



This map is part of a folio of maps of the Silver City 1° x 2° quadrangle, New Mexico-Arizona, prepared under the Continental United States Mineral Assessment Program.

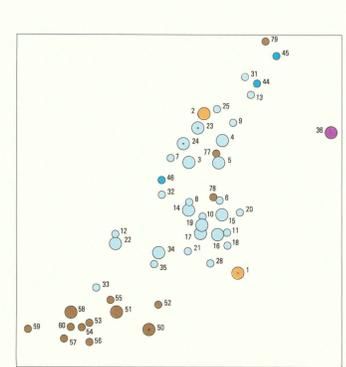
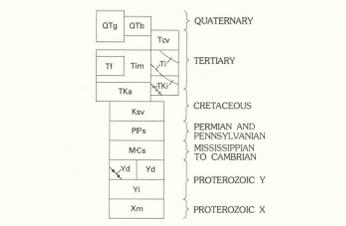


Figure 1—PART OF CENTRAL MINING REGION AREA, ENLARGED TO 1:140,000 TO SHOW DETAIL OF DEPOSITS IN THE CENTRAL, FERRO-HANOVER, FERRO MANGANESE, GEORGETOWN, AND SANTA RITA MINING DISTRICTS.

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- QTg GRAVEL, SAND, SILT, AND CLAY (QUATERNARY AND TERTIARY)—Mainly alluvium on stream terraces, fan aprons, and pediments; colluvium on hill slopes; and lacustrine and eolian deposits in basins
- QTh BASALT (QUATERNARY AND TERTIARY)—Basalt and basaltic andesite flows and small intrusions
- Tcv CONGLOMERATE AND VOLCANIC ROCKS (TERTIARY)—Mainly coarse conglomerate with intercalated mafic to intermediate flows and felsic tuffs
- Tim INTERMEDIATE TO MAFIC VOLCANIC ROCKS (TERTIARY)—Mainly flows, scoria cones, domes, and small intrusions. Locally includes small units of felsic volcanic rocks and volcanic rocks
- Tt FELSIC VOLCANIC ROCKS (TERTIARY)—Mainly flows, domes, and pyroclastic deposits. Locally includes small units of more mafic volcanic rocks and volcanoclastic rocks
- Ti INTRUSIVE ROCKS (TERTIARY)—Includes granitic rocks in plutons and aphanitic and porphyritic rocks in plugs and dikes
- TKi INTRUSIVE ROCKS (TERTIARY AND CRETACEOUS)—Includes granitic rocks, commonly porphyritic, in plutons and porphyritic rocks and breccias in dikes, plugs and small stocks
- Tka ANDESITIC ROCKS (TERTIARY AND CRETACEOUS)—Flows and small intrusions. Locally includes small units of sedimentary rocks
- Kcv SEDIMENTARY AND VOLCANIC ROCKS (CRETACEOUS)—Mainly shale, siltstone, sandstone and conglomerate; includes some limestone and felsic to intermediate volcanic rocks. Mainly Lower Cretaceous Bishop Group to the southwest and Upper Cretaceous Colorado Formation to the northeast. Includes Jurassic and Triassic rocks in extreme southwest corner of quadrangle
- PPs SEDIMENTARY ROCKS (PERMIAN AND PENNSYLVANIAN)—Mainly limestone; includes some dolomite and sandstone. Chiefly Naco Group
- MCA SEDIMENTARY ROCKS (MISSISSIPPIAN TO CAMBRIAN)—Mainly limestone, dolomite, shale, quartzite, and sandstone; includes some conglomerate and arkose sandstone
- Yd DIABASE (PROTEROZOIC Y)—Includes gabbro, and metadiorite in sills, dikes and irregular masses
- Yt INTRUSIVE ROCKS (PROTEROZOIC Y)—Granitic rocks, commonly porphyritic or porphyroblastic, in plutons
- Xm METASEDIMENTARY AND METAIGNEOUS ROCKS (PROTEROZOIC X)—Includes Pinal Schist and unnamed gneisses

- CONTACT
- FAULT—Dotted where concealed
- STRIKE AND DIP OF BEDS
- Inclined
- Vertical
- STRIKE AND DIP OF FOLIATION—Includes primary flow foliation of volcanic rocks and secondary metamorphic foliation of metamorphic rocks
- Inclined
- Vertical

Geology by J. R. Cooper, Harold Drown, T. L. Finner, D. C. Hildard, R. M. Hester, B. B. Houser, W. R. Jones, V. A. Lawrence, E. L. Moore, R. B. Morrison, W. P. Pratt, D. K. Richter, and C. H. Thomas, U.S. Geological Survey, M. Shephard, and F. E. Dorn, University of Arizona; E. S. Day, Eastern Kentucky University; W. E. Eaton, University of New Mexico; J. E. Cunningham, Western New Mexico State University; Compiled 1979

Base from U.S. Geological Survey, 1884, revised 1970

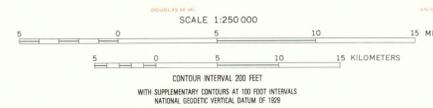


Table 1.—Estimated production of major commodities, Silver City 1° x 2° quadrangle, New Mexico-Arizona
[Numbers in parentheses are production figures from mining districts in the Central mining region area and are included in totals for the area. Leaders (—) indicate no recorded production.]

Area	Gold (kg)	Silver (kg)	Copper (metric tons)	Lead (metric tons)	Zinc (metric tons)	Molybdenum (metric tons of MoS ₂)	Tungsten (metric tons of 77-14% Mo)	Manganese (metric tons of >1% WO ₃)	Iron (metric tons of 30-40% Fe)	Manganese (metric tons of 10-14% Mn)	Fluorite (metric tons of 80-70% CaF ₂)	Zeolites (metric tons)	Value (millions of dollars)
Gila and Northern Peloncillo Mountains	410	98,000	25,000	10	—	—	—	1,840	—	—	—	—	8.7
Summit Mountains and Black Mountain	5,400	124,000	460	1,700	1,500	—	—	4,400	—	—	11,000	—	7.0
Big Burro and Little Burro Mountains	1,100	209,000	810,000	80	140	1,000	—	1,555	—	—	175,000	—	1,000.0
Central Mining Region	9,800	656,000	3,521,000	114,500	990,600	22,000	—	3,550	2,003,500	7,112,000	220	—	2,400.0
Georgetown	(120,000)	(1,300)	(19,700)	(1,900)	(12,000)	(22,000)	—	(800)	(7,112,000)	(220)	(220)	—	—
Pinos Alcos	(8,500)	(383,000)	(3,520,000)	(112,600)	(978,600)	(22,000)	—	(800)	(7,112,000)	(220)	(220)	—	—
Central, Bayard, Santa Rita, Ferro-Hanover	—	(9,300)	—	—	—	—	—	(1,850)	—	—	(220)	—	—
Fleming	—	(124,000)	—	—	—	—	—	(900)	(2,000,000)	(200)	—	—	—
Chloride Flat	—	—	—	—	—	—	—	—	—	—	—	—	—
Lower Mountain	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver City	2	—	—	145	—	—	—	—	—	—	—	—	0.4
Red Bird Hills and Dragon Mountains	630	10,300	1,800	2,500	127	—	—	—	—	—	—	—	1.7
Don Cabezas and Chiricahua Mountains	4	7,000	—	5,800	4,700	—	—	300	15	—	—	—	0.6
Central Peloncillo Mountains	8,100	226,000	104,200	3,100	740	—	—	—	—	—	3,200	—	60.0
Pyramid Mountains	380	18,100	14	7,900	26	—	—	1,000	—	—	—	—	1.7
Basins	—	—	—	—	—	—	—	—	—	—	—	10,000	30.0
Totals	25,826	1,348,900	4,461,474	135,735	997,833	23,000	2,250	11,360	2,003,500	7,112,000	189,420	10,000	3,510.1

DISCUSSION

The Silver City 1° x 2° quadrangle, New Mexico-Arizona, is richly endowed with a variety of mineral deposits that have produced more than \$3 billion worth of mineral products, chiefly precious and base metals, since about 1850. This map and accompanying pamphlet are a descriptive compilation of more than 600 of these mineral deposits at 440 locations, and constitutes part of the basic data framework for the U.S. Geological Survey's CUSMAP (Continental United States Minerals Assessment Program) investigations in the Silver City 1° x 2° quadrangle. The compilation is restricted generally to those deposits that have been referred to in the published literature although data for a few deposits are from unpublished sources. In addition, literally thousands of small prospects and mineral occurrences are present in the mining districts throughout the quadrangle. The compilation includes both metallic and nonmetallic deposits, but excludes such commodities as sand and gravel, rock, and most other low cost per unit volume construction materials. Significant deposits of manganese and occurrences of cobalt, both considered to be of strategic national importance, are present in the quadrangle.

To aid in the presentation of the mineral deposit data, 10 regional areas, each characterized by a relatively distinct geologic terrane, and to some degree by a characteristic suite or suites of mineral deposit types, are delineated on the map. These areas include all the recognized mining districts in the quadrangle, but, because of the districts' vague and often ambiguous boundaries, they are not shown on the map. As shown in the Explanation, the mineral deposits of the quadrangle are classified in a broad genetic sense (hydrothermal, magmatic, sedimentary, etc.) and further subdivided into specific types on the basis of physical form or some characteristic feature and metal or mineral content, such as Au-Ag (base metal) vein, porphyry Cu (Mo), Zn-Pb replacement, fluorite vein, etc. Metals in parentheses in the specific deposit types denote commodities that are generally present but of secondary importance. The accompanying pamphlet contains descriptions of the mineral deposits, grouped into the 10 regional areas shown on the map, plus an intervening general basin area. A brief introductory statement of the geologic setting, general mineral deposit features, and mining activity for many of the specific deposit types precedes the description of the individual deposits.

Estimates of the quantity and value (at time of production) of most of the major commodities produced in the quadrangle are listed by area in table 1. These figures, derived from a number of published (U.S. Bureau of Mines, Mineral Yearbooks; industry annual reports, and others) and unpublished sources, are probably conservative. Data on production and mining activity are largely nonexistent for many of the areas prior to 1900; production figures for commodities such as byproduct MoS₂, gold, and silver from the porphyry copper operations are generally considered proprietary. All weights and measures used in this report are in the metric system. Conversion factors relating to gold and silver quantities and grades are as follows:
kilogram (kg) x 32.15 = troy ounce
metric ton x 1.1 = short ton
gram/metric ton (g/t) x 0.029 = troy ounce/short ton

EXPLANATION

Numbers accompanying symbols on map correspond to deposit or group of deposits described in accompanying pamphlet. Larger symbol denotes mine with known production greater than \$1 million. Dot in symbol denotes mine or prospect active in 1979 or 1980.

HYDROTHERMAL DEPOSITS

- Porphyry Cu (Mo)
- Cu vein and turquoise vein
- Base and precious metal vein and replacement—Includes Au-Ag-base metal vein, Au-Ag-base metal vein, Pb-Ag (Cu-Zn-Au) vein, Cu-Ag-Au (Pb-Zn) vein, Zn-Pb hydrothermal deposits
- Ag (Au) vein
- Precious metal (and uranium) vein—Includes Au (Cu-Bi-U) vein, Ag-Pb (Cu-Bi-U) vein, and U vein
- Ni-Co-Ag (U) vein
- Mn vein

- Ag (Pb-Mn) vein and replacement
- Base and ferrous metal replacement—Includes Cu-Zn-Zn-Pb replacement, Zn replacement, Fe replacement, and Zn-Pb replacement
- Mn (Fe) replacement
- Fluorite vein
- Tungsten and beryllium vein and replacement—Includes W vein, W replacement, and W-Bc vein replacement

HYDROTHERMAL AND MAGMATIC DEPOSITS

- W vein and pegmatite
- Be pegmatite
- Rare-earth pegmatites

METAMORPHIC DEPOSITS

- ▲ Magnetite, marble, and ricolite

SEDIMENTARY DEPOSITS

- ▽ Au placer and diatomite (mechanical deposits)
- ▽ Fe, U, brine, and zeolites (chemical deposits)

VOLCANIC DEPOSITS

- ◆ Perlite, and pumice-cinder

MINERAL DEPOSIT MAP OF THE SILVER CITY 1° x 2° QUADRANGLE, NEW MEXICO AND ARIZONA

By
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