE)
- PORPHYRY COPPER DEPOSITS (LARAMIDE)
- JURASSIC ROCKS
- URANIUM DEPOSIT
- PRECAMBRIAN ROCKS

PRODUCTION
- large
- small

WULFENITE
in or associated with

- MID-TERTIARY ROCKS
- unclassified age
- LEAD-ZINC-SILVER DEPOSITS IN PORPHYRY COPPER DISTRICTS
- LATE CRET. LEAD-ZINC-SILVER DISTRICTS
- JURASSIC ROCKS
- URANIUM DEPOSIT
- PRECAMBRIAN ROCKS

PRODUCTION
- large
- small

POWELLITE
in or associated with

- MID-TERTIARY ROCKS
- PORPHYRY COPPER DISTRICTS
- CRETACEOUS ROCKS
- JURASSIC ROCKS
- PRECAMBRIAN ROCKS

FERRIMOLYBDITE
in or associated with

- MID-TERTIARY ROCKS
- PORPHYRY COPPER DISTRICTS
- JURASSIC ROCKS
- PRECAMBRIAN ROCKS

OTHER MOLYBDENUM MINERALS

- LINDGRENITE
- ILSEMANNITE
- UMOHOITE
- JORDISITE
- UNSPECIFIED MO. MINERAL

MOLYBDENUM OCCURRENCES IN ARIZONA