UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GOLD IN THE CONTERMINOUS UNITED STATES, PERSPECTIVE OF 1986--PRELIMINARY MAP OF SELECTED GEOGRAPHIC, ECONOMIC, AND GEOLOGIC ATTRIBUTES OF PRODUCTIVE (>10,000 OZ) GOLD DISTRICTS

By

Edwin W. Tooker and Thomas L. Vercoutere
U.S. Geological Survey, Menlo Park, California

To accompany Open-File Report 86-209

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Contents

Illustrations

Tables

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INTRODUCTION

Revived interest in gold mining beginning in the late 1970's, caused in part by improved economic conditions and advances in the technology of metal recovery, has led to this expanded update and reevaluation of United States gold resources twenty-four years after the publication of Mineral Investigation Map MR-24, "Gold in the United States, exclusive of Alaska and Hawaii" (Koschmann and Bergendahl, 1962). A free-market system for pricing gold in the world market, beginning in 1976 (Anderson, 1982), and the discovery of a new type of low grade deposit amenable to less costly surface bulk mining techniques have provided an expanded outlook for gold exploration and development in the conterminous United States (Shawe and others, 1982). Consequently, we are reevaluating the location and magnitude of past production and of currently announced reserves as guides for the assessment and development of future gold resources. This map and accompanying table 1 provide a review of the geographic distribution of gold in the conterminous United States in terms of its past and anticipated production, the types of gold deposits present, and favorable old and new geologic environments. This report includes an explanation of the symbols and terms used.

An objective of the map is to show the size, principal types of deposits (table 2), and the geographic distribution of more than 550 producing gold mining districts in the conterminous United States, each of whose cumulative production exceeds 10,000 oz (troy). In addition to the magnitude of past production, the map shows the major type of deposit within each district, whether gold is the primary commodity or a byproduct, and the location of the district within a broad continental structural framework. An accompanying tabulation of localities (table 1), provides information about other types of gold deposits that may occur within a district and cumulative gold production from (1) the beginning of production in a district until 1959, (2) through 1981, as well as (3) information released by mining companies about the size of reserves. A second objective is to identify gold-bearing geologic terranes in the conterminous United States.

HISTORICAL TRENDS OF UNITED STATES GOLD PRODUCTION

Gold was one of the metals sought early in the settlement of the conterminous United States, and the development of domestic gold production and the major districts from which that gold was produced are described in detail by Koschmann and Bergendahl (1968). The metal was reported to have been discovered and mined in pre-Revolutionary War times from veins and placers in southeastern United States, notably in North Carolina (Bryson, 1936). This region remained the major domestic source of production until about 1850. Following discovery of easily mined and concentrated placer and lode deposits in California in the mid to late 1800's, the broad Cordilleran mountainous belt of western United States became the site for several lode and placer deposit "gold rushes". Placers, which were the chief sources of gold until about 1873, were gradually displaced as increased production from the lode mines was achieved. In spite of its ease of discovery and exploitation, an ultimate decline in placer mining in the conterminous United States occurred in part owing to the depletion of conventional placer fields, but also because of environmental restrictions designed to prevent water pollution and siltation in areas of expanding population. Production from the famous bonanza sources of gold, such as those at Goldfield, and Virginia City, Nevada, and Cripple Creek, Colorado, began in the 1890's and early 1900's. The search for gold in the west also lead to the discovery of base metal and silver deposits from which gold was won as a byproduct.

Beginning in the early 1900's, improved mining and metallurgical technology permitted the recovery of dispersed fine-grained gold as a byproduct of some porphyry copper-type deposits, and by 1945, more than 50 percent of United States gold was produced from these deposits. In the early 1960's, a previously unrecognized type of sediment- and volcanic-hosted gold deposit occurring as very fine-grained low-grade disseminations became a significant new source in the conterminous United States (Tooker, 1985). This type provides a low-cost extractable source of gold based on bulk mining by open pit and gold recovery by heap leaching methods. Several precious metal districts whose conventional types of deposits were considered mined-out now have been reopened as disseminated gold districts. A substantial number of new districts of this type also have been discovered in recent years and are still being found in the conterminous United States and elsewhere.

Gold has been produced in the United States from all but one of the major world types identified by Anderson (1982), as shown in figure 1. There is no

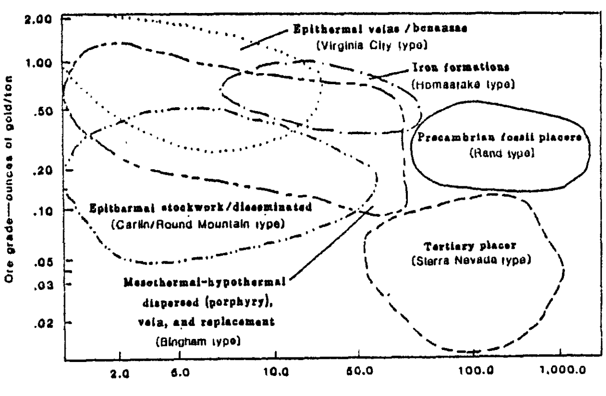

Figure 1. Approximate ranges in ore grades and tonnages for the five main types of major world gold deposits.

known analog in the United States of the world's largest type of gold deposit, the Witwatersrand fossil (Precambrian) placers of South Africa. United States production of about 325 million ounces has been derived mainly from lode (50 percent) and placer (35 percent) gold deposits and as a byproduct of base metal (mainly dispersed) ores (15 percent) according to Lucas (1985). This represents about 10.5 percent of a world production of 3.1 billion ounces, 40 percent of which was from the Rand ores of South Africa. The average grade of United States deposits presently is about 0.1 oz per ton (Lucas, 1985), which reflects the contribution from the present major U.S. source of gold, the disseminated type of deposit (fig. 1).

Of the total United States production (Lucas, 1985), approximately 88 percent was derived principally from Alaska and 6 western conterminous states (Fig. 2). Gold deposits and occurrences have been found or reported in all but 10 states[1] (Tooker and Johnson, 1980). The ten most productive districts and their main types of deposits in 1960 are compared (table 3) with the ten current (1982, 1983) top producers. Replacement of placer, lode, and dispersed deposits as the major producers by the disseminated deposits between 1960, 1980, 1982, and 1983 represents a dramatic shift in the source of domestic gold production.

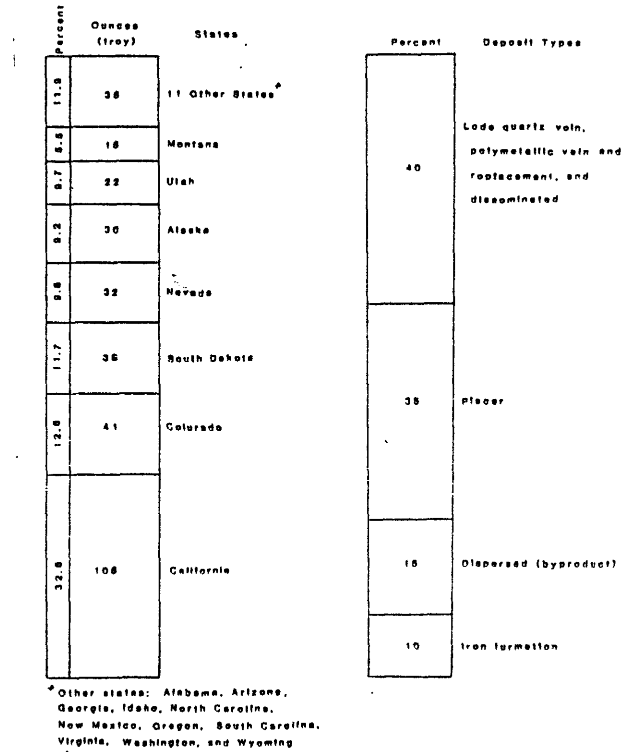

Figure 2. Distribution of United States cummlative gold production (in millions of ounces) through 1982 by (A) state and (B) type of deposit.

The Homestake, South Dakota, and Bingham, Utah, districts have long-continued records of production; Carlin, Nevada, which appears in the 1980 list, is one of the new disseminated type that was discovered in the vicinity of the "mined-out" Lynn district. The Homestake district, in operation for more than 100 years, accounts for nearly 10 percent of the total U.S. gold production. The Bingham (West Mountain) district, Utah, has produced more than 19 million oz (5 percent) of U.S. gold during the past 70 years, mainly as a byproduct of porphyry copper mining. In 19 years the disseminated carbonate-hosted gold district north of Carlin, in Eureka County, Nevada, has produced an estimated 2.9 million oz, 1 percent of total U.S. production. The announced gold resources of Round Mountain, Nevada, a volcanic-hosted disseminated deposit, alone are equivalent to more than 3 percent of U.S. production. In comparison, the quartz lode and associated placer districts of the ten-county Mother Lode region of the Sierra Nevada, foothills belt in California, which has been inactive until recently, have produced an estimated 56.2 million oz, 18 percent of United States production.

GEOLOGIC ENVIRONMENTS FOR GOLD DEPOSITION

Geochemical abundance of gold

The average abundance of gold in the crust, as summarized by Simons and Prinz (1973), lies in the range of 0.003 to 0.004 ppm (parts per million) or about 1 g (gram) per 300 metric tons. They also observed that gold is more abundant in sedimentary than in igneous rocks, gold is more abundant in

[1] Kansas, Louisiana, Mississippi, Florida, Kentucky, Ohio, Delaware, Rhode Island, Massachusetts, and Hawaii.

Table 2.—Provisional classification of types of deposits for use on the accompanying map and in Table 1.

1. Quartz lode gold—Vein and shear zone deposits composed primarily of quartz, pyrite, and gold; lodes commonly contain minor amounts of sulfides.

2. Gold-bearing skarn—Irregular deposits as replacements or in small fractures in silicified lime-bearing silicate rock, generally the result of contact metasomatic reconstitution of carbonate rock near granitic intrusives; gold may be the principal metal recovered or may be a byproduct.

3. Gold-bearing polymetallic vein and replacement—Fissure and bedded replacement deposits in sedimentary or igneous rocks containing significant primary or byproduct gold; deposits may be mined also for other precious metals and sulfide minerals.

4. Bonanza gold—Exceptionally rich accumulations (ore shoots) of primary and secondary enriched (oxidized) gold ore, generally in volcanic host rocks (may be exceptionally enriched quartz lodes, replacements, stockworks, and breccia pipes).

5. Dispersed (porphyry) gold—Deposits of large volume but low grade distributed in sheeted zones, stockworks, and subvolcanic porphyry bodies; the gold may occur as a primary or byproduct metal.

6. Gold-bearing volcanogenic massive sulfide—Deposits formed in localized irregular peneconformable concentrations, generally of submarine volcanogenic origin. Gold may be the principal metal recovered or may be a byproduct of high-grade base metal mining.

7. Gold-bearing iron formation—Stratabound stringers and fracture fillings that contain local concentrations of primary or byproduct gold in banded marine sedimentary and volcaniclastic rocks containing more than 15 percent iron, and, commonly, abundant chert and fine-grained quartz seggregations.

8. Disseminated carbonate- and volcanic-hosted gold—Broadly distributed low grade deposits of very fine grained primary gold formed as hydrothermal replacements and fracture fillings, commonly in carbonate and volcanic rocks. Mercury, antimony, and arsenic are common gangue metals.

9. Gold placer—Eluvial, alluvial and colluvial modern and fossil local accumulations of gold resulting from the erosion of other types of deposits, and mechanical concentration of gold by stream or wave action.

10. Saprolite gold—Secondary enriched deposits of gold localized in decomposed soft clay-rich igneous or metamorphic rock altered in place by chemical weathering.

Table 3.—Ten leading productive gold mining districts in 1960, 1980, and 1982 and their main types of deposits [Ryan and McBreen, 1961; Lucas, 1981, 1983, 1984]

	1960	
1.	Homestake (Lead), South Dakota	Iron formation
2.	Bingham (West Mountain), Utah	Dispersed (byprod.)
3.	Republic, Washington	Polymetallic vein (byprod.)
4.	Yuba River, California	Placer
5.	Fairbanks, Alaska	Placer
6.	Warren, Arizona	Polymetallic repl. (byprod.)
7.	Ely (Robinson), Nevada	Dispersed (byprod.)
8.	Nome, Alaska	Placer
9.	Ajo, Arizona	Dispersed (byprod.)
10.	Wenatchee River, Washington	Quartz lode
	1980	
1.	Homestake (Lead), South Dakota	Iron formation
2.	Bingham (West Mountain), Utah	Dispersed (byprod.)
3.	Carlin, Nevada	Disseminated
4.	Battle Mountain, Nevada	Polymetallic/dispersed (byprod.)
5.	Round Mountain, Nevada	Disseminated
6.	Sunnyside, Colorado	Polymetallic vein (byprod.)
7.	DeLamar, Idaho	Disseminated (byprod.)
8.	Morenci, Arizona	Dispersed (byprod.)
9.	Zortman-Landusky, Montana	Disseminated
10.	San Manuel, Arizona	Dispersed (byprod.)
	1982	
1.	Jerritt Canyon, Nevada	Disseminated
2.	Homestake (Lead), South Dakota	Iron formation
3.	Bingham (West Mountain), Utah	Dispersed (byprod.)
4.	Carlin/Maggie Creek, Nevada	Disseminated
5.	Round Mountain, Nevada	Disseminated
6.	Battle Mountain, Nevada	Dispersed/disseminated
7.	Zortman-Landusky, Montana	Disseminated
8.	Pinson, Nevada	Disseminated
9.	Alligator Ridge, Nevada	Disseminated
10.	Ortiz, New Mexico	Disseminated
	1983	
1.	Homestake (Lead), South Dakota	Iron formation
2.	Jerritt Canyon, Nevada	Disseminated
3.	Bingham (West Mountain), Utah	Dispersed (byprod.)
4.	Carlin, Nevada	Disseminated
5.	Round Mountain, Nevada	Disseminated
6.	Battle Mountain, Nevada	Dispersed/disseminated
7.	Golden Sunlight, Montana	Dispersed/disseminated
8.	Pinson, Nevada	Disseminated
9.	Alligator Ridge, Nevada	Disseminated
10.	Ortiz, New Mexico	Disseminated

sandstone than in other sedimentary rocks, and is more abundant in mafic than in felsic igneous rocks. Iron-rich meteorites, considered to represent subcrustal materials, contain more gold (0.67 to 1.3 ppm) than lithospheric crustal rocks. Gold deposits are more commonly associated with felsic than with mafic or ultramafic rocks, and in siliceous or aluminous sedimentary metamorphic rocks in preference to carbonate rocks. Ore mined in large deposits (Homestake, South Dakota; Carlin, Nevada) average about 0.3 oz Au/ton (10.3 g Au/t) which represents a concentration of 2,500 to 3,000 times average crustal abundance. Finally, gold is resistant in the weathering environment, permitting formation of residual concentrations of it in ancient as well as modern placer deposits.

Common mineral occurrences of gold

Gold occurs mainly as the native metal alloyed with variable amounts of silver and other metals (Simons and Prinz, 1973; Tilling and others, 1973). Of the twenty-three minerals of gold listed by Boyle (1979), native gold and the tellurides are most common. He also documents the fact that minor and trace amounts of gold occur in a great variety of organic compounds and inorganic minerals.

Geologic age of gold deposits

The geologic ages for the formation of gold deposits in the conterminous United States are not fully documented, but Meyer's (1985) survey of world deposits shows that deposition of gold was not continuous. Most of the sources of gold-bearing volcanogenic massive sulfides, veins in greenstones, and placers in quartz-pebble conglomerates are of Archean age. Meyer (1985, p. 1426) ventures, "that more than 70 percent of the world's gold came from primary concentrations of Archean age." Mesozoic-Tertiary porphyry-related dispersed, epithermal veins, strata-bound low-grade dissemination, veins in greenstones, volcanogenic massive sulfides, and related placers were deposited or redeposited after a hiatus of 1,700 million years following a break in deposition at about 2,000 m.y. In contrast, ores such as those of copper, nickel, and zinc were formed throughout geologic time.

Occurrence of gold deposits in crustal terranes

Deposition of gold seems to have occurred in geographically and geologically selective portions of the Earth's crust, which, during its long history, has been modified by a number of interacting geologic processes. These have produced individual geologic terranes of variable dimensions, some or parts of which became hosts for deposits of gold and (or) other metals. A terrane, as used here, following the definition by Beck and others (1980), is a fault-bounded crustal block characterized by a distinctive stratigraphic and faunal sequence and (or) a structural-plutonic history differing markedly from those of its adjoining neighbors. Continental- and oceanic-derived crustal geologic domains, as considered here, are major crustal blocks that may be distinctive or have been subdivided (Silberling and others, 1984) into discrete terranes. Many of these terranes and blocks have been joined by accretion and (or) translation processes, but the manner of the joining process often is uncertain, or is as yet unknown.

A central long-stable continental crust area, the craton, consists of several areally large as yet undivided terranes: The craton shield terrane is composed of an exposed thick deformed sequence of Archean basement rocks that is surrounded by a sediment-covered craton platform terrane, generally composed of Proterozoic basement and overlying Phanerozoic rocks (table 4A). The Superior and Wyoming shield terranes are overlain by, or juxtaposed with, less deformed younger rocks of the Churchill, Southern, and Grenville platform terranes, and the western and Appalachian cordilleran shelf terranes.

Peripheral terranes were added to tha cratonal terranes during Phanerozoic time along the shelf edge of the platform by the accretion or translation of exotic or local mobile oceanic- and island-arc-, cratonal-, and mantle- derived crustal terranes (table 4B and 4C). These accreted terranes, as subdivided by Silberling and others (1984), are shown on the map. At present, those along the Pacific coast are better defined than those currently but tentatively identified by Williams and Hatcher (1982), Zen (1983), and Peper (written commun., 1983) along the Atlantic and Gulf of Mexico coasts.

Productive deposits of gold seem to be concentrated somewhat selectively in a relatively restricted number of types of deposits within a few cratonal and accreted terranes or along preferred terrane boundaries. We note a strong correlation of gold occurrences in specific accreted west coast terranes, which have had a relatively simple geologic history. The cratonal terranes, which have undergone a much longer more complex history, have not yet been subdivided in comparable detail.

A number of preliminary attempts have been made to identify the most favorable host terranes for gold deposits (Wolfhard and Ney, 1976; Noble, 1976; Guild, 1978, 1981; Tooker, 1979; Tooker and Johnson, 1980; Albers, 1981, 1983; and Eaton, 1984), but neither the full range of types of deposits was considered nor were the host terrane boundaries established. We are now at an intermediate stage, able to identify favorable gold-bearing host terranes, where an optimum level of erosion permits, and to observe rough alignments of gold districts that seem to follow the regional structural grain of terranes, in some cases, and to cross the structural grain of terranes in other areas. Ashley (written commun., 1985) points out that isotopic dating of deposits, although incomplate, clearly indicates that most deposits in major gold regions (e.g. Mother Lode, California, and Northern Nevada) are post-accretionary. Therefore, the significance of gold occurrence in some accretionary terranes (e.g. Foothills terrane) is not yet fully understood.

DESCRIPTION OF FEATURES SHOWN ON THE MAP AND TABLE OF LOCALITIES

The gold resource map and accompanying table of localities (table 1), at the end of this report, represents the current status of information about the amounts of gold produced in excess of 10,000 oz from districts within the conterminous United States, and the principal known future reserves and (or) resources of gold, in the geologic context of their host geologic terranes. We have adopted a number of reporting conventions because the data for gold are published in several ways and otherwise are difficult to compare. Production data shown are at best estimates of magnitude; much of the vary early production often was not recorded, and more recently, production data are combined as composite district or county deta. Production data also have

Table 4.—Presently identified cratonal (A), accreted western (B), and accreted eastern (C) tectonostratigraphic terranes of the conterminous United States [Terranes containing gold districts are in italics]

A.—Cratonal terranes of the North America plate (King, 1976; Bayley and Muehlberger, 1968; and Sims (1986))

	Name of Terrane	Host rock type
AM1	*Appalachian* (platform shelf)	Continental basement miogeocline overlain by Phanerozoic sediments.
CH	*Churchil* (platform)	Proterozoic continental metasedimentary and intrusive.
CP	*Colorado Plateau* (platform)	Moderately deformed continental basement overlain by Phanerozoic sediments.
CM1	*Cordilleran* (platform shelf)	Continental Proterozoic sediments and intrusions overlain by Phanerozoic sediments and Tertiary intrusive rocks.
GR	Grenville (platform)	Proterozoic continental metasediments
SO	*Southern* (platform)	Proterozoic continental sediments, Phanerozoic cover
SU	*Superior* (shield)	Archean continental deformed crust.
WY	*Wyoming* (shield)	Archean continental metasediments, deformed.

B.—Accreted terranes along the Pacific Coast Margin (Silberling and others, 1984)

	Name of terrane	Host rock type
AG	*Applegate*	Metasediments and volcanics
BA	*Baker*	Oceanic metasediments and melange
BL	*Bucks Lake*	Oceenic metasediments and metavolcanics
BRK	*Black Rocks*	Ocean basin and island arc sediments and volcanics
BY	*Baldy*	Oceanic metasediments, basalt
CAB	*Caborca*	Continental basement overlain by miogeoclinal sediments
CD	*Condrey Mountain*	Metamorphosed oceanic, sediments, greenschist
CE	Central	Oceanic sediments, tectonic melange
CK	*Chilliwack*	Terrigenous clastic and carbonate sedimentary rocks
CTS	*Cortes*	Continental basement, miogeoclinal sediments
CZ	Cenozoic cover areas	
EC	*Elder Creek*	Oceanic crust, ophiolite
EK	*Eastern Klamath*	Island arc volcanics and sediments
FH	*Foothills*	Oceanic metasediments, ophiolite, and volcanics
PJ	*Fort Jones*	Oceanic metavolcanic, sediments
FR	*Feather River*	Oceanic metavolcanics, ultramafics, and ophiolite
GC	*Golconda*	Deep oceanic sediments; allochthonous
HF	*Hayfork*	Oceanic volcaniclastic sediments, volcanic arc, melange
HG	*High Sierra-Goddard*	Oceanic sediments and metavolcanics
IBA	*Idaho batholith*	Granitic plutons
JN	*Jackson*	Oceanic, volcanogenic arc, volcanics
JO	Jungo	Oceanic turbidites, terrigenous clastics
LZ	Lopez	Graywacke, argillite, flysch, chert sediments, volcanics
MB	*Marble Mountain*	Oceanic siliceous metasediments and melange
MR	*Merced River*	Oceanic clastic metasediments, plutons
MT	*Methow*	Oceanic clastic and volcanogenic sediments
NBA	*Northern batholith*	Granitic pluton
NSI	*Northern Sierra*	Oceanic turbidite sediment, arc marine volcanics
OF	*Olds Ferry*	Submarine volcanics and volcaniclastics, limestone
QN	*Quesnellia—undifferentiated*	Marine greenstone, volcaniclastic and metasediments
QNH	Quesnellia, Harper Ranch subterrane	Pelitic sediments, limestone and volcanics
QNO	Quesnellia—Okanagan subterrane	Oceanic metasediments, ultramafics
OWN	Owens	Metamorphosed shelf sediments, plutons
RC	*Roaring Creek*	Continental metasediments and ultramafics
RM	*Roberts*	Siliceous deep marine to nonmarine overlap assemblage, allochthonous
OP	Olney Pass	Melange marine greenstone, pillow lava, basalt, limestone
SBA	*Sierra batholiths*	Granitic plutons
SCB	*Southern Calif. batholith*	Granitic plutons
SJ	*San Juan*	Deformed oceanic metasediment and melange
SK	Skagit	Metaclastic and volcanics of oceanic origin
SR	*Salmon River*	Oceanic volcanics, metavolcanics, migmatites
SZ	Siletz	Oceanic volcanics and turbidites
TJ	Tujunga	Precambrian metaplutonic and metasediments
TR	*Trinity*	Oceanic volcanics, ophiolite
WA	*Wallowa*	Oceanic plateau and island-arc volcanics
WPN	*Walker Lake, Pine Nut subterrane*	Basinal marine volcanics, and volcaniclastic and carbonate sediments
WPD	*Walker Lake, Paradise subterrane*	Cabonate, siliciclastic, and volcaniclastic sediments and andesitic volcanics and volcanogenic sediments; in part allochthonous
WKS	*Western Klamath, Rogue Valley subterrane*	Oceanic ophiolitic overlain by island-arc allochthon
WPD	*Western Klamath, Smith River subterrane*	Allochthonous ophiolite and marginal basin sedimentary rocks
YR	Yreka	Oceanic clastic sediments, allochthonous

C.--Accreted terranes along the Atlantic and Gulf of Mexico Coasts (Williams and Hatcher, 1982; J. D. Peper, written commun., 1983; Zen, 1983)

	Terrane	Crustal rocks
AV	Avalon	Proterozoic sedimentary and volcanic platform rocks, undeformed, weakly metamorphosed, cut by Precambrian intrusives, overlying Paleozoic oceanic island-arc volcanics and sediments related to subduction
CHO	Chopawamsic	Predominant mafic volcanic rocks cut by granitic pluton (500 m.y.) overlain by Paleozoic sedimentary and volcanic rock of island-arc affinity
GA	Gander	Continental basement overlain by clastic volcanic rock and shale, intense metamorphism and deformation, not part of original North American craton
GO	Goochland	Proterozoic metamorphosed Grenvillian basement may or may not be part of North American craton
PD	Piedmont	Mainly Proterozoic early Paleozoic metaclastics on Grenvillian basement metamorphosed, intense, deformed mafic bodies, ophiolitic?

been reported in a number of ways: As dollar values; in troy ounces (oz); in grams (g); in ounces per short ton (ton) or in grams per Tonne (t) of ore. We have converted these to a single unit, the oz. The dollar value per oz. has varied over time (table 5), producing added uncertainty for such conversion.

Table 5.--Dollar values for gold from 1792 to the present [Anderson, 1982; Engineering and Mining Journal, 1984]

Years	Value per ounce (troy)	Remarks
1792-1834	$19.38	Mint Act fixed Ag/Au ratio 15:1
1835-1861	$20.67	Fixed Ag/Au ratios changed to 16:1
1862-1878	Greenback free market era	
1879-1933	$20.67	Pre Civil War value reestablished
1934-1970	$35.00	Based on current value of dollar
1971-Present	Variable, free market pricing	Dollar per ounce "floats", eg. March 1980 $850/oz, August 1981 $435/oz, and August 1984 342-355/oz

Because early records often are incomplete and more recent data may remain proprietary, the production data should be regarded at best as only minimum values and subject to revision. Data for the production from individual mining districts for the period between 1960 and 1981 has, in most cases, not been distributed in Bureau of Mines publications, and is consolidated as a county or state value. In some cases these data were withheld to protect proprietary interests. We have made what are believed to be reasonable allocations of these lumped values where published information elsewhere provides sufficient clues; such estimates are clearly identified in the table. We judge that, on the whole, these data of variable accuracy reflect reasonable orders of magnitude. While estimates of the sizes of unmined new fine-grained disseminated gold deposits, obtained from published resource data, are incomplete and of varying accuracy (Hillman and others, 1984), they undoubtedly are indicative of the order of magnitude of potential future production in the United States.

Map features

District location and main type of deposit.--Productive gold districts are located by numbered spot symbols placed at the approximate center of a district, which often is composed of more than one mine. Names of the major districts appear on the map. A number of the larger new deposits are not located in recognized or established mining districts. Consequently, we have adopted the strategy of using the deposit name for its district identity until such time as a formal district name is established. In a few special cases newly recognized districts, mainly of the disseminated type, are located too close to old districts to separate them on the map. We have resorted to using the existing number with an a, b, c designation for the new district or subdistrict. In addition, a few of the presently subeconomic but anticipated future large byproduct gold districts have been included to indicate permissive future directions for production of gold. The shape of the symbol indicates the main productive type of deposit in the original district; less productive types of deposits in those districts where more than one type was mined are indicated in table 1. Where the type of reserve gold exceeds past production from another type, the symbol of the reserve type is shown on the map. Its size represents production plus reserves. Where the type of reserve is equal to or less than that of production, the original symbol is retained, and the district number is underlined on the map.

District size classes.--Three size classes are shown by appropriately-sized symbols on the map: (1) more than 10,000 oz (troy ounces) up to 99,999 oz; (2) 100,000 oz up to 999,999 oz; and (3) 1,000,000 (one million) oz or more. Corresponding values in grams are compared in table 6.

Main type of district production.--A solid symbol indicates that gold was the principal metal sought. An open symbol indicates that gold was produced as a byproduct.

Table 6.--Comparison of size classes in ounces and grams

Class	Ounces (troy)	Grams
1	10,000 - 99,999	311,000 - 3,109,999
2	100,000 - 999,999	3,110,000 - 31,099,999
3	1,000,000 or more	31,100,000 or more

Type of deposit in districts.--The main type of deposit in a gold district shown on the map is one of 10 provisional geologic types listed in table 2: (1) quartz lode gold; (2) gold-bearing skarn; (3) gold-bearing polymetallic vein and (or) replacement; (4) bonanza gold; (5) dispersed (porphyry) gold; (6) gold-bearing volcanogenic massive sulfide; (7) gold-bearing iron formation; (8) carbonate- and volcanic-hosted disseminated gold; (9) gold placer; and (10) saprolite gold deposits. The geologic characteristics of these types, described in table 2, often overlap within a district, and a large district, such as Bingham, Utah, may be composed of more than one type as indicated in table 1. We recognize that our classification of the types of deposits is imperfect and needs revision: The class 3 deposit type has become unwieldy large and lacking in discrimination: an epithermal type needs to be identified; the overlap of types in complex districts should be clearly indicated; and some specialized types are not represented at all. Nevertheless, this classification provides a simple first cut that we hope is useful, but will be improved.

Geologic terranes.--The major cratonal and accreted terranes identified thus far, together with their principal geologic attributes, are listed in table 4A-C. Those terranes that have produced gold are shown in italics. Further identification or subdivision of terranes, particularly cratonal terranes, remains to be done.

Locality index table features

State, county, and district localities.--The major productive districts (or in some cases localities of potential future production) of states are numbered on the map consecutively by alphabetical order of counties within each state. The modern district or locality name is used; former designations are in parenthesis.

District production and reserves.--The best known cumulative district production data available to us are listed from a district's beginning to 1960 and thence to 1982, respectively. Record-keeping in the early days was poor, records often lost, and county boundaries changed. The district, county, and state data from 1961 to 1982 sometimes are incomplete because of the necessity to protect proprietary interests. Reserve data in italics on table 1 undoubtedly are conservative, where reported, as well as incomplete, if not reported. In most cases the sum of the production from individual districts in column 2 (beginning to 1959) of table 1 is less than the total reported for the county and state. Presumably the difference mainly represents that portion of production from the smaller (<10,000 oz) districts, which are not included in this report. In column 3 (to 1981) of table 1, the sum of district production is also generally less than the total reported or estimated for the county. This difference is due, in part, to our inability to apportion the undistributed portion of production of active, (a), districts, as well as accounting for districts (or deposits) having only a small (<10,000 oz) production.

District production data from Arizona, reported by the Arizona Bureau of Geology and Mineral Technology (Keith and others, 1983) consistently differ from those of the U.S. Geological Survey (Koschmann and Bergendahl, 1962), U.S. Bureau of Mines, and other indicated sources. This is due in part to different methods of describing Arizona mining districts and the number of mines included, reallocations made owing to changes in county boundaries, as well as in estimates of early, poorly documented production. Where the difference is significant, we indicate the ABGMT data in footnotes. In a number of cases their data fill gaps that occur in U.S. Bureau of Mines post-1960 data. The Bureau of Mines cumulative production for Arizona through 1981, shown in table 1, exceeds the ABGMT production totals (Keith and others, 1983) for the same period by about 17 percent.

Ranges of types of deposits in a district.--Many districts have recorded production from several discrete types of deposits, which have been identified in table 1; only the most productive type is shown on the map. Production of gold as the primary material sought is shown by an "X"; byproduct gold production is shown by a "+", and minor production of a type is shown by a symbol in parentheses. A query may follow a symbol where there is some uncertainty as to the type indicated. The symbol is in italics for those cases where a reserve of gold of the type shown is reported in a district. An "O" indicates that an unevaluated resource of the commodity has been reported.

Sources of data.--The main sources of data, in addition to Koschmann and Bergendahl (1968) and the U.S. Bureau of Mines Mineral Yearbook compilations for 1961-1981[1], include the series of Senate Interior and Insular Affairs Committee State resources reports for most western states[2], the U.S. Geological Survey MRDS (Mineral Resource Data System) computer files, the gold commodity specialist's files, and an extensive scientific and technical collection of published data listed in "references cited".

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[1] Ryan and McBreen 1961, 1962; Ryan and Tucker 1963; Ryan 1964, 1965, 1966, 1968, 1969; Anonymous 1967; Hoyt 1971, 1972; West 1973, 1974, 1975, 1976, 1977; West and Butterman 1978; Butterman 1980a, 1980b; and Lucas 1981, 1982, 1983.

[2] Staff, U. S. Geol. Survey (1960), Bergendahl (1964a, 1964b, 1964c, 1965, 1968), Clark (1966), MacLaren and others (1966), Weissenborn (1968), Moore (1969), Brooks and Ramp (1969), Anderson (1973), Norton and Redden (1975), and Dutton and Prinz (1976).

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DISTRIBUTION OF PRODUCTIVE GOLD DISTRICTS IN THE CONTERMINOUS UNITED STATES

Of 566 productive mining districts (>10,000 oz) shown on Table 1, more than 75 percent of production has been from five western states (Table 7). There have been only 32 new districts added since 1981, six of which are now still considered subeconomic by earlier criteria, but have large low-grade tonnages containing disseminated gold. Production between 1959, when the Koschmann and Bergendahl (1968) survey was made, and 1981 has increased by 28.6 million ounces. Eighty-nine percent of it came from South Dakota, Utah, Nevada, and Arizona, mainly as primary production from iron formation type deposits and as the byproduct of dispersed copper. In fact it was not until after 1971, when the price of gold was deregulated (Table 5), that primary gold once again became a worthwhile commodity to mine extensively in the United States. However, in the post-1979 period, when gold rose above $800 per ounce and when the viability of the bulk minable deposits was recognized, particularly in Nevada, California, Arizona, Montana, and Idaho (Table 8), the indicated and inferred reserves in conterminous United States had augmented cumulative production to 1981 by an additional 34 percent. As long as the price of gold remains above $300 per ounce, according to Metals Week (1985, v. 56, no. 3, p. 7), the probability is that reserves in the present districts and additional discoveries of disseminated type deposits will continue to keep pace with production and (or) increase.

Table 7.—Ranking of gold producing states through 1981 based on table 1

States	Cumulative gold production to 1981 (millions of ounces)	Percent of total production
California	106.4	35.0
Colorado	42.7	14.0
South Dakota	37.8	12.5
Nevada	33.1	10.9
Utah	22.4	7.4
Montana	20.8	6.9
Arizona	15.2	5.0
Idaho	10.6	3.5
Oregon	5.8	1.9
Washington	2.8	0.9
New Mexico	2.4	0.9
North Carolina	1.3	0.4
Georgia	0.9	0.3
Virginia	0.2	0.1
Wyoming	0.08	0.03
Alabama	0.05	0.02
Pennsylvania	0.04	0.01
Michigan	0.03	0.009
Tennesee	0.02	0.006
	302.8	99.7

Table 8.—Comparison of anticipated state and national increases in gold reserves based on past production and reserves.

States	Post 1981 indicated/infered reserves (thousand oz)	Percent increase of State's gold reserves over past production	Percent increase of Nation's gold reserves over past production
Nevada	59.3	179.0	20.0
California	12.3	11.0	4.0
Arizona	10.0	68.0	3.4
Montana	7.1	34.0	2.3
Idaho	4.5	42.0	1.4
Utah	2.5	11.0	0.8
Colorado	2.0	5.0	0.7
South Dakota	1.8	4.8	0.6
Washington	1.8	64.0	0.6
New Mexico	0.8	31.0	0.3
Oregon	0.8	14.0	0.3
Conterminous U.S.	102.9	—	34.4

DISTRIBUTION OF PRODUCTIVE GOLD DISTRICTS IN THE CRUSTAL TERRANES OF THE CONTERMINOUS UNITED STATES

Seven major terrane groups are identified as comprising the area of the conterminous United States: (1) Craton shields; (2) craton platforms; (3-4) western and Appalachian craton shelves; (5-6) Pacific and Atlantic accreted cordillera; and (7) Atlantic-Gulf of Mexico coastal plains and continental shelves. The cratonal terranes contain about 45 percent of the productive districts, the Pacific accreted terranes about 50 percent and the Atlantic terranes 5 percent. The distribution of the main deposit types in districts in cratonal terranes, summarized in Table 9, shows that polymetallic vein and replacement, placer, quartz lodes, and disseminated deposits comprise more than 90 percent. The main characteristic feature of the terrane groups as hosts for gold districts are briefly summarized in the following sections.

Table 9.—Distribution of deposit types in cratonal terrane districts

Types of deposits	Percent
Polymetallic vein and replacement................	54.2
Placer...............................	17.0
Quartz lode..........................	10.0
Disseminated.........................	10.0
Dispersed............................	5.0
Skarn................................	2.5
Massive sulfide......................	0.8
Iron formation.......................	0.4
Bonanza..............................	0.4
Total............................	100.3

Cratonal shield terranes

The oldest Archean rocks of the conterminous United States underlie the Superior terrane, a thick sequence of highly deformed metavolcanic, metasedimentary, and intrusive granitic plutonic rocks overlain by younger Precambrian quartzite, iron formation, slate, and continental volcanic and sedimentary rocks (King, 1976; Harrison and Peterman, 1984). These are a part of the Canadian Shield of the North American craton. Two Archean tectonostratigraphic terranes (not shown) recently have been recognized in these rocks in the Great Lakes region (Sims, 1985). A greenstone-granite (about 2700 Ma) terrane and a gneiss (3550-2600 Ma) terrane, which were joined in Late Archean time are partly covered by a continental margin miogeoclinal sequence of Early Proterozoic (about 2,000-1900 Ma) age. The gneiss terrane does not host mineral deposits, but the greenstone-granite terrane hosts mineral deposits in Canada.

Archean rocks centered in the Cordilleran region in Wyoming (about 2,900-2,000 Ma) are considered by King (1976) to be an extension of the Superior terrane. The Wyoming rocks consist of a thick sequence of pelitic sediments and minor volcanics that have been metamorphosed to gneiss and amphibolite, and intruded by later granite plutons and diabase dikes. They are mantled by younger Precambrian metasedimentary and plutonic, and locally, by Phanerozoic sediments and volcanic rocks.

In contrast to shield areas in Canada, which contain many gold districts (Boyle, 1979), no productive gold districts have been developed in the Superior terrane in the United States. However, there is a large subeconomic byproduct disseminated gold potential in the Duluth Complex of Minnesota (Watson and others, 1981). The Wyoming terrane contains 2.5 percent of the cratonal districts in only a few small-sized quartz lode and polymetallic vein or replacement types in which gold is present mainly as a byproduct. Scattered small-size disseminated, dispersed, and placer type districts are also present in the Wyoming terrane, generally near its margins. There is a potentially large source of byproduct gold in the Stillwater Complex of Montana (Conn, 1979).

Cratonal platform terranes

The shields are rimmed by craton platform rock terranes consisting generally of less deformed and metamorphosed Proterozoic basement and overlying mostly unmetamorphosed Phanerozoic rock sequences. The emplacement of these terranes against the shields by accretion or some other process is not well understood. The Wyoming terrane borders locally parallel two large shear zones whose deep-reaching structures may account for intercepting the source gold of many deposits that occur in or near these zones. The Mullen Creek-Nash Fork shear zone (King, 1976) lies along the southern boundary of the Wyoming shield, and the Trans Challis-Great Falls shear zone or lineament (Bennett, 1984) flanks the northern border.

The platform terranes include the Churchill to the north and west, the Southern and Grenville belt terranes to the south and east, and the Colorado Plateau terrane on the southwest. Together these terranes contain about 56 percent of the productive cratonal gold districts. Most of the remaining cratonal districts are in the craton shelf terrane.

The Churchill terrane includes those regions generally east of the western craton shelf terrane, between and northwest of the Superior and Wyoming shield terranes. The terrane consists of moderately deformed and metamorphosed clastic and argillite sedimentary rocks in Montana, and metasediments, iron formation, and intrusive granite plutons in the Black Hills, South Dakota; both are overlain by Phanerozoic sedimentary and volcanic sequences.

About 6 percent of the cratonal districts, including some of the larger productive districts, occur in the Churchill terrane, concentrated in two areas: (1) a northeast-trending zone in central Montana, which contains polymetallic, dispersed, disseminated, and placer deposits, and appears to extend northeast from a broad zone that includes the Idaho batholith and adjoining western craton shelf terranes; and (2) the Black Hills of South Dakota, which contain iron formation as well as polymetallic vein and replacement, quartz lode, disseminated, and placer deposits.

The Southern platform terrane includes about 44 percent of cratonal districts mainly in a highly mineralized area in the Southern Rocky Mountains from Wyoming to New Mexico, as well as the areas lying between the western craton shelf terrane and Colorado Plateau in Utah and Arizona. Folded and faulted Proterozoic basement volcanogenic, clastic, and shaly sediments, metamorphosed to gneiss and amphibolite, and intruded by granitic rocks, are overlain by Phanerozoic sediments and volcanic rocks. The major concentration of gold districts in the Southern terrane lies along the Precambrian shear zone that hosts the Colorado mineral belt. Main production, largely of byproduct gold, came from polymetallic vein and replacement deposits; lesser production came from disseminated and dispersed deposits, quartz lodes, and placers. The mineral belt extends into the San Juan volcanic field of Colorado on the margin of the Colorado Plateau, which contains bonanza, disseminated, and quartz lode deposits. Districts in Arizona and New Mexico, which flank the Plateau, are grouped into distinct clusters; those in New Mexico generally lie along the Rio Grande rift zone. The deposit types in these districts, in which gold is recovered mostly as a byproduct, include polymetallic vein and replacement, massive sulfide, quartz lode vein, dispersed, and placer deposits.

Two terranes of Proterozoic age (not shown) have recently been recognized by Sims (1985) in the southern platform terrane in the Great Lakes region. An early Proterozoic (about 1900-1800 Ma) oceanic-arc assemblage—the Wisconsin magmatic terrane—which lacks an Archean basement, contains massive sulfide type deposits and was accreted to the Superior terrane about (1850 Ma). The Middle Proterozoic (about 1,100 Ma) midcontinent rift system was initiated and aborted before crustal separation was achieved. The terrane produced thereby contains deposits associated with magmas ascending from the mantle such as the gabbro-hosted Cu-Ni in the Duluth Complex, which, as we noted earlier, also contains a large subeconomic byproduct gold resource. For the most part in the Southern platform terrane, only small districts (i.e. Ropes mine, Michigan) were productive or have a primary resource potential; a number of potential byproduct sources of gold occur in massive sulfide and dispersed occurrences in Wisconsin.

The Grenville terrane, which overlaps and flanks the Southern terrane, contains no productive gold districts in the United States, although in Canada this terrane contains many productive deposits (Boyle, 1979).

The central part of the Colorado Plateau terrane is virtually devoid of gold-producing districts; the 6 percent of cratonal districts in the Plateau are scattered around the margin, generally as extensions of zones in adjoining cratonal regions. Polymetallic vein and replacement deposits predominate in the southwest extension of the Colorado Mineral belt. Quartz lode, dispersed and disseminated types are minor.

Western Cordilleran craton shelf

The Cordilleran miogeoclinal shelf along the west edge of the craton extends in a broad belt from Idaho and western Montana, south through western-most Wyoming, western Utah, and eastern Nevada, to southeastern California. The belt contains more than 40 percent of the cratonal gold districts. The distribution of main deposit types in these districts, table 10, shows that

Table 10.—Distribution of deposit types in the western Cordillera cratonal shelf

Types of deposits	Percent
Polymetallic vein and replacement	50.5
Placer	19.6
Disseminated	13.4
Quartz lode	6.2
Dispersed	5.2
Skarn	4.1
Bonanza	1.0
Total	100.0

the polymetallic vein and replacement deposits comprise more than half. Placer, disseminated, quartz lode, dispersed, skarn, and bonanza deposits are also represented.

The Idaho batholith and Cenozoic volcanic cover bound the western margin of the shelf at its northern end. Thrust fault blocks composed of oceanic crustal rocks overlap the shelf through central Nevada. The Sierra Nevada and southern California batholiths form a western edge at the southern end of the terrane belt. The eastern shelf margin is approximately the eastern border of the foreland of the Sevier thrust belt, which has telescoped the late Precambrian and Phanerozoic strata of the shelf miogeocline against the craton platform and shield terranes. Where exposed, the basement Precambrian rocks are Proterozoic in age. Phanerozoic rocks include clastic, carbonate, and argillaceous sediments, volcanic flows, and intrusive granitic plutons (Stewart and Poole, 1974; Roberts and others, 1965).

Gold districts in the shelf terrane in northern Idaho and northwestern Montana occur in: (1) A diffuse group of small and medium-sized byproduct polymetallic vein and replacement districts, primary quartz lode, and placer districts, (2) a cluster of placer districts near the northwest border of the Idaho batholith, and (3) a very broad zone of small to large districts in a belt from Boise, Idaho, to Butte and Helena, Montana. As noted earlier this generally linear belt roughly parallels the boundary of the Churchill platform and Wyoming terranes. The Snake River placers, in aggregate, have been very productive, but this area of Cenozoic volcanic cover is without lode type districts, and neighboring cratonal terranes are the presumed sources.

The southern part of the western shelf terrane contains fewer deposits, but includes a number of major gold-producing districts. Two broad but diffuse east-northeast-trending zones are defined here: (1) A trend from Bingham-Tintic region, Utah, through Ely, Nevada, which parallels the Cortez-Unita Trend (Tooker, 1971), and (2), a trend from Marysvale, Utah through Pioche, Nevada. Both zones head generally across the structural grain of the miogeoclinal rocks and Great Basin structures, but are associated with belts of Mesozoic and Cenozoic intrusive and extrusive rocks (Tooker, 1971). The western ends of these zones merge with those of the adjoining north-northeast trending accreted terranes in central Nevada.

Appalachian Cordilleran craton shelf

The Appalachian shelf terrane is a narrow belt of folded and thrust faulted geosynclinal rocks extending from Canada to Alabama. These rocks overlie Precambrian basement rocks along the eastern edge of the Grenville platform, and in part, were metamorphosed by a major plutonic, metamorphic, and deformational event, the Grenville orogeny. The basement and thrust-faulted cover sequences of rocks were intruded subsequently by plutonic rocks. A number of terranes accreted to the platform during Paleozoic time (table 4C) form the eastern border of the shelf terrane.

The Appalachian shelf is virtually devoid of productive gold deposits. A small production of gold as a byproduct of iron mining, however, was obtained from two skarn-type deposits near Cornwall, Pennsylvania.

Accreted Cordillera of the Pacific Coast

An irregular broad belt along the Pacific margin from Canada to Mexico is shown on the map as a complex of distinctive structural-stratigraphic crustal terranes that include fragments of continents (which include Precambrian basement), oceanic basins, volcanic arcs, disrupted (subduction complexes(?) and metamorphic terranes (Silberling and others, 1984). Precambrian basement rocks do not underlie these terranes for the most part. About half of the productive deposits in the conterminous United States occur in these accreted terranes. Some of these terranes, particularly those comprising the Sierra Nevada foothills, have been the sites of very large gold production.

Productive gold districts in the northwestern part of the Cordillera in Washington, Idaho, and western Montana, are relatively scattered and occur mainly in 7 oceanic crustal terranes[1]. They include about 6.5 percent of the productive deposits in Pacific Coast accreted terranes. Geologically, these terranes include deformed sedimentary and volcanic rocks, some of which have been metamorphosed to greenstones. Several districts lie in or adjacent to batholithic terranes. The deposits are mainly polymetallic veins and (or) replacements in which gold is a byproduct. Quartz lode veins are of less common occurrence. The Wenatchee disseminated deposit is achieving potential world class size.

The districts in Oregon and northern California are clustered in two main regions, in the Blue Mountains of eastern Oregon, and the Klamath Mountains in southwestern Oregon and northwestern California. As the intervening regions are covered by Cenozoic basalt, one may wonder whether concealed gold deposits may underlie these covered areas. The districts occur in 13 terranes[2], comprising about 17 percent of the productive districts in Pacific Coast accreted terranes. All except one, which is in an island-arc type terrane, occur in oceanic crust siliceous sedimentary and volcanogenic sedimentary, ophiolite, and melange rocks. Some of these terranes are metamorphosed. The main productive districts are nearly equally divided into the quartz lode vein and polymetallic vein and replacement types. Placer deposits are common. Two volcanic-hosted disseminated deposits and two byproduct gold massive sulfide deposits also occur in the Klamath Mountains terranes.

The Sierran batholith and Sierran foothill belt, which includes the famous Mother Lode district in east central California, are composed of 9 terranes[3], all containing gold districts. These gold-bearing terranes, for the most part, are a mix of oceanic type crust that includes clastic and pelitic sedimentary rocks, volcanic rocks, ophiolite, and melange. The districts cluster along thin linear north-trending terrane boundaries and are composed mainly of quartz lode deposits; a few polymetallic vein and replacement districts are also present. A number of very productive placer districts were formed, but none are directly associated with specific lodes.

The Sierra Nevada batholithic rocks also are a host terrane for a small number of deposits. One group of small-sized quartz lode districts occurs at the southern end of the Southern California batholith; small sized districts are also scattered irregularly along the eastern margin of the Sierra batholith.

The Idaho batholith terrane hosts about 8 percent of the districts in accreted terranes and contains primary and byproduct gold deposits, mainly polymetallic vein and (or) replacement, and numerous placer deposits derived therefrom.

The Elder Creek terrane, west of the Great Valley (CZ) terrane in northern California, contains less than one percent of the productive districts, but includes the large McLaughlin disseminated and neighboring polymetallic vein and replacement type deposits. The oceanic crustal rocks of the terrane include ophiolite, volcanics, graywacke, and mafic breccia.

The area of central and western Nevada contains 8 very important gold-bearing accreted terranes[4], all of which are composed of oceanic-derived sedimentary and volcaniclastic crustal rocks associated with intrusive and extrusive igneous rocks. These terranes contain more than 31 percent of the districts in Pacific Coast accreted terranes. Two of the terranes, the Roberts Mountains, and Golconda, are allochthonous, having been thrust eastward over the edge of the craton shelf in Pennsylvanian-Permian time. Gold occurs both in the allochthonous and underlying miogeoclinal shelf rocks. The earlier-worked districts consist mainly of primary and byproduct gold deposits of the polymetallic vein and replacement, bonanza, and dispersed types ranging in age from mid-Mesozoic to late Tertiary. However, the recently recognized sediment- and volcanic-hosted disseminated deposit districts have now become the main sources of gold in this region.

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[1] CK, Chilliwack, CZ; Cenozic cover; MT, Methow; NBA, Northern batholith; QN, Quesnellia; RC, Roaring Creek; and SJ, San Juan.

[2] AG, Applegate; BA, Baker, CD, Condrey Mountain, EK, Eastern Klamath; FJ, Fort Jones; HF, Hayfork, MB, Marble Mountain, OF, Olds Ferry; SR, Salmon River; TR, Trinity; WA, Wallowa; WKR, Western Klamath, Rogue, Valley; and WKS, Western Klamath, Smith River.

[3] BL, Bucks Lake; CTS, Cortes; FH, Foothills; FR, Feather River; HG, High Sierra-Goddard; MR, Merced River; NSI, Northern Sierra; SBA, Northern and Southern Sierran batholiths; and TJ, Tijuana.

[4] BRK, Black Rocks; BY, Baldy; CAB, Caborca; GC, Golconda; JN, Jackson; RM, Roberts Mountain; WPD, Walker L.-Paradise; WPN, Walker L.-Pine Nut.

Accreted terranes of the Atlantic Coast

Although the identification of suspect or exotic terranes along the Atlantic Coast is in an early stage, at least three types of accreted terranes have been recognized in New England (Zen, 1983). Williams and Hatcher (1982, 1983), and Williams (1984) have defined a number of additional terranes in the southern sector. The terranes shown on the map are a synthesis of current thought by J. D. Peper (written commun., 1983).

Production of primary and byproduct gold in these accreted terranes, mostly from the early period (pre-1849), was from small districts. Although gold occurrences similar to the quartz lode districts in Nova Scotia, Canada, (Boyle, 1979) are known in New England, only a few have become productive districts to date. Massive sulfides, placers, and saprolites, polymetallic veins and replacements, and quartz lodes comprise the main types of deposits in the southern areas. More than 80 percent of the districts are concentrated in the Avalon and Piedmont terranes, which are thought to have been accreted to the North American plate during Paleozoic time (Rankin, 1975; Williams and Hatcher, 1983, Stephens and others, 1984).

Atlantic and Gulf of Mexico coastal plains and continental shelf

This youngest terrane has developed along the present coasts, overlapping the accreted terranes. No gold has been produced from the consolidated or unconsolidated rocks that overlie or lie downstream from the productive accreted terranes.

DISCUSSION

The main conclusion from these data is that productive gold districts still seem to be where one finds them; however, some preliminary generalizations about productivity and the location of potential new of gold districts in the geologic terranes of the conterminous United States become apparent from these records. First of all, production in the cratonal terranes is nearly equal to that in the Pacific accreted terranes (Table 11),

Table 11.—Summary of approximate production and reserves from districts in the main terrane groups

Terranes	Cumulative production up to 1982 (thousand oz)	Percent of production up to 1982	Announced reserves (thousand oz)	Number of districts (percent)
Cratonal......	150,815	50.1	>45,346	44.5
Pacific accreted....	147,595	49.0	70,700	49.9
Atlantic accreted....	2,701	0.9	>520	5.5

from which the greatest portion of recent production has been derived. Production from the Atlantic accreted terranes is minor, but these areas may offer potential for future discoveries. Values in Table 11 are approximate because of some uncertainty in assigning deposits to terranes along terrane borders. The table shows that large reserves have been developed in the Pacific accreted terranes, but potential probably still exists for the discovery of reserves in cratonal terranes. Certainly the more exposed cratonal terranes in Canada have been excellent sources of gold production. Do comparably covered cratonal terranes in the conterminous United States yet conceal primary gold districts? Byproduct gold potential has been demonstrated locally, but may prove to be more extensive as concealed base metal skarn and replacement deposits in the cration are discovered.

The data in Table 1 suggest that the productive (>10,000 oz) districts were the sources of virtually all of the gold reported in some states (e.g., Arizona, Colorado). For a number of other states (i.e., California) the production from small deposits (<10,000 production through 1959) apparently has contributed a substantial portion of the total production. The rate of increase in national gold reserves (table 8) has been greatest in Nevada (20 percent) followed by California (4 percent) Arizona (3.4 percent), Montana (2.3 percent) and Idaho, (1.4 percent); the Nevada reserves are approaching twice the cumulative production through 1981. The rate of increase in reserves to date is much lower for the states of South Dakota, Utah, and Colorado, heretofore the major producing states. We expect that their rates of discovery of disseminated type deposits in or near existing districts also will increase, on the basis of increased exploration activity there. Fluctuations or decreases in base metal mining, as at present, will adversely affect production of byproduct gold, particularly from dispersed deposits.

The map distribution pattern of gold districts in Pacific accreted terranes generally supports their correlation with some accreted island-arc and oceanic crustal terranes (Albers, 1983), but not all of them. These geologic host terranes are younger than those of the craton; but we are not certain about the ages of district gold mineralization. The cratonal and accreted terranes may have sustained multiple hydrothermal events that added or redistributed gold deposits, and thus have a broader range of deposit ages. Swinden and Strong (1976) concluded that zonation of types of deposits in Canada is more likely to be observed in short-lived geologic terrane systems such as the Appalachian. Zonal trends are generally obscured in long-lived and more complex terrane systems such as in the Cordilleran orogenic belt, owing to remobilization or destruction by later tectonism, repetition of compatible or juxtaposition of incompatable deposit types by structural deformation, or interference by patterns from several stages of plutonism along common structural zones.

Still unanswered by these data is the question of whether the gold was derived from the host rocks comprising a specific terrane, or whether internal or boundary terrane structures provided the migration channels for gold derived from the lower crust. Meyer (1985) believes that near-surface epithermal deposits, particularly those that are associated with anorogenic Tertiary volcanic fields in the western United States, represent recycled continental crustal gold. An attempt to determine the types of deposits most characteristic of the major terrane groups (Table 12) was qualitative at best, owing in large part to our lack of precise classification of types and because many districts contain, in fact, a combination of types of deposits.

Whereas district groupings seem to parallel the structural fabric and boundaries of the accreted terranes, those in the craton, for the most part, seem to cut across the regional structural grain—at least that of the Phanerozoic cover rocks in which many of the deposits occur. This suggests that the location of craton districts may in some way be controlled by underlying basement structures along which intrusive sources of heat and concomitant hydrothermal solutions are more readily introduced. This conclusion is further reinforced by observations of the occurrence of platinum metals, generally with gold. Page and Tooker (1979), and Tooker and Johnson (1980), show this regional pattern of Pt-Au distribution along two east northeast-trending linear zones in the cratonal platform and shelf terranes flanking the Wyoming shield terrane—on the south from the Ely, Nevada and Bingham, Utah to the New Rambler, Wyoming, districts, and on the north from southwestern Idaho to the Stillwater district, Montana (Blair and others, 1977). Clearer perception of the origin of craton districts will require detailed knowledge about crustal discontinuities of the type that Sims (1985) has discovered in the Great Lakes area, as well as the structure and composition of basement rocks and associated intrusions. The fact that some cratonal and eastern accreted terranes presently seem to be less hospitable as locations for productive gold districts may be suspect in light of the successful production of gold from comparable Canadian terranes.

Within a large number of districts in table 1, there often are one or more types of gold occurrences in addition to the principal type shown on the map. The types of deposits often are a function of the structure and composition of cover rocks in depositional sites. At Bingham, Utah, for example, a series of subvolcanic porphyritic rocks intruded a well-faulted carbonate rock sequence. In addition to dispersed gold in the porphyry copper deposit, gold is also recovered from skarn deposits in sedimentary rock adjoining the porphyry, as well as from the base metal vein and replacement deposits in and peripheral to the intrusive. Gold was also recovered from adjacent placers.

The increase in the number of large-size districts in Nevada shown on this map, when compared with the earlier compilation by Koschmann and Bergendahl (1962), reflects acceleration in new discoveries, particularly those capable of producing gold from disseminated low-grade bulk-minable deposits. Some of the districts, such as those at Carlin and Round Mountain, Nevada, have been re-established or revitalized and moved from the unreported or low- to medium-size into the large-size category. The best future potential for gold production in the United States may well be from additional exploration of these near-surface epithermal gold districts.

Finally, in spite of our best intentions, errors and inconsistencies undoubtedly remain on the map and in the tabular data. We hope that users will call these deficiencies to our attention before a more permanent form of publication is made.

REFERENCES CITED

Adams, Opal, 1984, Geology and ore deposits of the Thunder Mountain mining district, Valley County, Idaho: Geologic Society of American Abstracts with Program, 1984, v. 16, no. 6, p. 425.

Albers, J. P., 1981, Metallogenic provinces in California's lithologic-tectonic framework: Economic Geology, v. 76, no. 4, p. 765-790.

_____ 1983, Distribution of mineral deposits in accreted terranes and cratonal rocks of western United States: Canadian Journal of Earth Sciences, v. 20, no. 6, p. 1019-1029.

Anderson, J. A., 1982, Gold—its history and role in the U. S. economy and U. S. exploration program of Homestake Mining Co.: American Mining Congress Journal, v. 68, no. 1, p. 51-58.

Anderson, S. B., 1973, Gold, in Mineral and water resources of North Dakota: Committee print, Senate Committee on Interior and Insular Affairs, 93rd Congress, 1st Session, p. 156-157.

Anonymous, 1967, Gold, in Minerals Yearbook 1966, v. I-II: U. S. Bureau of Mines, Washington, D. C., p. 233-244.

Antweiler, J. C., and Love, J. D., 1967, Gold-bearing sedimentary rocks in northwest Wyoming—a preliminary report: U. S. Geological Survey Circular 541, 12 p.

Bayley, R. W., and Muehlberger, W. R., 1968, Basement rock map of the United States exclusive of Alaska and Hawaii: U. S. Geological Survey, scale 1:2,500,000.

Beck, M., Cox, A., and Jones, D. L., 1980, Mesozoic and Cenozoic microplate tectonics of western North America: Geology, v. 8, no. 9, p. 454-456.

Table 12.--Proportion of deposit types in terrane groups

Terranes	Quartz lode	Skarn	Polymetallic vein/replacement	Bonanza	Dispersed	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite
Cratonal.........	9.6	2.5	54.2	0.4	5.0	0.8	0.4	9.6	16.7	---
Pacific Coast accreted........	29.0	0.7	26.0	2.7	2.7	0.7	---	13.6	25.0	---
Atlantic Coast accreted........	27.6	---	13.8	---	---	24.1	---	---	6.9	27.6

Bennett, E. H., 1984, The trans-Challis fault zone: a major crustal discontinuity in central Idaho (abs): Geological Society of America Abstracts with Programs 1984, v. 16, no. 6, p. 442.
Bergendahl, M. H., 1964a, Gold, in Mineral and water resources in Idaho: Committee print, Senate Committee on Interior and Insular Affairs, 88th Congress, 2d Session, p. 93-100.
_____1964b, Gold, in Mineral and water resources of Nevada: Senate document 87, Committee on Interior and Insular Affairs, 88th Congress, 2d Session, p. 87-100.
_____1964c, Gold, in Mineral and water resources of Utah: Committee print, Senate Committee on Interior and Insular Affairs, 88th Congress, 2d Session, p. 83-88.
_____1965, Gold, in Mineral and water resources of New Mexico: Committee print, Senate Committee on Interior and Insular Affairs, 89th Congress, 1st Session, p. 131-138.
_____1968, Precious and base metals--gold, silver, zinc, lead, and copper, in Mineral and water resources of Colorado: Senate Document 115, Senate Committee on Interior and Insular Affairs, 90th Congress, 2d Session, p. 77-93.
Blair, W. N., Page, N. J, and Johnson, M. G., 1977, Map and list of reported occurrences of platinum-group metals in the conterminous United States: U. S. Geological Survey Miscellaneous Field Studies Map MF-861, Scale 1:5,000,000.
Bonham, H. F., Jr., 1981, Bulk-minable precious-metal deposits and prospects in Nevada: Nevada Bureau of Mines and Geology Map 43, Open-file edition, scale 1:1,000,000.
_____1982, Reserves, host rocks, and ages of bulk-mineral precious-metal deposits in Nevada: Nevada Bureau of Mines and Geology Open-File Report 82-9, 3 p
_____1984, Reserves, host rocks, and ages of bulk-minable precious-metal deposits in Nevada: Nevada Bureau of Mines and Geology, Special Bulletin M1-1983, p. 15-16.
Boyle, R. W., 1979, The geochemistry of gold and its deposits: Geological Survey of Canada, Bulletin 280, 584 p.
Brooks, H. C., and Ramp, Len, 1969, Gold and Silver, in Mineral and water resources of Oregon: Committee print, Senate Committee on Interior and Insular Affairs, 90th Congress, 2d Session, p. 125-143.
Bryson, H. J., 1936, Gold deposits in North Carolina: North Carolina Department of Conservation and Development Bulletin 38, 161 p.
Butterman, W. C., 1980a, Gold, in Minerals Yearbook 1977: U. S. Bureau of Mines, Washington, D. C., p. 427-446.
_____1980b, Gold, in Minerals Yearbook 1978-79: U. S. Bureau of Mines, Washington, D. C., p. 377-400.
Clark, W. B., 1966, Gold, in Mineral and water resources of California, Part 1, Mineral resources: Committee print, Senate Committee on Interior and Insular Affairs, 89th Congress, 2d Session, p. 179-185.
_____1970, Gold districts of California: California Division of Mines Bulletin, 193, 186 p.
_____1985, Gold in the California desert: California Geology, v. 38, no. 8, p. 176-185.
Conn, H. K., 1979, Johns-Manville platinum--palladium prospect, Stillwater Complex Montana, USA: Canadian Mineralogist, v. 17, pt. 2, p. 463-468.
Dodge, F. C. W., and Loyd, R. C., 1984, Gold deposits of the western Sierra Nevada, field trip guide: U. S. Geological Survey Open-File Report 84-169, 25 p.
Dutton, C. E., and Prinz W. C., 1976, Gold and silver, in Mineral and water resources of Wisconsin: Committee print, Senate Committee on Interior and Insular Affairs, 94h congress, 2d Session, p. 117-118.
Eaton, G. P. 1984, Mineral abundance in the North American Cordillera: American Scientist, v. 72, no. 4, p. 368-377.
Elevatorski, E. A., 1981, Disseminated/replacement gold deposits: Minobras, Dana Point, CA, 114 p.
_____1982, Volcanogenic gold deposits: Minobras, Dana Point, CA, 143 p.
Engineering and Mining Journal, 1984, Free gold market, v. 185, no. 9, p. 35.
Guild, P. W., 1978, Metallogenesis in the western United States: London, Journal Geological Society, v. 35, part 4, p. 355-376.
_____1981, Preliminary metallogenic map of North America: Reston, Va., U. S. Geological Survey, scale 1:5 million.
Hausel, W. D., 1980, Gold districts of Wyoming: Geological Survey of Wyoming Report of Investigation No. 23, 71 p.
Harrison, J. E., and Peterman, Z. E., 1984, Introduction to correlation of Precambrian rock sequences: U. S. Geological Survey Professional Paper 1241-A, 7 p.
Hillman, B. A., Williams, G. K., Dohrns, P. H., and Williams, L. A., 1984, Evaluatory fundamentals of U. S. gold industry: Mining Engineering, v. 36, no. 12, p. 1646-1652.
Hoyt, C. D., 1971, Gold, in Minerals Yearbook 1969, Vol. I-II: U. S. Bureau of Mines, Washington, D. C., p. 521-538.
_____1972, Gold, in Minerals Yearbook 1970, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 535-550.
Hunting, M. T., 1955, Gold in Washington: Washington Department of Conserv. Develop., Division of Mines and Geology Bulletin 42, 158 p.
Johnson, M. G., 1972a, Placer gold deposits of New Mexico: U. S. Geological Survey Bulletin 1348, 46 p.
_____1972b, Placer gold deposits of Arizona: U. S. Geological Survey Bulletin 1355, 103 p.
_____1973, Placer gold deposits in Nevada: U. S. Geological Survey Bulletin 1356, 118 p.
_____1977, Geology and mineral deposits of Pershing County, Nevada: Nevada Bureau of Mines and Geology Bulletin 89, 115 p.
Keith, S. B., Best, D. E., DeWitt, Ed, Toll, N. W., and Everson, B. A., 1983, Metallic mineral districts and production in Arizona: Arizona Bureau of Geology and Mineral Technology Bulletin 194, 58 p.
King, P. B., 1976, Precambrian geology of the United States; an explanatory text to accompany the geologic map of the United States: U. S. Geological Survey Professional Paper 902, 85 p.
Koshmann, A. E., and Bergendahl, M. H., 1962, compilers, Gold in the United States, exclusive of Alaska and Hawaii: U. S. Geological Survey Mineral Investigation Resource Map MR-24, scale 1:3,168,000.
_____1968, Principal gold-producing districts of the United States: U. S. Geological Survey, Professional Paper 610, 283 p.
Lucas, J. M., 1981, Gold, in Minerals Yearbook, 1980: U. S. Bureau of Mines, Washington, D. C., p. 347-374
_____1982, Gold, in Minerals Yearbook 1981 Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 365-392.
_____1983, Gold, in Minerals Yearbook 1982: U. S. Bureau of Mines, Washington, D. C., p. 369-396.
_____1984, Gold, in Minerals Yearbook 1983: U. S. Bureau of Mines, Washington D. W., p. 385-412.
_____1985, Gold, in Mineral facts and problems: U. S. Bureau of Mines Bulletin 675, p. 323-338.
MacLaren, D. R., Weissenborn, A. E., and Weiss, P. L., 1966, Gold, in Mineral and water resources of Washington: Committee print, Senate Committee on Interior and Insular Affairs, 89th Congress, 2d Session, p. 82-91.
McConnell, K. L., and Abrams, C. E., 1984, Geology of the greater Atlantic region: Georgia Geological Survey Bulletin 96, p. 65 and 97-100.
McQuiston, F. W., Jr., and Shoemaker, R. S., 1981, Gold and silver cyanidation plant practice, vol. 2: Littleton, CO., Society of Mining Engineers of AIME, 263 p.
Metal Week, 1985, Significant U. S. gold output costs $250 per oz to produce: v. 56, n. 3, p. 7.
Meyer, Charles, 1985, Ore metals through geologic history: Science, v. 227, no. 4693, p. 1421-1428.
Monroe, S. C., and Plahuta, J. T., 1984, Geology and geochemistry of the Buckhorn mine, Eureka County Nevada: Geological Society of America abstract with program 1984, v. 16, no. 6, p. 599.
Moore, R. T., 1969, Gold, in Mineral and water resources of Arizona, Part 1, Geology and mineral resources: Committee print, Senate Committee on Interior and Insular Affairs, 90th Congress, 2d Session, p. 156-167.
Noble, J. A., 1976, Metallogenic provinces of the Cordillera of Western North and South America: Mineral Deposits (Berl.), v. 11, p. 219-233.
Norton, J. J., 1983, Black Mountain gold mining region, northern Black Hills, South Dakota: U. S. Geological Survey Open-File Report 83-791, 18 p.
Norton, J. J., and Redden, J. A., 1975, gold and gold-silver deposits, in Mineral and water resources of South Dakota: Committee print, Senate Committee on Interior and Insular Affairs, 94th congress, 1st Session, p. 78-89.
Page, N. J, and Tooker, E. W., 1979, Preliminary map of platinum and platinum-group metal provinces in the conterminous United States in Tooker, E. W., editor, Atlas of metal and nonmetal mineral provinces in conterminous United States: U. S. Geological Survey Open-File report 79-576 B scale 1:500,00.
Pearre, N. C., and Calkins, J. A., 1957, Mineral deposits and occurrences in New Hampshire exclusive of clay, sand and gravel, and peat: U. S. Geological Survey Mineral Investing Resource Map MR-6, scale 1:500,000.
Prommel, H. C., and Hopkins, P. M., 1968, Placer gold, in Mineral and water resources of Colorado: Senate document 115, 90th Congress, 2d Session, p. 85-93.
Rankin, D. W., 1975, The continental margin of eastern North American in the southern Appalachians: The opening and closing of the proto Atlantic Ocean: American Journal of Science, v. 275-A (Tectonics and mountain ranges), p. 298-336.
Roberts, R. J., Crittenden, M. D., Jr., Tooker, E. W., Morris, H. T., Hose, R. K., and Cheney, T. M., 1965, Pennsylvanian and Permian basins in northwestern Utah, northeastern Nevada and south-central Idaho: Bulletin American Association of Petroleum Geologists, v. 49, no. 11, p. 1926-1956.
Ross, D. C., 1961, Geology and mineral deposits of Mineral County, Nevada: Nevada Bureau of Mines and Geology Bulletin 58, 98 p.
Ryan, J. P., 1964, Gold, in Minerals Yearbook 1963, Vol. I : U. S. Bureau of Mines, Washington, D. C., p. 549-572.
_____1965, Gold, in Minerals Yearbook 1964, Vol. I : U. S. Bureau of Mines, Washington, D. C., p. 515-536.
_____1966, Gold, in Minerals Yearbook 1965, Vol. I : U. S. Bureau of Mines, Washington, D. C., p. 433-454.
_____1968, Gold, in Minerals Yearbook 1967, Vol. I-II : U. S. Bureau of Mines, Washington, D. C., p. 523-544.
_____1969, Gold, in Minerals Yearbook 1968, Vol. I-II : U. S. Bureau of Mines, Washington, D. C., p. 529-550.
Ryan, J. P. and McBreen, K. M. 1961, Gold, in Minerals Yearbook 1960, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 505-528.
_____1962, Gold, in Minerals Yearbook 1961, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 597-618.
Ryan, J. P. and Tucker, E. M., 1963, Gold, in Minerals Yearbook 1962, Vol. I : U. S. Bureau of Mines, Washington, D. C., p. 599-622.
Schreiber, H. W. and Emerson, M. E. 1984, North American hardrock gold deposits: an analysis of discovery costs and the cash flow potential: Engineering and Mining Journal, v. 185, n. 10, p. 50-57.
Shawe, D. R., Ashley, R. P., Steven, T. A., Taylor, R. B., and Tooker, E. W., 1982, United States gold resource profile--A discussion: Economic Geology, v. 77, no. 5, p. 1242-1244.
Silberling, N. J., Jones, D. L., Blake, M. C., Jr., and Howell, D. G., 1984, Lithotectonic terrane maps of the North American Cordilleras, Part C--Lithotectonic terrane map of the western conterminous United States, in Silberling, N. J., and Jones, D. L., eds., Lithotectonic terrane maps of the North American Cordilleran: U. S. Geological Survey Open-File Report 84-523, p. C-1-C-43, scale 1:250,000.
Simons, F. S., and Prinz W. C., 1973, Gold, in Brobst, D. A., and Pratt, W. P., eds., United States mineral resources: U. S. Geological Survey Professional Paper 820, p. 263-276.
Simpson, T. A., and Neathery, T. L., 1980, Alabama gold: Geological Survey of Alabama Circular 104, p. 1-58.
Sims, P. K., 1985, Metallogeny of Archean and Proterozoic terranes in the Lake Superior region: U. S. Geological Survey Circular 949, p. 51.
Staff, U. S. Geological Survey, 1960, Gold, in Mineral and water resources of Wyoming: Senate Document 76, 86th Congress, 2d Session, p. 10.
Stephens, M. B., Swinden, H. S., and Slack, J. F., 1984, Correlation of massive sulfide deposits in the Appalachian-Caledonian orogen on the basis of paleotectonic setting: Economic Geology v. 79, no. 7, p. 1442-1478.
Stewart, J. H., and Poole, F. G., 1974, Lower Paleozoic and uppermost Precambrian Cordilleran miogeocline, Great Basin, Western United States in Dickinson, W. R., ed., Tectonics and sedimentation: Society of Economic Paleontologists and Mineralogist Special Publication No. 22, p. 28-57.
Swinden, H. S. and Strong, D. F., 1976, A comparison of platetectonic models of metallogenesis in the Appalachians, the North American Cordillera, and the East Australian Paleozoic: in Strong, D. F., ed., Metallogeny and plate tectonics: The Geologic Association of Canada, Special Paper 14, p. 443-471.

Tilling, R. I., Gottfried, D., and Rowe, J. J., 1973, Gold abundance in igneous rocks—bearing on gold mineralization: Economic Geology v. 68, no. 2, p. 168-186.

Tooker, E. W., 1971, Regional structural controls of the deposits, Bingham mining district, Utah, U. S. A., in Proc. IMA-IAGOD Meetings IAGOD vol., Society of Mining Geologists of Japan, Spec. Issue 3, p. 76-81.

______1979, Metal provinces and plate tectonics in the conterminous United States, in Ridge, J. D., ed., Papers on mineral deposits of western North America: Nevada Bureau of Mines and Geology Report 33, p. 33-38.

______,1979, Geologic charteristics of sediment and volcanic-hosted disseminated gold deposits — Search for an occurrence model: U. S. Geological Survey Bulletin 1646,m 150 p.

______1986, The Butte mining district, Montana, in Shawe D. R., ed., Gold in the United States: U. S. Geological Survey Professional Paper. [in press].

______1986, The Bingham mining district Utah, in Shawe, D. R. ed., Gold in the United States: U. S. Geological Survey Professional Paper. [in press].

Tooker, E. W., and Johnson, M. G., 1980, Preliminary map of gold provinces in the conterminous United States: U. S. Geological Survey Open-File Report 79-576S, scale 1:5 million.

Watowich, S. W., Malcolm, K. J. and Parker, P. D., 1981, Review of the Duluth gabbro complex of Minnesota as a domestic source of critical and strategic metals: Society of Mining Engineers of A.I.M.E., Preprint Number 81-351, 9 p.

Weaver, C. E., 1911. Geology and ore deposits of the Blewett mining district, Washington: Washington Geologic Survey Bulletin 6, 104 p.

Weissenborn, A. E., 1968, Gold, in Mineral and water resources of Montana: Senate document 98, Committee on Interior and Insular Affairs, 90th Congress, 2d Session, p. 69-74.

West, J. M., 1973, Gold, in Minerals Yearbook 1971, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 539-560.

______1974, Gold, in Minerals Yearbook 1972, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 567-588.

______1975, Gold, in Minerals Yearbook 1973, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 557-582

______1976, Gold, in Minerals Yearbook 1974, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 603-626.

______1977, Gold, in Minerals Yearbook 1975, Vol. I: U. S. Bureau of Mines, Washington, D. C., p. 669-697.

West, J. M., and Butterman, W. C., 1978, Gold, in Minerals yearbook 1976, Vol. I : U. S. Bureau of Mines, Washington, D. C., p. 592-616.

Wildon, W. H., 1964, The Kirwin mineralized area, Park County, Wyoming: Wyoming Geological Survey Premininary Report 2, 12 p.

Williams, Harold, 1984, Miogeoclines and suspect terranes of the Caledonian-Appalachian orogen tectonic patterns in the North Atlantic region: Canadian Journal of Earth Science v. 21, n. 8, p. 887-901.

Williams, Harold and Hatcher, R. D., Jr., 1982, Suspect terranes and accretionary history of the Appalachian orogen: Geology, v. 10, no. 10, p. 530-536.

______1983, Suspect terranes—A new look at the Appalachian region; in Hatcher, R. D., Jr., and others, eds., Contributions to the tectonics and geophysics of mountain chains: Geologic Society America Memoir 158, p. 33-54.

Wolfhard, M. R., and Ney, C. S., 1976, Metallogeny and plate tectonics in the Canadian Cordillera: in Strong, D. F., ed., Metallogeny and plate tectonics: The Geologic Association of Canada, Special paper 14, p. 361-392.

Zen, E-an, 1983, Exotic terranes in the New England Appalachians--limits, candidates, and ages—a speculation (?) in Hatcher, R. D., Jr., and others, eds., Contributions of the tectonics and geophysics of mountain chains essay: Geologic Society of America Memoir 158, p. 55-81.

Table 1.—MAJOR GOLD DISTRICTS IN THE CONTERMINOUS UNITED STATES

[Data for districts whose production exceeds 10,000 oz from earliest recorded production to 1959, mainly from Koschmann and Bergendahl (1968) and cited authors of State Mineral and Water Resources reports of the Senate Interior and Insular Affairs Committee; last year of production in parentheses; "e", estimated production owing to combined or incomplete records; ">", minimum value from fragmentary data; "~", approximate value. Data from 1960 to 1981, mainly allocated by county only, is cited primarily from authors of U.S. Bureau of Mines Mineral Yearbooks and other publications; value in parentheses in State totals is the undistributed portion, mainly from counties marked with an asterisk, "*", which alone indicates a small allocation of the undistributed production; "(e)", indicates the deduced main allocation of the undistributed portion, "(a)" indicates districts identified in the Bureau of Mines Minerals Yearbooks as being in production, production unannounced. Available cited data for announced indicated and inferred reserves are shown in italics. Deposit types: "X", primary material sought; "+" byproduct; "( )", minor production; "0", reported but unevaluated occurrence, italicized type indicates the mode of occurrence of the reserve except where the reserve is of the deposit type originally sought].

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
ALABAMA	~49,500	~49,500	unknown											
Cleburne County	—	—	—											
1. Arbacoochee district	~18,000 (1890)	~18,000	—	(X)	—	—	—	—	—	—	—	X	X	—
Tallapoosa County	—	—	—											
2. Hog Mountain district	~24,300 (1937)	~24,300	—	X	—	—	—	—	—	—	—	—	—	—
ARIZONA	[1] ~12,700,000	15,223,200 (189,996)	>10,261,700											
Cochise County	~2,723,000	>3,248,800*(e)	—											
1. Warren (Bisbee) district	~2,193,000	[2] 2,792,000(a)	—	—	(+)	+	—	(+)	—	—	—	(X)	—	Keith and others (1983)
2. Dos Cabezas (Mascot) district	>20,200	>20,200	—	—	—	+	—	—	—	—	—	(X)	—	D. R. Richter (written commun., 1981).
3. Tombstone district	~271,200 (1948)	[3] ~271,200	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 20).
4. Turquoise district	~70,000 (1956)	[4] ~70,000	—	—	—	+	—	—	—	—	0	—	—	Do.
52. Golden Rule district	10,500	10,500	—	—	—	+	—	—	—	—	—	—	—	Keith and others (1985, p. 28)
56. Pearce	unknown	130,000	—	—	—	+	—	—	—	—	—	—	—	Keith and others (1985, p. 41)
Gila County	~240,500	~343,400*(e)	—											
5. Banner (Christmas) district	~26,000	[2] 57,600(a)	—	—	+	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 20).
6. Globe-Miami district	191,800	[2] 243,400(a)	—	—	—	(X)	—	+	—	—	—	—	—	—
Greenlee County	~228,000	~610,300*(e)	—											
7. Ash Peak district	12,800 (1954)	~12,800	—	—	—	+	—	—	—	—	—	—	—	D. R. Richter (written commun., 1981).
8. Copper Mountain (Clifton-Morenci) district	203,000	[2] 504,000	—	—	—	(+)	—	+	—	—	—	—	—	—
Maricopa County	~428,000	>428,800*	~63,000											
9. Cave Creek district	~17,000 (~1900)	~17,000	—	—	X?	—	—	—	—	—	—	X	—	—
10. Vulture district	~366,000 (1945)	[5] ~366,000	—	X	—	—	—	—	—	—	—	(X)	—	—
11. Waters Sunset, near Wickenburg	—	—	~63,000	—	—	—	—	—	—	—	X	—	—	Calif. Min. Jour. (1984, v. 53, no. 9, p. 48); Mining Mag. (1984, v. 150, no. 2, p. 126.
54. Osborne district	13,000	13,000	—	—	—	X	—	—	—	—	—	—	—	Keith and others (1983, p. 40)
Mohave County	~2,461,000	>2,464,000*	~10,000,000											
12. Lost Basin-Gold Basin district (1943)	>15,000 (1943)	~15,000(a)	~10,000,000	(X)	—	+	—	—	—	—	—	(X)	—	Moore (1969, p. 167).
13. Maynard-McConnico district	~10,000	[6] ~10,000	—	X	—	—	—	—	—	—	—	—	—	—
14. San Francisco (Oatman) district	~2,045,400 (1951)	~2,045,400(a)	—	—	—	X	—	X?	—	—	0	—	—	Elevatorski (1982, p. 18, 21).
15. Wallapai district	125,060 (1956)	[2] 151,000	—	—	—	+	—	—	—	—	—	—	—	—
16. Virginia (Weaver) district	~63,200	[7] ~63,200	—	X	—	—	—	—	—	—	—	—	—	Keith and others (1983, p. 52)
57. Pilgrim district	48,000	48,000	—	—	—	X	—	—	—	—	—	—	—	Keith and others (1983, p. 42)
59. Union Pass district	128,000	128,000	—	—	—	X	—	—	—	—	—	—	—	Keith and others (1983, p. 53)
Pima County	~1,081,000	~1,683,300*(e)	—											
17. Ajo (New Cornelia) district	~990,000	[2] 1,558,000(a)	—	—	—	(X)	—	+	—	—	—	—	—	—
48. Arivaca district	~10,000	[8] ~10,000	—	—	—	—	—	—	—	—	—	X	—	Johnson (1972, p. 85).
18. Greaterville district	~40,000	[9] ~40,000	—	—	—	—	—	—	—	—	—	X	—	—

[1] Total includes 1.0 million oz not allocated to districts below.
[2] Keith and others (1983).
[3] Keith and others (1983) report 131,600 oz.
[4] Keith and others (1983) report 21,600 oz.
[5] Keith and others (1983) report 350,000 oz.
[6] Keith and others (1983) report 4,500 oz.
[7] Keith and others (1983) report 17,800 oz.
[8] Keith and others (1983) report 600 oz.
[9] Keith and others (1983) report 300 oz.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
ARIZONA														
Pima County (cont'd)														
50. Papago and Pima districts	~12,500?	[3] ~12,500?	—	—	—	—	—	—	—	—	—	X	—	Johnson (1972b, p. 39).
49. Quijotoa district	~15,000*	[3] ~15,000	—	—	—	—	—	—	—	—	—	X	—	Johnson (1972b, p. 85).
47. Baboquivari district	unknown	11,300	—	—	—	+	—	—	—	—	—	X	—	Keith and others, (1983 p. 17).
Pinal County	>894,700	~1,665,700*(e)	153,700											
51. Goldfield (Golden Hillside) district	[4] 5,100	~5,100	153,700	X	—	—	—	—	—	—	—	—	—	Eng. Mining Jour. Internat. Dir. 1983, v. 9, no. 14, p. 3).
19. Mammoth (San Manuel) district	~403,000	[5] 835,000	—	—	—	+	—	+	—	—	0	—	—	Elevatorski (1981, p. 20).
20. Mineral Hill (Twin Buttes-Pima) district	?	34,200	—	—	—	—	—	+	—	—	—	—	—	Keith and others, (1983 p. 42).
21. Ray (Mineral Creek) district	>35,250	57,900(a)	—	—	—	—	—	+	—	—	—	—	—	Keith and others, (1983 p. 36).
22. Superior (Pioneer) district	~398,000	705,000(a)	—	(X)	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 20); Keith and others, (1983 p. 43).
Santa Cruz County	~108,200 (1942)	[1] >108,700*	—											
23. Oro Blanco district	~100,200	[6] ~100,200	—	X	—	—	—	+	—	—	0	—	—	Elevatorski (1981, p. 22; 1982, p. 19).
55. Palmetto (Thunder Mtn) district	unknown	19,400	—	—	—	—	—	+	—	—	—	—	—	Keith and others, (1983 p. 41).
Yavapai County	3,742,950	3,898,600*(e)	45,000											
24. Agua Fria district	~13,000	[7] ~13,000	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 22).
25. Big Bug district	~627,000	[8] ~627,000(a)	—	—	—	—	—	—	+	—	0	X	—	Do.
26. Black Canyon district	~47,000 (1956)	[9] ~47,000	45,000	—	—	X	—	—	—	—	X	—	—	Eng. Mining Jour. (1980, v. 181, no. 10, p. 121).
27. Black Rock district	~12,200	~12,200	—	X	—	—	—	—	—	—	—	(X)	—	—
28. Eureka (Bagdad) district	60,000	67,000(a)	—	—	—	X	—	(+)	—	—	—	—	—	Keith and others, (1983 p. 26).
29. Hassayampa-Groom Creek district	127,000	[10] 127,000	—	—	—	X	—	—	—	—	—	X	—	—
30. Jerome (Verde) district	1,571,000 (1953)	1,579,000	—	—	—	—	—	—	+	—	0	—	—	Elevatorski (1981, p. 22).
31. Lynx Creek-Walker district	140,300	[11] 140,300	—	—	—	X	—	—	—	—	—	X	—	—
32. Martinez district	396,000 (1910)	432,500	—	X	—	—	—	—	—	—	—	—	—	Keith and others, (1983 p. 35).
33. Peck district	15,500 (1932)	[12] 15,500	—	—	—	+	—	—	—	—	—	—	—	—
34. Pine Grove-Tiger district	~130,300 (1951)	[13] ~130,300	—	—	—	+	—	—	—	—	—	—	—	—
35. Tiptop district	~10,000 (1888)	~10,000	—	—	—	X	—	—	—	—	—	—	—	—
36. Weaver-Rich Hill district	308,000	[14] 308,000	—	—	—	X	—	—	—	—	0	X	—	Calif. Mining Jour. (1984, v. 53, no. 8, p. 84).
Mayer district (incl. in 25)	—	—	—	—	—	—	—	+	—	—	—	—	—	Keith and others, (1983 p. 34).
53. Mount Union district	unknown	51,700	—	—	—	+	—	—	—	—	—	—	—	Keith and others, (1983 p. 39).
58. Ticonderoga district	unknown	189,000	—	—	—	—	—	+	—	—	—	—	—	Keith and others, (1983 p. 51).
Yuma County	~771,000	>771,600*(e)	—											
37. Cienega district	>10,000	12,000	—	—	—	X	—	—	—	—	—	—	—	Keith and others, (1983 p. 22).
38. La Paz district	~104,000*(1933)	[15] ~104,000	—	(X)	—	—	—	—	—	—	—	X	—	Johnson (1972b, p. 87.)
39. Plomosa district	~24,570	[16] ~24,570	—	(X)	—	—	—	—	—	—	—	X	—	—
40. Castle Dome district	~10,500 (1942)	[17] ~10,500	—	X	—	+	—	—	—	—	0	X	—	Elevatorski (1982, p. 18).
41. Dome (Gila City) district	~25,000 (1950)	~25,000	—	—	—	—	—	—	—	—	—	X	—	Johnson (1972b, p. 68).
42. Ellsworth (Harquahala) district	~134,000	~143,000	—	X	—	X	—	—	—	—	0	(X)	—	Elevatorski (1982, p. 23); Keith and others, (1983 p. 32).
43. Fortuna district	125,300 (1940)	131,300	—	X	—	—	—	—	—	—	—	(X)	—	Keith and others, (1983 p. 26).
44. Kofa district	~237,000 (1941)	~237,000	—	X	—	—	—	—	—	—	0	(X)	—	Elevatorski (1982, p. 15, 19).
45. Laguna district	~10,500 (1911)	[18] ~10,500	—	(X)	—	—	—	—	—	—	—	X	—	—
46. La Cholla-Middle Camp-Oro Fino district	~17,300	~17,300	—	—	—	—	—	—	—	—	—	X	—	Johnson (1972b, p. 87).

[1] Elevatorski (1982) reports production of 176,000 oz through 1972.
[2] Grade and tonnage not divulged.
[3] Keith and others, (1983) consider only minor production.
[4] Keith and others, (1983) p. 28.
[5] Keith and others, (1983) credit 349,000 oz to Mammoth and 486,000 oz to San Manuel.
[6] Keith and others, (1983) credit 84,500 oz.
[7] Keith and others, (1983) credit 900 oz.
[8] Keith and others, (1983) credit 462,00 oz.
[9] Keith and others, (1983) credit 32,000 oz.
[10] Keith and others, (1983) credit 14,400 oz.
[11] Keith and others, (1983) credit 65,000 oz.
[12] Keith and others, (1983) credit 130 oz.
[13] Keith and others, (1983) credit 122,000 oz.
[14] Keith and others, (1983) credit 203,000 oz.
[15] Keith and others, (1983) credit 1,600-2,000 oz.
[16] Keith and others, (1983) credit <10,000 oz.
[17] Keith and others, (1983) credit 3,000-5,000 oz.
[18] Keith and others, (1983) credit 150 oz.

Mining districts or deposits	Cumulative production and reserves (troy ounces)			Deposit Types										References Cited
	Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	
CALIFORNIA	[1]105,677,800	~106,422,000 (412,600)	>19,667,500											
Alpine County	—	—	—											
1. Monitor-Mogul district (incl. Zaca mine)	~50,000	~52,600*(e)	16,800	—	—	X	—	—	—	—	X	—	—	Calif. Geology (1983, v. 36, no. 10, p. 215).
Amador County	>7,885,900	~7,886,300*	—											
2. Consumnes River placers	~10,900	~11,000	—	—	—	—	—	—	—	—	—	X	—	—
3. Fiddletown district	10,000-100,000 (1956)	10,000-100,000	—	—	—	—	—	—	—	—	—	X	—	—
4. Mother Lode district	7,675,000	>7,675,000(a)	—	X	—	—	—	—	—	—	—	—	—	—
5. Volcano district	~100,000[e] (1932)	~100,000	—	—	—	—	—	—	—	—	—	X	—	—
Butte County	>3,226,900	>3,227,400*	—											
6. Magalia district	>66,000	>66,000	—	—	—	—	—	—	—	—	—	X	—	—
7. Oroville district	1,964,130	1,964,130	—	—	—	—	—	—	—	—	—	X	—	—
8. Yankee Hill district	~96,600	>96,600(a)	—	X	—	—	—	—	—	—	—	X	—	—
Calaveras County	~5,041,300	~5,043,700*(e)	630,000											
9. Camanche district	100,000-1,000,000[e]	100,000-1,000,000	—	—	—	—	—	—	—	—	—	X	—	—
10. Campo Seco district	>60,000	>60,000(a)	—	—	—	—	—	—	+	—	—	(X)	—	—
11. Jenny Lind district	>1,000,000[e]	~1,000,000	—	—	—	—	—	—	—	—	—	X	—	—
12. Mother Lode-East Belt and West Belt districts	2,045,700	>2,045,700(a)		X	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p. 25)
101. Hodson district (Royal-Mtn. King Mines)	[2]~300,000	~300,000	630,000	X	—	—	—	—	—	—	X	—	—	Clark (1970, p. 64); Calif. Geol. (1983, v. 36, no. 10, p. 214); Dodge and Loyd (1984, p. 14).
13. Placers in Tertiary gravel	>106,000[e]	>106,000	—	—	—	—	—	—	—	—	—	X	—	—
Del Norte County	—	—	—											
14. Smith River Placers	>44,700	>44,700*	—	—	—	—	—	—	—	—	—	X	—	—
~~El Dorado County~~	~1,300,000	~1,300,600*	3,017,000											
15. Georgia Slide district	~300,000[e] (1955)	~300,000	50,000	X	—	—	—	—	—	—	—	(X)	—	T.P. Anderson (written commun., 1986).
16. Mother Lode-East Belt and West Belt districts	>1,000,000	>1,000,000(a)	2,967,000	X	—	—	—	—	—	—	—	X	—	Northern Miner (1984, v. 70, no. 26, p. A12).
17. Placers in Tertiary gravels	~190,000[e]	>190,000	—	—	—	—	—	—	—	—	—	X	—	—
Fresno County	—	—	—											
18. Friant district	121,000 (1942)	~131,000*(e)	—	—	—	—	—	—	—	—	—	X	—	—
Humboldt County	—	—	—											
19. Klamath River placers	131,300	~138,300*(e)	—	X?	—	—	—	—	—	—	—	X	—	—
Imperial County	~325,000	~425,000*	>2,345,400											
20. Cargo Muchacho district	~224,700	>224,700	>>10,000	X	—	+	—	—	—	—	X	(X)	—	Wall Street Jour. (Nov. 10, 1981); Clark (1985, p. 182).
102. Mesquite district	—	~100,000	>1,950,000	—	—	—	—	—	—	—	X	—	—	Skillings (1985, v. 74, no. 12, p. 3).
103. Picacho district	~100,000	~100,000	385,400	X	—	—	—	—	—	—	X	X	—	Clark (1970, p. 162; 1985, p. 183); Mining Jour. (1985, v. 305, no. 7845, p. 487).
Inyo County	496,000	~500,200*(e)	>4,000											
21. Ballarat district	~65,000	~65,000	—	—	—	X	—	—	—	—	—	—	—	Clark (1985, p. 182).
22. Chloride Cliff district	~50,000	~50,000	—	X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 182).
23. Union (Inyo Range) district[3]	25,000	>25,000	>4,000	—	—	X	—	—	—	—	—	—	—	Calif. Geology (1983, v. 36, no. 10, p. 215); Clark (1985, p. 182).

[1]Total includes 31.6 million oz not allocated to districts below.
[2]Production from Hodson district is probably included in the Mother Lode-East Belt and West Belt districts.
[3]Beveridge district of Clark, 1970, p. 147.

Mining districts or deposits	Cumulative production and reserves (troy ounces)			Deposit Types										References Cited
	Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	
CALIFORNIA														
Inyo County (cont'd)														
24. Resting Springs district	>15,000	>15,000	—	—	—	+	—	—	—	—	—	—	—	—
25. Sherman district	>14,180	>14,180	—	X	—	(+)	—	—	—	—	—	—	—	—
26. Skidoo-Wild Rose district	>75,000^e	>75,000	—	X	—	—	—	—	—	—	—	—	—	Clark (1970, p. 151; 1985, p. 183).
27. Willshire-Bishop Creek district	75,000-100,000	>100,000(a)	—	—	+	—	—	—	—	—	—	—	—	—
109. Argus	unknown	~45,000		X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 182).
110. Harrisburg	~5,800	~15,300	—	X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 182).
Kern County	>1,777,000	>1,781,000*	303,700											
28. Amalie district	~30,000	~30,000	—	X	—	—	—	—	—	—	—	(X)	—	—
29. Cove district	~262,800 (1942)	~262,800	—	X?	—	—	—	—	—	—	—	X	—	—
30. Green Mountain district	~33,100	~33,100	—	X	—	—	—	—	—	—	—	—	—	—
31. Joe Walker mine	~30,000	~30,000	—	X?	—	—	—	—	—	—	—	—	—	—
32. Keyes district	~39,600	~39,600	—	X	—	—	—	—	—	—	—	—	—	—
33. Pine Tree mine	~12,500	~12,500	—	X?	—	—	—	—	—	—	—	—	—	—
34. Rand district	23,400,000	23,400,000	—	—	X	—	—	—	—	—	—	(X)	—	Clark (1985, p. 183).
35. Rosamond-Mojave district	18,964,000	>18,964,000(a)	303,700	—	—	(X)	X	—	—	—	X	—	—	Eng. Mining Jour. Internat. Dir. (1984, v. 11, no. 2, p. 10); Clark (1985, p. 183).
36. St. John mine	~35,000	~35,000	—	X?	—	—	—	—	—	—	—	—	—	—
Lassen County	>137,800	>137,800	—											
37. Diamond Mountain district	21,800	21,800	—	X	—	—	—	—	—	—	—	X	—	—
38. Hayden Hill district	~116,000 (1910)	~116,000	—	X	—	—	—	—	—	—	—	—	—	—
Los Angeles County	>225,000	>226,500*	—											
39. Acton district	>50,000	>50,000(a)	—	X	—	—	—	—	—	—	—	—	—	—
40. Antelope Valley district	10,000 (1946)	10,000	—	X	—	—	—	—	—	—	—	—	—	—
41. San Gabriel district	~165,000	>165,000(a)	—	X	—	—	—	—	—	—	—	X	—	—
Madera County	>79,280	>79,400*	—											
42. Chowchilla River placers	unknown	unknown	—	—	—	—	—	—	—	—	—	X	—	—
43. Grub Gulch-Hildreth district	~48,000^e	~48,000	—	X	—	—	—	—	—	—	—	(X)	—	Clark (1970, p. 62).
Strawberry Mine	—	unknown(a)[1]	inferred	—	+	—	—	—	—	—	—	—	—	—
Mariposa County	>2,144,500	>2,145,600*	~116,100											
44. Hornitos-West Belt district (incl. Blue Moon Mine)	>500,000^e(1900)	>500,000	~116,100	X	—	—	—	—	—	—	—	X	—	T.P. Anderson (written commun., 1986).
45. Merced River placers	>50,000 (1880's)	>50,000	—	—	—	—	—	—	—	—	—	X	—	—
46. Mormon Bar district	~75,000 (1930's)	~75,000	—	—	—	—	—	—	—	—	—	X	—	—
47. Mother Lode-East Belt district	~1,009,000	>1,009,000(a)	—	X	—	—	—	—	—	—	—	—	—	—
48. Placers in Tertiary gravels (NW area)	~75,000	~75,000	—	—	—	—	—	—	—	—	—	X	—	—
Merced County	—	—	—											
49. Snelling district	~516,350 (1943)	~516,800*	—	—	—	—	—	—	—	—	—	X	—	—
Modoc County	~14,400	~14,400	—											
50. High Grade district	>11,000	>11,000	—	X	—	—	—	—	—	—	0	—	—	Elevatorski (1982, p. 27).
Mono County	~1,650,000	>1,650,100*	—											
51. Bodie district	>20,523,000	>20,523,000	—	—	—	—	X	—	—	—	0	—	—	Elevatorski (1982, p. 24).
52. Masonic district	~60,000	~60,000	—	X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 182).
104. Homer (May Lundy) district	~150,000^e	>150,000(a)	—	X	—	—	—	—	—	—	—	—	—	Clark (1970, p. 64)

[1]Production data withheld by U.S. Bureau of Mines.

Mining districts or deposits	Cumulative production and resources (troy ounces)			Deposit Types										References Cited
	Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	
CALIFORNIA														
Napa County	—	—	3,200,000											
53. Calistoga district	23,230 (1941)	23,230	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1982, p. 24).
54. McLaughlin (Knoxville) district	—	—	3,200,000	—	—	—	—	—	—	—	X	—	—	Mining Jour. (1983, v. 300, no. 7702, p. 202).
Nevada County	~17,016,000	~17,021,800*	>3,185,400											
55. Grass Valley-Nevada City district	~12,608,000	>12,608,000(a)	46,200	X	—	—	—	—	—	—	—	X	—	Northern Miner (1984, v. 69, no. 49, p. A1).
56. Meadow Lake district	>10,000	>10,000	—	—	—	X	—	—	—	—	—	—	—	—
57. Placers in Tertiary gravels (incl. San Juan Ridge)	~3,000,000 (1909)	>3,000,000(a)	3,139,200	—	—	—	—	—	—	—	—	X	—	Hillman and others (1984).
Placer County	~2,014,000	~2,016,200*(a)	—											
58. Dutch Flat-Gold Run district	~492,000	>492,000(a)	—	—	—	—	—	—	—	—	—	X	—	—
59. Foresthill district	~344,000	~344,000	—	—	—	—	—	—	—	—	—	X	—	—
60. Iowa Hill district	~500,000 (1938)	>500,000(a)	—	—	—	—	—	—	—	—	—	X	—	—
61. Michigan Bluff district	~300,000	~300,000	—	(X)	—	—	—	—	—	—	—	X	—	—
62. Ophir district	~255,500	~255,500	—	X	—	—	—	—	—	—	—	X	—	—
63. Rising Sun mine	~100,000 (1932)	~100,000	—	X	—	—	—	—	—	—	—	—	—	—
Plumas County	~4,582,000[e]	4,583,000	517,500											
64. Crescent Mills district	~100,000	>100,000(a)	—	X	—	—	—	—	—	—	—	(X)	—	—
65. Johnsville district	~393,000	~393,000	—	X	—	—	—	—	—	—	—	(X)	—	—
66. La Porta district	~2,910,000 (1957)	~2,910,000	—	—	—	—	—	—	—	—	—	X	—	—
105. Virgilia district (Rich Gulch property)	~77,000 (1934-1942)	~77,000	517,500	X	—	—	—	—	—	—	X	X	—	Northern Miner (1983, v. 69, no. 20, p.24; Skilling 1982, v. 71, no. 29, p. 10).
Riverside County	136,100	136,100	—											
67. Pinacate district	~104,000 (1942)	~104,000	—	X	—	—	—	—	—	—	—	—	—	—
68. Pinon-Dale district	>32,100	>32,100	—	X	—	—	—	—	—	—	—	—	—	—
113. Twentynine Palms district	17,500	>17,500	—	X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 183).
Sacramento County	5,005,700	>5,117,300*(a)	—											
69. Folsom district	>3,000,000	>3,000,000(a)	—	—	—	—	—	—	—	—	—	X	—	—
70. Sloughhouse district	~1,700,000	~1,700,000	—	—	—	—	—	—	—	—	—	X	—	—
San Bernardino County	>754,500	>755,000*	—											
71. Dale district	1,360,000	1,360,500	—	X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 182).
72. Holcomb district	~400,000 (1900's)	~400,000	—	—	(X)	X	—	—	—	—	—	X	—	—
73. Stedman district	>300,000 (1949)	>300,000	—	—	—	—	—	X	—	—	—	—	—	Clark (1985, p. 183).
106. Ord district	unknown	unknown(a)[1]	inferred	X	—	—	—	—	—	—	—	(X)	—	Clark (1970, p. 161).
107. Clark district (Colosseum mine)	—	—	—	—	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p.27).
111. Ivanpah	~12,500	>12,500	—	+	—	—	—	—	—	—	—	—	—	Clark (1985, p. 182).
112. Old Dad	10,000	~10,000	—	X	—	—	—	—	—	—	—	—	—	Clark (1985, p. 183).
San Diego County	—	unknown(a)	—											
74. Julian district	~219,800 (1949)	>219,900*	—	X	—	—	—	—	—	—	—	(X)	—	—
San Joaquin County	~140,000	~143,000*	—											
75. Bellota district	20,000-40,000[e]	20,000-40,000	—	—	—	—	—	—	—	—	—	X	—	—
76. Clements district	50,000-100,000[e]	50,000-100,000	—	—	—	—	—	—	—	—	—	X	—	—

[1]Production data withheld by Bureau of Mines.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
CALIFORNIA														
Shasta County	2,033,000	>2,035,900*	155,100											
77. Deadwood-French Gulch district	~128,900	>128,900(a)	—	—	—	X	—	—	—	—	—	X	—	—
78. Harrison Gulch district	~200,000 (1920)	~200,000	—	X	—	—	—	—	—	—	—	—	—	—
79. Igo district	115,000	115,000	—	—	—	—	—	—	—	—	—	X	—	—
80. West Shasta Copper-Zinc district	~520,000	(a)	—	—	—	—	—	—	+	—	0	—	—	Elevatorski (1981, p. 27).
81. Whiskeytown district	63,300 (1911)	63,300	—	—	—	X	—	—	—	—	—	—	—	—
81a. Old Diggings (incl. Reid mine)	125,000	unknown	155,100	—	—	X	—	—	—	—	X	—	—	Mining Mag. (1984, v. 151, no. 2, p. 89).
Sierra County	~3,750,000	>3,807,500*(e)	250,000											
82. Alleghany-Downieville district	>2,173,000*	>2,173,000(a)	250,000	X	—	—	—	—	—	—	X	X	—	Calif. Mining Jour. (1984, v. 54, no. 3, p. 18).
83. Sierra City district	~825,000 (1941)	~825,000	—	X	—	—	—	—	—	—	—	—	—	—
108. Poker Flat	~750,000*	<750,000(a)	—	—	—	—	—	—	—	—	—	X	—	Clark (1970, p. 109).
Siskiyou County	>1,940,000	~1,951,100*	160,000											
84. Cottonwood-Ft. Jones-Yreka district	>248,500 (1931)	>248,500(a)	—	X?	—	—	—	—	—	—	—	X	—	—
85. Humbug district (incl. Gray, Eagle mine)	25,000-50,000	15,000-50,000	160,000	X?	—	—	—	—	—	—	X	(X)	—	Elevatorski (1981, p. 26).
86. Klamath River district	>194,000	>194,000	—	X	—	—	—	—	—	—	—	X	—	—
87. Salmon River district	1,284,900	1,284,900	—	X	—	—	—	—	—	—	0	X	—	Elevatorski (1981, p. 26).
88. Scott River district	>162,000	>162,000	—	X?	—	—	—	—	—	—	—	X	—	—
Stanislaus County	679,000	>684,000*	—											
89. Oakdale-Knights Ferry district	>>28,400	>29,400(a)	—	—	—	—	—	—	—	—	—	X	—	—
90. La Grange-Waterford district	>650,000*	>650,000(a)	—	—	—	—	—	—	—	—	—	X	—	Clark (1970, p. 85).
Trinity County	2,036,300	>2,037,500*	—											
91. Carrville district	~50,000 (1910)	~50,000	—	—	—	X	—	—	—	—	—	—	—	—
92. Trinity River basin	~1,750,000	~1,750,000	—	—	—	(X)	—	—	—	—	—	X	—	—
Tulare County	—	—	—											
93. White River district	20,320 (1906)	~20,500	—	X	—	—	—	—	—	—	—	—	—	—
Tuolumne County	>10,430,000*	~10,430,500	5,240,800											
94. Columbia Basin-Jamestown-Sonora district	~5,874,000	~5,874,000	3,437,000	X	—	—	—	—	—	—	X	X	—	Mining Jour. (1984, v. 303, no. 7793, p. 447).
95. East Belt district	~965,000	>965,000(a)	—	—	—	X	—	—	—	—	—	—	—	—
96. Groveland-Moccasin-Jacksonville area	>1,700,000 (1939)	>1,700,000	—	X	—	—	—	—	—	—	—	X	—	Clark (1970, p. 77).
97. Mother Lode district (includes Harvard mine)	>1,615,000	>1,615,000	1,803,800	X	—	—	—	—	—	—	X	X	—	Mining Jour. (1984, v. 303, no. 7791, p. 418).
98. Pocket Belt district	~267,000 (1940)	~267,000	—	X	—	—	—	—	—	—	—	—	—	—
Yuba County	>5,294,600	~5,883,000*(e)	525,200											
99. Browns Valley-Smartville and Brownsville-Challenge-Dobbins districts	~907,500*	>907,500(a)	—	X	—	—	—	—	—	—	—	X	—	
100. Hammonton district	~4,387,100	>4,387,100(a)	525,200	—	—	—	—	—	—	—	—	X	—	Dodge and Loyd (1984, p. 23); Hillman and others (1984, p. 1651).

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
COLORADO	[1]~41,787,400	~42,750,700 (268,100)	>>2,093,900											
Adams County	—	—	—											
1. Clear Creek placers	~16,800	>29,500*	>910,300	—	—	—	—	—	—	—	—	X	—	Prommel and Hopkins (1968).
Boulder County	1,048,200	>1,054,100*	~65,280											
2. Jamestown (Central) district	~207,000	>207,000(a)	—	X	—	X	—	—	—	—	—	—	—	—
3. Gold Hill-Sugarloaf district (incl. Cash Mine)	>412,000	>412,000(a)	~65,280	—	—	X	—	—	—	—	—	(X)	—	Eng. & Mining Jour. (1984, v. 185, no. 1, p. 75).
4. Grand Island-Caribou district	10,010	>10,010(a)	—	—	—	+	—	—	—	—	—	—	—	—
5. Magnolia district	~130,000 (1934)	~130,000	—	—	—	X	—	—	—	—	0	—	—	Elevatorski (1981, p. 34).
6. Ward district	~172,000 (1943)	>172,000(a)	—	(X)	—	X	—	—	—	—	—	(X)	—	—
Chaffee County	~370,500	>370,500	—											—
7. Chalk Creek district	~275,000 (1925)	>275,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
8. Monarch-Garfield district	15,000-20,000 (1940)	>20,000(a)	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 34.
Clear Creek County	~2,400,000	~2,403,700*	—											
9. Alice district	>23,000 (1943)	>23,000(a)	—	X	—	—	—	X	—	—	0	X	—	Elevatorski (1981, p. 30).
10. Argentine district	>25,000	>25,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
11. Empire district	>165,000	>165,000(a)	—	—	—	X	—	—	—	—	—	—	—	—
12. Georgetown-Silver Plume (Griffith) district	~145,000	>145,000(a)	—	X	—	+	—	—	—	—	—	X	—	—
13. Idaho Springs district	>1,805,000	>1,805,000(a)	—	X	—	+	—	(X)	—	—	—	X	—	—
14. Freeland-Lamartine (Trail) district	~220,000	>220,000(a)	—	X	—	+	—	—	—	—	—	X	—	—
Custer County	~107,300	~107,400*	—											
15. Rosita Hills-Westcliffe-Silver Cliff district	85,660 (1932)	<85,660(a)	—	—	—	X	—	X	—	—	—	—	—	—
Dolores County	~104,500	~105,300*	—											
16. Rico (Pioneer) district	~100,000	<100,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
Eagle County	~359,900	~398,300	—											
17. Gilman district	~348,000	>348,000(a)	—	(X)	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 32).
Gilpin County	~4,255,000	~4,257,900*	—											
18. Northern Gilpin district	35,000 (1942)	>35,000(a)	—	X	—	X	—	—	—	—	—	(X)	—	—
19. Central City (Southern Gilpin) district	4,200,000	>4,205,000(a)	—	X	—	+	—	X	—	—	0	(X)	—	Elevatorski (1981, p. 34).
Gunnison County	130,000	>130,800*	—											
20. Gold Brick-Quartz Creek district	>80,000 (1942)	780,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
21. Tincup district	16,400 (1912)	>16,400(a)	—	—	—	+	—	—	—	—	0	X	—	Elevatorski (1981, p. 30).
Hinsdale County	—	—	—											
22. Lake City district	~71,370	71,700*	—	—	—	+	—	—	—	—	—	—	—	—
Jefferson County	—	—	—											
23. Golden placers	~15,900	~23,000*	—	—	—	(+)	—	—	—	—	—	X	—	—

[1]Total includes 1.0 million oz not allocated to districts below.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
COLORADO														
Lake County	>3,011,000	>3,044,200*(e)	78,300											
24. Arkansas River Valley placers	~41,000 (1948)	~41,000	—	—	—	—	—	—	—	—	—	X	—	—
25. Leadville district	~2,970,000	>2,970,000(a)	78,300	—	—	+	—	—	—	—	X	(X)	—	Hillman and others (1984).
La Plata County	~215,400	>216,100*	—											
26. La Plata (California) district	~215,000	>215,000(a)	several thousand	—	(X)	X	—	(+)	—	—	0	(X)	—	Elevatorski (1981, p. 29); Eng. Mining Jour. Internat. Dir. (1983, v. 9, no. 11, p. 6).
Mineral County	—	—	—											
27. Creede district	~149,200	>155,200*	—	—	—	+	—	—	—	—	(X)	—	—	—
Moffat County	—	—	—											
45. Craig area	~10,000	~10,100	260,000	—	—	—	—	—	—	—	X	—	—	Northern Miner (1984, v. 69, no. 49, p. A22).
Ouray County	>1,923,000	~1,996,000*(e)	large											
28. Sneffels-Red Mountain district (incl. Camp Bird mine)	~1,723,000	>1,723,000(a)	substantial	—	—	—	+?	+	—	—	—	—	—	Eng. Mining Jour. (1983, v. 184, no. 7, p. 23).
29. Uncompahgre (Ouray) district	~200,000	>200,000(a)	substantial	—	(+)	+	—	—	—	—	0	X	—	Elevatorski (1981, p. 31); Eng. Mining Jour. (1983, v. 184, no. 3, p. 163).
Park County	>1,617,000	>1,618,900*	180,000											
30. Alma district (incl. London mine)	~1,348,000 (1952)	>1,348,000(a)	180,000	X	—	+	—	—	—	—	—	(X)	—	Eng. & Mining Jour. Intern. Dir. (1983, v. 9, no. 10, p. 5); Skillings (1982, v. 71, no. 22, p.4)
31. Fairplay district	>202,000 (1952)	>202,000	—	—	—	—	—	—	—	—	—	X	—	
32. Tarryall district	>67,000 (1948)	>67,000	—	—	—	—	—	—	—	—	—	X	—	—
Pitkin County	~28,200	28,230*(e)	—											
33. Independence Pass district	~25,000* (1932)	>25,000(a)	—	—	—	X	—	—	—	—	—	—	—	—
Rio Grande County	—	—	—											
34. Summitville district	257,600 (1948)	258,000*(e)	—	—	—	—	—	X	—	—	X?	(X)	—	—
Routt County	—	—	—											
35. Hahns Peak (Columbine) district	15,000-20,000	15,000-20,000	—	—	—	—	—	(+)	—	—	—	X	—	—
Saguache County	~20,590	~20,700*	90,000											
36. Bonanza (Kerber Creek) district	~17,000	>17,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
46. Crystal Hill	—	—	90,000	—	—	—	—	—	—	—	X?	—	—	Eng. Mining Jour. Internat. Dir. (1982, v. 8, no. 10, p. 5).
San Juan County	~1,665,000	~1,981,700*(e)	300,000											
37. Animas (Silverton) district	874,000-1,000,000	>1,000,000(a)	300,000	—	—	+	—	+	—	—	—	—	—	Skilling (1984, v. 73, no. 37, p. 15).
38. Eureka district	>500,000	>500,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
San Miguel County	3,837,000	~4,109,800*(e)	—											
39. Mount Wilson district	~24,800 (1909)	>24,800(a)	—	—	—	+	—	—	—	—	—	—	—	—

Mining districts or deposits	Cumulative production and reserves (troy ounces)			Deposit Types										References Cited
	Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	
COLORADO														
San Miguel County (cont'd)														
40. Ophir district	>200,000 (1950)	>200,000(a)	—	X	—	—	—	—	—	—	X	—	—	—
41. Telluride district	>3,000,000	>3,000,000(a)	—	—	—	X	—	—	—	—	—	—	—	—
Summit County	>1,052,670	>1,060,000*	—											
42. Breckenridge district	~1,000,000 (1947)	>1,000,000(a)	—	—	—	+	—	X	—	—	0	X	—	Elevatorski (1981, p. 31).
43. Tenmile district	~52,000 (1950)	>52,000(a)	—	—	—	+	—	—	+	—	—	X	—	—
Teller County	—	—	—											
44. Cripple Creek district	19,100,870	>19,169,800	210,000	—	—	X	X?	—	—	—	0	X	—	Mining Eng. (1982, v. 34, no. 5, p. 482).
GEORGIA	[1]~870,800 (1953)	~870,800	none											
Cherokee County	—	—	—											
1. Franklin-Creighton mine	35,400-48,500 (1909)	35,400-48,500	—	X	—	—	—	—	—	—	—	—	X	—
Lumpkin County	—	—	—											
2. Dahlonega district	400,000-500,000	400,000-500,000	—	(X?)	—	—	—	—	—	—	—	(X)	X	—
White County	—	—	—											
3. Nacoochee district	35,000-52,000	35,000-52,000	—	(X)	—	—	—	—	—	—	—	X	X	—
IDAHO	[2]~10,415,900	~10,592,700 (53,900)	>4,909,500											
Ada County	—	—	—											
1. Black Hornet district	>21,400 (1955)	>21,400	—	—	—	X	—	—	—	—	—	—	—	—
Bingham County	—	—	—											
2. Snake River placers	24,200 (1935)	24,200	—	—	—	—	—	—	—	—	—	X	—	—
Blaine County	~212,700	~213,300*	—											
3. Camas (Hailey, Mineral Hill) district	~102,000	>102,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
4. Warm Springs district	[3]>76,600	>76,600	—	—	+	+	—	—	—	—	—	—	—	—
5. Vienna district	>10,000	>10,000	—	—	+	—	—	—	—	—	—	(X)	—	—
Boise County	2,891,500	~2,892,000*	—											
8. Boise Basin (Idaho City) district	~2,300,000	>2,300,000(a)	—	—	—	(X)	—	—	—	—	—	X	—	—
9. Pioneerville district	~25,000	~25,000	—	—	—	X	—	—	—	—	—	—	—	—
10. Quartzburg district	~400,000 (1940?)	~400,000	—	—	—	X	—	(X)	—	—	0	—	—	Elevatorski (1981, p. 36).
Westview Pearl district (included in Gem County)														
Bonneville County	—	—	—											
11. Mount Pisgah district	~16,600-60,000	~16,700-60,100	—	(X)	—	—	—	—	—	—	—	X	—	—
Camas County	—	—	—											
12. Big and Little Smokey-Rosetta district	>10,000	>10,000	—	—	—	+	—	—	—	—	0	X	—	Elevatorski (1981, p. 36).
Cassia, Jerome, and Minidoka Counties	>23,000	>23,000*	100,000											
13. Snake River placers	>23,000	>23,000	—	—	—	—	—	—	—	—	—	X	—	—
47. Black Pine district (Tolman deposit)	—	—	100,000	—	—	—	—	—	—	—	X	—	—	W. C. Bagby (1984, Written Commun.).
Clearwater County	—	—	—											
14. Pierce City district	~385,000	~385,200	—	(+)	—	—	—	—	—	—	—	X	—	—

[1]Total includes ~270.3 thousand oz not allocated to districts below.
[2]Total includes 1.52 million oz not allocated to districts below.
[3]Production prior to 1902 is unknown.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
IDAHO														
Custer County	>373,600	377,900	270,570											
15. Alder Creek district	~33,500	>33,500(a)	—	—	+	—	—	—	—	—	—	—	—	—
16. Loon Creek district	>40,000	>40,000	—	—	—	+	—	—	—	—	—	X	—	—
17. Stanley placer (incl. Valley Creek) district	33,000	33,000	—	—	—	(X)	—	—	—	—	—	X	—	Mining Mag. (1984, v. 151, no. 6, p. 565).
18. Yankee Fork district	~266,600	~266,600	[1]270,570	—	—	—	—	X	—	—	0	X	—	Elevatorski (1981, p. 28).
Elmore County	~754,000	>754,100*	—											
19. Atlanta district	~385,000	~385,000	—	—	—	X	—	—	—	—	—	(X)	—	Bergendahl (1964a).
20. Featherville district	>33,000 (1927)	>33,000	—	—	—	—	—	—	—	—	—	X	—	—
21. Neal district	>110,900[e] (1911)	>110,900	—	—	—	X	—	—	—	—	—	(X)	—	—
22. Pine Grove district	>37,500[e] (1917)	>37,500	—	—	—	X	—	—	—	—	—	(X)	—	—
23. Rocky Bar district	162,500-187,500 (1900)	~250,000	—	—	—	X	—	—	—	—	—	X	—	—
Gem County	—	—	—											
24. Westview (Pearl) district	>20,000	~24,000	—	—	—	X	—	—	—	—	—	—	—	—
Idaho County	2,740,000-3,025,000 (1942)	~2,740,800-3,000,800	>350,000											
25. Buffalo Hump district	~27,000 (1941)	~27,000	—	—	—	X	—	—	—	—	—	—	—	—
26. Dixie district	40,000-75,000	40,000-75,000	—	(X)	—	—	—	—	—	—	—	X	—	—
27. Elk City district	550,000-800,000 (1957)	550,000-800,000	—	—	—	(X)	—	—	—	—	—	X	—	—
28. French Creek-Florence district	~1,000,000 (1900)	>1,000,000(e)	—	—	—	—	—	—	—	—	—	X	—	—
29. Orogrande district	~32,000	>32,000(a)	>350,000	—	—	—	—	X	—	—	X	—	—	Elevatorski (1981, p. 38); Skillings (1984, v. 73, no. 6, p. 17).
30. Simpson-Camp Howard-Riggins district	>38,000	>38,000	—	—	—	—	—	—	—	—	—	X	—	—
31. Tenmile district	~147,000	~147,000	—	—	—	X	—	—	—	—	—	X	—	—
32. Warren-Marshall district	~906,500	~906,000	—	—	—	(X)	—	—	—	—	—	X	—	—
Latah County	—	—	—											
33. Hoodoo (Blackbird) district	~17,000	>17,000	—	—	—	—	—	—	—	—	—	X	—	—
Lemhi County	573,000-720,000	>577,000-723,800	—											
34. Blackbird district	>14,000	>14,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
35. Carmen Creek, and adjacent districts	~24,500	~24,500	—	—	—	(X)	—	—	—	—	—	X	—	—
36. Gibbonsville district	~100,000	~100,000	—	—	—	X	—	—	—	—	—	X	—	—
37. Kirtley Creek district	~27,500 (1932)	~27,500	—	—	—	(X)	—	—	—	—	—	X	—	—
38. Mackinew (Leesburg) district	~271,000	>271,000(a)		X	—	(X)	—	(X)	—	—	0	X	—	Elevatorski (1981, p. 38).
39. Mineral Hill-Indian Creek district	~87,000	~87,000	—	—	—	X	—	—	—	—	—	(X)	—	—
40. Texas district	~22,000 (1956)	>22,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
41. Yellow Jacket district	~25,000 (1949)	>25,000(a)	—	—	—	X	—	—	—	—	0	—	—	Elevatorski (1981, p. 36).
Owyhee County	>1,000,000	~1,088,900	550,000											
42. Silver City-DeLamar district	>1,000,000	1,088,900*(e)	550,000	—	—	X	—	—	—	—	X	(X)	—	Skillings (1984, v. 73, no. 37, p. 10).
48. South Mountain area	—	—	—	—	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p. 38).

[1]Sunbeam mine.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	1960 to 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
IDAHO														
Power County	—	—	—											
43. Snake River placers	>>18,500 (1950)	>>18,500	—	—	—	—	—	—	—	—	—	X	—	—
Shoshone County	~439,000	>497,900*(e)	1,161,400											
44. Murray (Coeur d'Alene) region	~311,800	>311,800	100,000	—	—	+	—	—	—	—	0	X	—	Elevatorski (1981, p. 38).
44a. Mother Lode mine	—	—	—	—	—	—	—	—	—	—	0	—	—	Do.
Valley County	~421,000	~421,100	2,477,500											
45. Thunder Mountain district	~17,500	>17,500(a)	352,000	—	—	X?	—	—	—	—	X	—	—	Adams (1984).
45a. Dewey mine	—	—	1,161,400	—	—	—	—	—	—	—	X	—	—	Mining Jour. (1983, v. 301, no. 7733, p. 348).
45b. Sunnyside mine			100,000	—	—	—	—	—	—	—	X	—	—	E. H. Bennett (written. commun., 1985)
46. Yellow Pine district	~310,000	>310,000(a)	2,125,500	—	—	—	—	—	—	—	+	—	—	Am. Mining Corg. Jour. (1982, v. 68, no. 10, p. 11).
MAINE														
Aroostook County														
Bald Mountain	—	—	169,500	—	—	—	—	—	—	—	—	—	—	Hillman and others (1984).
MICHIGAN														
Marquette County	—	—	—											
1. Ropes mine	31,100	31,100	>176,000	(X)	—	X	—	—	—	—	X	—	—	Skillings (1983, v. 72, no. 38, p. 7); R. T Segall (written commun., 1985)
MINNESOTA														
Lake County	—	—	—											
1. Duluth Gabbro-Spruce mine	—	—	very large[2]	—	—	—	—	0?	—	—	—	—	—	Watowich and others (1981)
MONTANA	[3]>20,205,000	>20,782,700 (91,071)	>8,108,000											
Beaverhead County	~370,000	>377,750*	—											
1. Bannack district	>240,400 (1950)	>240,400(a)	—	—	—	X	—	—	—	—	0	X	—	Elevatorski (1981, p. 41).
2. Argenta district	>65,350 (1957)	>65,350	—	—	+	+	—	—	—	—	—	(X)	—	—
3. Bryant (Hecla) district (incl.	~17,400 (1950)	~17,400	—	—	—	+[4]	—	—	—	—	—	—	—	—
Cleve-Avon group mine)	—	undisclosed(a)	—	—	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p. 41).
Broadwater County	[1]1,141,000-1,215,300	1,160,500-1,234,800*	—											
4. Confederate Gulch district	550,000-600,000 (1953)	550,000-600,000	—	X	—	—	—	—	—	—	—	X	—	—
5. White Creek district	67,700-92,000 (1940)	67,700-92,000	—	—	—	(+)	—	—	—	—	0	X	—	Elevatorski (1981, p. 42).
6. Winston district	>118,000 (1953)	>118,000(a)	—	—	—	X	—	—	—	—	—	(X)	—	—
7. Park district	~80,300 (1957)	~80,300	—	—	—	X	—	—	—	—	—	X	—	—
8. Radersburg district	~325,000 (1956)	>325,000(a)	—	—	—	+	—	—	—	—	—	(X)	—	—
Cascade County	—	—	—											
9. Montana (Neihart) district	~67,000 (1952)	~67,000	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 42).
Deer Lodge County	>910,000	>910,400*	528,000											
10. French Creek district	~200,000 (1940)	~200,000	—	—	—	—	—	—	—	—	—	X	—	R. C. Pearson (written commun., 1981).
11. Georgetown district	>460,000	>460,000	—	—	X	X	—	—	—	—	0	X	—	Elevatorski (1981, p. 42).
12. German Gulch (Siberia) district	>250,000	>250,000	528,000	—	—	—	—	—	—	—	X	X	—	R. C. Pearson (written commun., 1981); Canadian Mining Jour. (1983, v. 104, no. 3, p. 27).
Fergus County	625,000-660,000	~635,100-660,100*	—											
13. Warm Springs district	200,000-210,000 (1954)	200,000-210,000	—	—	—	X	—	—	—	—	0	(X)	—	Weissenborn (1968, table 5); Elevatorski (1981, p. 42).
14. North Moccasin district	425,000-450,000 (1948)	425,000-450,000	—	—	—	(X)	—	—	—	—	0	—	—	Do.

[1]No record of large Pre-1904 production.
[2]Subeconomic byproduct resource, not fully evaluated.
[3]Total includes 3.14 million oz not allocated to the districts below.
[4]Chimneys in carbonate host (Henry McClernan, written. commun, 1985)

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
MONTANA														
Granite County	~700,000-850,000	>716,900-866,900*	—											
15. First Chance district	345,000-445,000 (1951)	345,000-445,000	—	—	—	X	—	—	—	—	—	X	—	Weissenborn (1968, table 5).
16. Henderson placer district	~81,800 (1950)	~81,800	—	—	—	(X)	—	—	—	—	—	X	—	—
17. Boulder Creek district	~58,000 (1943)	>58,000(a)	—	—	—	X	—	—	—	—	—	(X)	—	—
18. Flint Creek (Philipsburg) district	~260,000 (1956)	>260,000(a)	—	—	—	+	—	—	—	—	0	(X)	—	Elevatorski (1981, p. 43).
Jefferson County	>748,000	~773,300*	3,810,000											
19. Clancy district	~103,000	~103,000	—	—	—	(+)	—	—	—	—	—	X	—	—
20. Basin and Boulder district	~188,000 (1954)	>188,000(a)	—	—	—	+	—	—	—	—	X?	(X)	—	—
21. Elkhorn district	~80,500	~80,500	—	—	+	+	—	+	+	—	—	(X)	—	—
22. Whitehall district (Golden Sunlight mine)	~100,000 (1952)	>100,000	1,290,000	X	—	X	—	—	—	—	X?	—	—	Mining Mag. (1983, v. 148, no. 5, p. 341).
23. Tizer district	~10,500 (1952)	~10,500	—	—	—	X	—	—	—	—	—	(X)	—	—
24. Wickes district	~266,000	~266,000	—	—	—	+	—	—	—	—	—	(X)	—	—
24a. Montana Tunnel mine	—	—	2,520,000	—	—	—	—	—	—	—	X	—	—	Skillings (1984, v. 73, no. 44, p. 15).
Lewis and Clark County	4.2-5 million	4,202,500-5,002,500*	2,015,000											
25. Rimini-Tenmile district	~198,300 (1957)	>198,300(a)	—	—	—	+	—	—	—	—	0	(X)	—	Elevatorski (1982, p. 61).
26. Helena-Last Chance district	>1,285,000 (1954)	>1,285,000(a)	2,000,000	—	+	X	—	—	—	—	X	X	—	Elevatorski (1981, p. 43); Eng. Mining Jour. (1984, v. 185, no. 1, p. 41).
27. Missouri River-York district	>335,000 (1942)	>335,000	—	—	—	X	—	—	—	—	—	X	—	—
28. Sevenmile-Scratchgravel district	>108,000	>108,000	—	X	—	X	—	—	—	—	—	X	—	—
29. Marysville-Silver Creek district	~1,310,000 (1951)	~1,310,000	15,000	—	—	X	—	—	—	—	X	X	—	Eng. Mining Jour. (1980, v. 181, no. 9 p. 255).
30. Stemple-Virginia Creek district	~245,000	~245,000	—	(X)	—	X	—	—	—	—	—	(X)	—	—
31. McClellan district	>340,000 (1940's)	>340,000	—	—	—	—	—	—	—	—	—	X	—	—
32. Lincoln district	~342,000 (1955)	~342,000	—	—	—	—	—	—	—	—	—	X	—	—
Lincoln County	[1]~33,500	33,600*	—											
33. Libby district	~19,500 (1945)	~19,500	—	(X)	—	+	—	—	—	—	—	(X)	—	—
34. Sylvanite district	~11,000 (1940)	~11,000	—	X	—	—	—	—	—	—	—	—	—	—
Madison County	>3,746,000	>3,791,400*	—											
35. Virginia City-Alder Gulch district	>2,617,000 (1948)	>2,617,000(a)	—	—	—	X	—	—	—	—	—	X	—	—
36. Norris district	>265,000 (1953)	>265,000	—	X	—	(X)	—	—	—	—	—	X	—	—
37. Pony district	~346,000 (1944)	~346,000	—	—	—	X	—	—	—	—	0	(X)	—	Elevatorski (1981, p. 43).
38. Renova district	~162,000 (1953)	>162,000(a)	—	—	—	X	—	—	—	—	—	—	—	—
39. Silver Star-Rochester district	~225,000 (1951)	~225,000	—	—	X	X	—	—	—	—	0	—	—	Weissenborn (1968, table 5); Elevatorski (1981, p. 43).
40. Tidal Wave district	>33,400 (1955)	>33,400	—	—	(+)	X	—	—	—	—	0	—	—	Do.
41. Sheridan district	>33,500 (1952)	>33,500(a)	—	—	—	X	—	—	—	—	—	(X)	—	—
Mineral County	[1]>152,200	~152,400*	—											
42. Cedar Creek district	>120,000	>120,000	—	—	—	—	—	—	—	—	—	X	—	—

[1]Pre-1914 production included in Missoula County

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Cumulative production and reserves (troy ounces): Through 1981	Cumulative production and reserves (troy ounces): Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
MONTANA														
Missoula County	[1]170,000-242,000	>170,350-242,350*	—											
44. Ninemile Creek district	100,000-125,000 (1949)	100,000-125,000	—	—	—	—	—	—	—	—	—	X	—	—
45. Elk Creek-Coloma district	70,000-117,000 (1940)	~70,000-117,000	—	X	—	—	—	—	—	—	—	X	—	—
Park County	>295,000	~295,100*	56,000											
46. Emigrant Creek district	~16,000	~16,000	—	—	—	—	—	—	—	—	—	X	—	—
47. Jardine district	190,000-200,000	190,000-200,000	—	X	—	X	—	—	—	—	0	(X)	—	Elevatorski (1981, p. 44).
48. Cooke City (New World) district	>66,000	>66,000	56,000	—	—	+	—	—	—	—	X	(X)	—	Calif. Mining Jour. (1983, v. 53, no. 1, p. 56); Eng. Mining Jour. Internat. Dir. (1983, v. 11, no. 5, p. 7).
Phillips County	—	—	—											
49. Little Rocky Mountains (Zortman-Landusky) district	~380,000 (1951)	~557,800*(e)	>1,462,000	—	—	(X)	—	X	—	—	X	(X)	—	Eng. Mining Jour. (1980, v. 184, (no. 12, p. 26); Eng. Mining Jour. (1985, v. 186, no. 2, p. 65).
Powell County	~603,400	>604,000*	—											
50. Finn district	~81,000 (1951)	~81,000	—	(X?)	—	—	—	—	—	—	—	X	—	—
51. Ophir district	>188,200 (1941)	>188,200(a)	—	—	—	(X)	—	—	—	—	—	X	—	—
52. Pioneer district	~276,000 (1942)	~276,000	—	—	—	(X)	—	—	—	—	—	X	—	Weissenborn (1968, table 5).
53. Zosell district	>43,000 (1942)	>43,000	—	X	—	+	—	—	—	—	—	(X)	—	—
54. Elliston district	>15,000	>15,000	—	X	—	X	—	—	—	—	—	—	—	J. E. Elliott (written commun., 1981).
Ravalli County	—	—	—											
55. Hughes Creek placers	>10,000	~10,100*	—	—	—	—	—	—	—	—	—	X	—	—
Silver Bow County	>2,800,000	~3,189,200	~237,000											
56. Butte (Summit Valley) district	~2,725,000	~2,928,800	~237,000[e]	—	—	+	—	+	—	—	—	X	—	Weissenborn (1968, table 5). Tooker (198 , in press).
57. Highland district	~63,000 (1951)	—	—	—	+	+	—	—	—	—	—	?	—	—
German Gulch (Siberia) district (reported in Deer Lodge Co.)														
Stillwater County	—	—	—											
58. Stillwater complex	—	—	large, low grade[2]	—	—	—	—	—	—	—	+	—	—	Conn (1979).
NEVADA	[3]26,881,800	~33,114,500 (3,661,370)	>53,453,700											
Churchill County	164,600	165,800*(e)	35,000											
1. Fairview district	>53,000	>53,000	35,000	—	—	+	—	—	—	—	X	(X)	—	Elevatorski (1982, p. 71).
2. Sand Springs district	~21,000 (1951)	~21,000	—	—	—	+	—	—	—	—	—	—	—	—
3. Wonder district	~74,000	~74,000	—	—	—	+	—	—	—	—	—	—	—	—
Clark County	>408,000	>408,100*	—											
4. Eldorado district	~101,700	<101,700(a)	—	—	—	+	—	—	—	—	—	(X)	—	—
5. Goodsprings district	~58,800	~58,800	—	—	—	+	—	—	—	—	—	—	—	—
6. Searchlight district	~247,000	>247,000(a)	—	—	—	X	—	—	—	—	—	—	—	—
Elko County	~561,200	838,285*(e)	5,949,200											
7. Aura district (incl. Sammy Creek property)	>10,000	>10,000	600,000	—	—	+	—	—	—	—	X	X	—	Bagby (written commun., 1984).
8. Bootstrap mine	—	3,000 (1981)	68,600	—	—	—	—	—	—	—	X	—	—	Bonham (1982); McQuiston and Shoemaker (1981).

[1]Pre-1914 production includes that from Ravalli, Lincoln, Mineral, and Powell Counties.
[2]Subeconomic byproduct resource, not fully evaluated.
[3]Total includes 1.85 million oz not allocated to the districts below.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
NEVADA														
Elko County (cont'd)														
9. Cornucopia district	~13,000	~13,000	—	+	—	—	—	—	—	—	(0)		—	Elevatorski (1982, p. 70).
10. Edgemont district	48,500 (1907)	48,500	—	—	—	X	—	—	—	—	—	—	—	—
11. Gold Circle (Midas) district	~119,770	~130,000	—	—	—	+	—	—	—	—	—	—	—	—
12. Jarbidge district	217,800	>217,800(a)	—	—	—	X	—	—	—	—	X	—	—	—
13. Jerritt Canyon (Bell mine)	—	—	>3,753,800	—	—	—	—	—	—	—	X	—	—	Northern Miner (1983, v. 69, no. 1, p. 13); Bonham (1984); Hillman and others (1984).
14. Mountain City district	—	11,000 (1969)	—	—	—	+	—	—	—	—	—	X	—	Bonham (1976).
15. Tuscarora district	>100,000	170,000 (1980)	—	—	—	X	—	—	—	—	0	X	—	Elevatorski (1982, p. 82).
84. Rain mine	—	—	1,188,700	—	—	—	—	—	—	—	X	—	—	Bonham (1984).
85. Dee-Boulder Creek mine	—	—	>338,130	—	—	—	—	—	—	—	X	—	—	Bonham (1982); Eng. Mining Jour. (1984, v. 185, no. 1, p. 41); Skilling (1985, v. 74, no. 11, p. 6).
Esmeralda County	4,914,180	>4,916,700*	1,024,600											
16. Divida district (incl. Raebrouck)	~26,480	~26,480	347,900	(+)	—	+	—	—	—	—	X	—	—	Bonham (1984); Mining Joun. 1985, v. 305, n. 7845, p. 482
17. Goldfield district	~4,194,800	4,194,800	~640,000	—	—	—	X	—	—	—	X	—	—	Nevada Mining Assoc Bull., (Summer, 1984, p. 13-14); R. P. Ashley, (written commun., 1985).
18. Gold Point (Hornsilver) district	~25,000 (1956)	>25,000(a)	—	—	—	X	—	—	—	—	0	—	—	Bonham (1981).
19. Lone Mountain district	~31,960 (1949)	>32,000(a)	—	—	—	+	—	—	—	—	0	—	—	Bonham (1981).
20. Silver Peak (Red Mountain) district (incl. 16 to 1 mine)	~568,000	>568,000(a)	36,700	—	—	X	—	—	—	—	X	—	—	Skillings, (1982, v. 71, no. 20, p. 6).
Eureka County	>1,326,900	~4,247,300*(e)	13,876,530											
21. Buckhorn district	~39,630	230,000	237,000	—	—	—	—	—	—	—	X	—	—	Mining Jour. (1984, v. 302, no. 7761, p. 338); Monroe and Plahuta (1984)
22. Cortez district	~48,270	993,800 (1968-1982)	none	—	—	+	—	—	—	—	X	—	—	Mining Eng., (1979, v. 31, no. 9, p. 1323).
22a. Horse Canyon mine	—	—	320,000	—	—	—	—	—	—	—	X	—	—	Mining Jour., (1983, v. 300, no. 7702, p. 202); Hillman and others (1984); Skilling (1985, v. 74 , no. 23, p. 6.
23. Eureka District (incl. Windfall mine)	1,230,000	1,230,000	240,000	—	—	+	—	—	—	—	X	—	—	Bergendahl (1964b, table 7); Bonham (1982); Elevatorski (1981, p. 49).
23a. Gold Bar property	—	—	250,000	—	—	—	—	—	—	—	X	—	—	Eng. and Mining Jour. (1984, v. 185, no. 10, p. 11).
24. Carlin (incl. Lynn) district	~9,000	3,094,000 (1965-1979	3,520,000	—	—	—	—	—	—	—	X	X	—	Bonham (1982); Eng. Mining Jour. (1983, v. 184, no. 6, p. 49, and no. 7, p. 38-46).
24a. Blue Star mine	—	4,000 (1980)	216,000	—	—	—	—	—	—	—	X	—	—	Bonham (1984).
24b. Gold Strike mine	—	7,400 (1979)	100,000	—	—	—	—	—	—	—	X	—	—	Bonham (1984).
24c. Bullion Monarch mine	—	—	—	—	—	—	—	—	—	—	0	—	—	Bonham (1981).
25. Maggie Creek mine	—	520,900 (1982-1983)	447,530	—	—	—	—	—	—	—	X	—	—	Mining Jour. (1983, v. 300, no. 7702, p. 202).
25e. Gold Quarry mine	—	—	>8,000,000	—	—	—	—	—	—	—	X	—	—	Northern Miner, (1984, v. 69, no. 49, p. A3); Mining Jour. (1984, v. 302, no. 7754, p. 214).
91. Tonkin Springs	—	—	546,000	—	—	—	—	—	—	—	X	—	—	Bagby (1984, written commun.).
Humboldt County	~1,705,200	>2,278,900(a)	3,248,000											
26. Awakaning district (incl. Sleeper deposit)	>25,650	>25,700(a)	546,000	X	—	—	—	—	—	—	X	—	—	Eng. and Mining Jour. Internat. Direc. 1985, v. 11, no. 10, p. 5).
27. Dutch Flat district	~10,000	~10,000	—	(X)	—	—	—	—	—	—	—	X	—	
28. Gold Run district	~26,000	~26,000	—	—	—	+	—	—	—	—	0	(X)	—	Bergendahl (1964b, table 7); Elevatorski (1981, p. 56).

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
NEVADA														
Humboldt County (cont'd)														
29. National (Buckskin) district	177,000 (1917?)	>177,000(a)	—	—	—	+	—	—	—	—	—	—	—	—
30. Paradise Valley district	73,400 (1946)	73,400	—	—	—	+	—	—	—	—	—	X	—	Bergendahl (1964b, table 7).
31. Potosi district	~485,700	>485,700(a)	—	—	—	+	—	—	—	—	—	—	—	—
31e. Getchell mine	—	788,875 (1967)	2,185,000	—	—	—	—	—	—	—	X	—	—	Bonham (1984).
31h. Pinson mine	—	~114,000 (1982)	397,000	—	—	—	—	—	—	—	X	—	—	Mining Jour. (1983, v. 300, no. 7702, p. 201).
31c. Preble mine	—	—	120,000	—	—	—	—	—	—	—	X	—	—	Bonham (1984).
32. Warm Springs district	~24,000	24,000	—	X	—	—	—	—	—	—	—	—	—	—
33. Winnemucca district	~35,000 (1943)	35,000	—	—	—	X	—	—	—	—	—	—	—	—
Lander County	~607,000	>1,865,750*(e)	4,901,000											
34. Battle Mountain (Copper Canyon) district	150,300	70,000 (1978-1982)	[1]3,751,000	X	—	+	—	+	—	—	X	X	—	Bergendahl (1964b, table 7); Eng. Mining Jour. Internat. Dir. (1982, v. 8, no. 8, p. 9; 1983, v. 9, no. 14, p. 3); Bonham (1982).
35. Bullion (Gold Acres-Tenabo) district	>156,600	>400,000	181,000	—	—	X	—	—	—	—	X	X	—	Elevatorski (1981, p. 47); Bonham (1984).
36. Hilltop district	~17,834	~17,834	450,000	—	—	X	—	X	—	—	—	(X)	—	Northern Miner (1984, v. 69, no. 48, p. 23).
37. Lewis district	~51,000	~51,000	—	X	—	+	—	—	—	—	—	—	—	—
38. New Pass district	~16,000	~16,000	—	X	—	X	—	—	—	—	—	—	—	—
39. Reese River district	>10,000 (1950?)	>10,000	—	—	—	+	—	—	—	—	—	—	—	—
86. Fire Creek property	—	—	21,000	—	—	—	—	—	—	—	X	—	—	Bonham (1984).
92. Sumich property	—	—	348,000	—	—	—	—	—	—	—	X	—	—	Mining Mag. (1984, v. 150, no. 1, p. 14).
93. Toiyabe property	—	—	150,000	—	—	—	—	—	—	—	X	—	—	W. C. Bagby (1984, written commun.).
Lincoln County	~556,800	>1,159,900*(e)	1,768,000											
40. Atlanta district	—	88,000	88,000	—	—	X	—	—	—	—	X	—	—	Bonham (1981).
41. Delamar district	[2]>>217,000	>>217,200	1,680,000	—	—	X	—	(X)	—	—	X	—	—	Bonham (1981).
42. Pioche (incl. Highland) district	[3]>>104,600	>>104,600(a)	—	—	—	+	—	—	—	—	—	—	—	—
Lyon County	~613,000	~698,300*(e)	—											
43. Como district	10,000-15,000 (1940)	10,000-15,000	—	—	—	X	—	—	—	—	0?	—	—	—
44. Silver City district	~190,000	~190,000	—	—	—	—	+	—	—	—	X	X	—	—
45. Wilson district	~408,000	~408,000	—	—	—	—	—	X	—	—	—	—	—	—
94. Terington district	unknown	undisclosed(a)	—	—	—	—	—	+	—	—	—	—	—	—
Mineral County	[3]~361,700	~362,700*	7,501,900											
46. Aurora district	>93,600	>93,600(a)	193,500	—	—	—	X	—	—	—	X	—	—	Ross (1961, p. 72); Elevatorski (1982, p. 67); Bonham (1984).
47. Bell district	~34,000	~34,000	294,590	X	—	—	+	—	—	—	X	—	—	Bonham (1982).
48. Borealis district	—	—	168,000	—	—	—	—	—	—	—	X	—	—	Do.
49. Candelaria district	>13,000	>22,200 (1981)	110,000	—	—	+	—	—	—	—	X	—	—	Skillings (1983, v. 72, no. 7, p. 11); Bonham (1982).
50. Garfield district	10,000-50,000	10,000-50,000	—	X	—	—	—	—	—	—	—	—	—	—
51. Gold Range district	~97,000 (1948)	~97,000	—	—	—	X	—	—	—	—	—	—	—	—
52. Hawthorne district	~10,000*	>10,000	>200,000	—	—	X	—	—	—	—	X	(X)	—	Eng. Mining Jour. Internat. Dir. 1982, v. 8, no. 8, p. 9).
53. Oneota and Mount Montgomery districts	>10,000* (1935)	>10,000	—	X	—	—	—	—	—	—	—	—	—	—

[1]Includes Fortitude, Bluebird, and Tomboy-Minnie deposits.
[2]Does not include production prior to 1902.
[3]Does not include production prior to 1906.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
NEVADA														
Mineral County (cont'd)														
54. Rawhide district	53,000	53,000	>6,000,000	--	--	--	X	--	--	--	--	(X)	--	Bonham, (1984).
55. Santa Fe (Luning) district (incl. Mindora, Calvada and Santa Fe mines)	--	--	>497,000	--	--	--	--	--	--	--	+	--	--	Skillings (1983, v. 72, no. 52, p. 4).
89. Pamlico district (Ashby mine)	~1,100e (1937)	~1,100	38,800	X	--	--	--	--	--	--	--	--	--	Mine search Annual (1984).
Nye County	~3,291,400	3,752,300*(e)	>11,766,000											
56. Bruner district	>17,200	17,200	--	X	--	--	--	--	--	--	--	--	--	--
57. Bullfrog district	120,400	120,400	--	--	--	--	X?	--	--	--	--	--	--	--
58. Ellendale district	8,000-20,000e (1939)	8,000-20,000	--	X	--	--	--	--	--	--	--	--	--	Bergendahl (1964b, table 7).
59. Fluorine district (incl. Sterling)	--	--	125,000	--	--	--	--	--	--	--	X	--	--	Bonham (1984).
60. Gold Hill district	>25,000 (1933)	>25,000	--	X	--	--	--	--	--	--	--	--	--	Bergendahl (1964b, table 7).
61. Jackson district	24,000-48,000 (1911)	24,000-48,000	--	X	--	--	--	--	--	--	--	--	--	--
62. Jefferson Canyon district	20,000-25,000e (1932)	20,000-25,000	--	X	--	--	--	--	--	--	--	--	--	Bergendahl (1964b table 7).
63. Johnnie district	~40,000	~40,000	--	--	--	+	--	--	--	--	--	--	--	--
64. Lodi district	10,000-20,000e	10,000-20,000	--	--	--	+	--	--	--	--	--	--	--	--
65. Manhattan district	>486,000	>486,000	216,000	--	--	X	--	X	--	--	X	--	--	Elevatorski (1981, p. 52); Skilling (1984, v. 73, no. 28, p. 17).
66. Northumberland district	~35,500	~35,500	765,000	--	--	--	--	--	--	--	X	--	--	Bonham (1984).
67. Round Mountain district (incl. Smoky Valley mine	~537,000	>537,000(a)	9,660,000	--	--	--	--	X	--	--	X	X	--	Bergendahl (1964b, table 7); Bonham 1985); Hillman and others (1984).
68. Tonopah district	1,880,000	1,880,000	--	--	--	+	--	--	--	--	0	--	--	Elevatorski (1981, p. 82).
69. Tybo district	>27,300	>27,300(a)	--	--	--	+	--	--	--	--	--	--	--	--
70. Union district	>10,000 (1903)	>10,000(a)	--	--	--	+	--	--	--	--	X?	--	--	--
87. Paradise Peak property	--	--	>1,000,000	--	--	--	--	--	--	--	+	--	--	Skilling (1984, v. 73, no. 5, p. 11); Bonham (1984).
Pershing County	~1,119,300	~1,130,300*[2]	1,550,100											
71. Imlay (Humboldt) district (incl. Standard and Florida Canyon	[1]42,600	55,100 (1977)	442,600	--	--	+	--	--	--	--	X	--	--	Bonham (1984); Bagby (written commun., 1984)
72. Rochester district	274,500-120,000e	74,500-120,000	787,500	--	--	+	--	--	--	--	+	X	--	Bergendahl (1964b, table 7); Bonham (1981); Eng. Mining Jour. (1985, v. 186, no. 2, p. 68).
73. Rosebud district	>11,500	>11,500	--	--	--	(X)	--	--	--	--		X	--	Johnson (1977, p. 84).
74. Rye Patch district	~10,000	~10,000	--	--	--	+	--	--	--	--	0	--	--	--
75. Seven Troughs district	160,200	>160,200(a)	--	--	--	--	--	X	--	--	--	0	--	Calif. Mining Jour. (1983, v. 53, no. 1, p. 44).
76. Sierra (Dun Glen) district	~241,000e	~241,000	--	--	--	X	--	--	--	--	--	X	--	--
77. Spring Valley district	534,000 (1932)	534,000	--	--	--	(X)	--	--	--	--	0	X	--	--
88 Antelope Springs district (Relief Canyon property)	--	--	320,000	--	--	--	--	--	--	--	X	--	--	Bonham (1984).

[1]Production from 1932 to 1951.
[2]Includes production from Willow Creek and Seven Troughs districts, formerly in Humboldt County.

Mining districts or deposits	Cumulative production and reserves (troy ounces)			Deposit Types										References Cited
	Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	
NEVADA														
Storey County	8,560,000	8,630,000	153,400											
78. Comstock district	~8,560,000	>8,570,000*	7,500	—	—	—	+	—	—	—	0	X	—	Bergendahl (1964b, table 7); Eng. Mining Jour. (1983, v. 184, p. 37); Eng. Mining Jour. Internat. Dir. (1984, v. 11, no. 2, p. 9).
78a. Flowery district	unknown[1]	—	—	—	—	X	—	—	—	—	0	—	—	Elevatorski (1982, p. 72).
90. Gooseberry mine	—	60,000 (1966-1981)	145,900	—	—	+	—	—	—	—	X	—	—	Elevatorski (1982, p. 74); Eng. Mining Jour. Internat. Dir. (1984, v. 11, no. 5, p. 11).
Washoe County	—	—	—											
79. Olinghouse district	~36,000	~39,500*	—	—	—	—	—	X	—	—	—	(X)	—	—
White Pine County	~2,049,900	2,620,700*(e)	>1,680,000											
80. Alligator Ridge district	—	247,600 (1981-84)	1,680,000	—	—	—	—	—	—	X	—	—	—	Skillings (1985, v. 74, no. 21, p. 6-7); Bonham, (1983).
81. Cherry Creek district	36,200	36,200	—	—	—	+	—	—	—	—	—	—	—	—
82. Ely (Robinson) district	~1,959,700	~2,531,500	unknown	—	—	+	—	+	—	—	—	—	—	—
83. Osceola district	131,700	131,700	—	—	—	—	—	X	—	—	—	X	—	—
NEW HAMPSHIRE														
Coos County	—	—	—											
1. Milan	unknown (1916)	—	—	—	—	—	—	—	X	—	—	—	—	Pearre and Calkins (1957).
NEW MEXICO	[2]>2,355,600	2,650,200 (53,010)	>848,800											
Catron County	—	—	—											
2. Mogollon district	362,100 (1946)	>362,300*	—	X	—	—	—	—	—	—	—	—	—	Bergendahl (1965, p. 135).
Colfax County	—	—	—											
~~3. Elizabethtown-Baldy~~ district	368,400	368,400	—	—	(+)	X	—	—	—	—	—	X	—	—
Dona Ana County	~13,500	~13,500*	—											
4. Organ district	~11,400 (1950)	11,400	—	—	—	+	—	—	—	—	—	—	—	—
Grant County	~501,000	~703,000	—											
5. Central district (incl. Santa Rita and Hanover areas)	~230,000	>230,000(a)	—	—	+	+	—	+	—	—	—	—	—	R. M. North and V. T. McLemore (written commun., 1985).
6. Pinos Altos district	~148,000	~148,000(a)	—	—	—	+	—	—	—	—	—	X	—	—
7. Steeple Rock district	~184,000 (1956)	~184,000	—	—	—	+	—	—	—	—	—	—	—	Bergendahl (1965, p. 136); Elevatorski (1982, p. 90).
8. Burro Mountain district	minor	~60,400	—	—	—	X	—	X	—	—	—	(X)	—	D. R. Richter (written commun., 1981)
1. Malone district	~12,000	~12,000	—	—	—	X	—	—	—	—	—	—	—	R. N. North and V. T. Lemore, (written commun., 1985).
Hidalgo County	~227,000 (1952)	>261,700*(a)	—											
9. Lordsburg district	>224,000	>224,000(a)	—	—	—	+	—	—	—	—	—	—	—	—

[1]Production figures included with Comstock Lode district.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
NEW MEXICO														
Lincoln County	~164,000	164,100*	—											
10. Nogal (Parson, Vera Cruz) district	15,000 (1936)	15,000	—	—	—	X	—	X	—	—	o	(X)	—	Elevatorski (1981, p. 58, 59).
11. White Oaks district	~163,500	~163,500	—	X?	—	—	—	—	—	—	—	(X)	—	R. M. North and V. T. McLemore, (written. commun., 1985).
Luna County	—	—	—											
12. Victorio district	12,200	12,200	—	—	—	X	—	—	—	—	—	—	—	D. H. Richter (written commun., 1981).
Otero County	—	—	—											
13. Orogrande (Jarilla) district	16,500 (1940)	~16,500	202,500	—	+	—	—	—	—	—	X	(X)	—	Elevatorski (1981, p. 60); Mining Jour. (1979, v. 293, no. 7522, p. 341).
Rio Arriba County	—	—	—											
14. Bromide-Hopewell district	24,300	>24,300	—	—	—	X	—	—	—	—	—	(X)	—	R. M. North and V. T. McLemore, (written. commun., 1985).
Sandoval County	—	—	—											
15. Cochiti district	~41,500 (1940)	42,000*	—	—	—	X	—	—	—	—	—	—	—	—
San Miguel County	—	—	—											
16. Willow Creek district	~179,000 (1939)	~179,000	—	—	—	+	—	—	—	—	—	—	—	—
Santa Fe County	~210,000	~248,130*(e)	—											
17. Old Placer (Ortiz) district (incl. Ortiz mine)	~99,300 (mostly pre 1900)	126,000	>500,000	(X)	(+)	—	—	—	—	—	X	X	—	Mining Mag. (1983, v. 148, no. 4, p. 266); Elevatorski (1981, p.59).
18. New Placer (San Pedro) district	~115,700 (1956)	~115,700	—	(X)	(+)	(+)	—	—	—	—	—	X	—	—
Sierra County	183,900	184,900*	—											
19. Chloride district (St. Cloud mine)	2,500	undisclosed(a)	146,300	—	—	+	—	—	—	—	—	—	—	Mining Mag. (1983, v. 149, no. 5 p. 290).
20. Hillsboro district	~165,000	~165,000	—	—	—	X	—	—	—	—	o	(X)	—	Elevatorski (1982, p. 86); R. M. North and V. T. McLemore, (written. commun., 1985).
Socorro County	~32,000	~42,500*(e)	—											
21. Rosedale district	~27,800 (1937)	>27,800(a)	—	X	—	—	—	—	—	—	—	—	—	—
NORTH CAROLINA	[1]~1,288,300	~1,292,700 (1963)	unknown											
Burke County	—	—	—											
1. Mills property	~50,000 (1954)	~50,000	—	(X)	—	—	—	—	—	—	—	X	—	—
Cabarrus County	~70,000	~70,000	—											
2. Phoenix mine	~19,400 (1906)	19,400	—	X	—	—	—	—	—	—	—	—	—	—
3. Reed mine	~50,000 (1935)	~50,000	—	(X)	—	—	—	—	—	—	—	X	X	—
Davidson County	—	—	—											
4. Cid (Conrad Hill-Silver Hill mines) district	~20,000 (1907)	~20,000	—	—	—	X	—	—	—	—	—	—	—	—
Franklin County														
5. Portis placers	~50,000e (1935)	~50,000	—	—	—	—	—	—	—	—	—	(X)	X	—
Gaston and Cleveland Counties	—	—	—											
6. Kings Mountain mine	37,500-50,000e (1895)	37,500-50,000	—	—	—	X	—	—	—	—	—	(X)	(X)	—
Guilford County	—	—	—											
7. Gardner Hill, Lindsay, Jacks Hill mines	~11,250e (1860)	~11,250	—	—	—	+	—	—	—	—	—	—	—	—

[1]U.S. Bureau of Mines total 1799-1959 is 1,169,423 oz; total includes 653.1 thousand oz not allocated to the districts below.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic: vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
NORTH CAROLINA (continued)														
Mecklenburg County	—	—	—											
8. Rudisil and St. Catherine mine	>60,000 (1937)	>60,000	—	X	—	—	—	—	—	—	—	—	—	—
Montgomery County	>72,500	>72,500	—											
9. Iola and Uwarra mines	~50,000 (1916)	~50,000	—	X	—	—	—	—	X?	—	—	—	—	—
10. Russell and Steel mines	>22,500	>22,500	—	—	—	X	—	—	X?	—	0	—	—	Elevatorski (1981, p. 60).
Randolph County	—	—	—											
11. Hoover Hill mine	~17,000 (1914)	~17,000	—	X?	—	—	—	—	—	—	—	—	—	—
Rowan County	—	—	—											
12. Gold Hill district	~160,000 (1915)	~160,000	—	—	—	X	—	—	X	—	—	—	—	—
Stanly County	—	—	—											
13. Parker mine	>10,000 (1935)	>10,000	—	—	—	—	—	—	(X?)	—	—	X	X	—
Transylvania County	—	—	—											
14. Fairfield Valley placers	10,000-15,000 (early 1800's)	10,000-15,000	—	—	—	—	—	—	—	—	—	X	—	—
Union County	—	—	—											
15. Bowie mine	~50,000 (1934)	~50,000	—	—	—	—	—	—	X?	—	0	X	X	Elevatorski (1981, p. 60).
OREGON	[2]~5,791,000	>5,802,600[1] (>5,300)	>870,000											
Baker County	~1,463,200	*[1]	—											
1. Baker district	36,150	36,150	—	—	—	X	—	—	—	—	0	X	—	Elevatorski (1981, p. 12).
2. Conner Creek district	~103,000 (1942)	103,000	—	X	—	—	—	—	—	—	—	X	—	—
3. Cornucopia district	~264,000 (1941)	>264,000(a)	—	—	—	X	—	—	—	—	0	X	—	Eng. Mining Jour. (1983, v. 184, no. 3, p. 166).
4. Cracker Creek district	189,000[e]	>189,000(a)	—	—	—	X	—	—	—	—	—	X	—	—
5. Eagle Creek district	87,800 (1952)	~87,800	—	X	—	—	—	—	—	—	—	X	—	—
6. Greenhorn district (southern part)	>100,000	>100,000	—	—	—	X	—	—	—	—	—	X	—	—
7. Homestead district (Iron Dyke mine)	34,967	34,967	—	—	—	+	—	—	—	—	0	—	—	Brooks and Ramp (1981, p. 94); Elevatorski (1981, p. 3).
8. Lower Burnt River Valley district	>53,500 (1955)	>53,500	—	X	—	—	—	—	—	—	—	X	—	—
9. Mormon Basin district	~233,700	~233,700	—	—	—	X	—	—	—	—	—	X	—	—
10. Rock Creek district	>51,000	>51,000	—	—	—	X	—	—	—	—	—	(X)	—	
11. Sparta district	~42,900 (1951)	~42,900	—	X	—	—	—	—	—	—	—	X	—	—
12. Sumpter district	131,210 (1955)	131,210	—	X	—	—	—	—	—	—	—	X	—	—
13. Upper Burnt River (includes Unity district)	~10,000	~10,000	—	X	—	—	—	X	—	—	—	X	—	—
14. Virtue district	126,000 (1956)	126,000	—	X	—	—	—	—	—	—	—	(X)	—	—
Douglas County	—	—	—											
Greenback district (reported in Josephine Co.)	—	—	—	—	—	—	—	—	—	—	—	—	—	
15. Silver Peak district	10,800[e] (1930)	10,800	—	—	—	+	—	—	+	—	—	(X)	—	Brooks and Ramp (1968, p. 214).
Grant County	1,116,150	*[1]	—											
16. Canyon Creek district	~818,000	~818,000	—	X?	—	—	—	—	(X)	—	—	X	—	—
17. Granite district	~160,000	>160,000(a)	—	—	—	X	—	—	—	—	0	X	—	Elevatorski (1981, p. 62).
18. North Fork district	>44,300	~44,300	—	—	—	—	—	—	—	—	—	X	—	—
19. Quartzburg district	>45,100	>45,100(a)	—	—	—	(X)	—	—	—	—	0	X	—	Elevatorski (1981, p. 62).
19a. Copperopolis mine	minor	minor	—	—	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p. 64).
19b. Dixie Meadow mine	minor	minor	30,000	—	—	X	—	—	—	—	X	—	—	Calif. Mining Jour. (1984, v. 53, no. 5, p. 31).
20. Susanville district	~48,750	~48,750	—	—	—	(X)	—	—	—	—	—	X	—	—

[1]County production data from Oregon too fragmentary to estimate.
[2]Total including 2.14 million oz not allocated to the districts below.

Mining districts or deposits	Cumulative production and reserves (troy ounces) Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
OREGON														
Jackson County	~495,000	*[1]	—											
21. Ashland district	~66,400e	~66,400	—	—	—	(+)	—	—	—	—	—	X	—	—
22. Gold Hill district	>80,000	(a)	—	X	—	—	—	—	—	—	—	X	—	—
23. Jacksonville district	26,000-52,000	26,000-52,000	—	X	—	—	—	—	—	—	—	X	—	—
24. Upper Applegate district	~210,000	~210,000	—	(X)	—	—	—	—	—	—	—	X	—	—
Josephine County	~1,235,000e	*[1]	—											
25. Galice-Mt. Reuben district (includes Silver Creek prop.)	~268,000	~268,000	840,000	X	—	(+)	—	—	—	—	X	X	—	Mining Jour. (1983, v. 301, no. 7727, p. 222).
26. Grants Pass district	~22,000	~22,000	—	—	—	X	—	—	X?	—	—	X	—	—
27. Greenback district (incl. Grave Creek, Ida (Wild Rose) and Oak mine	>55,000	>55,000(a)	—	X	—	—	—	—	—	—	0	X	—	Elevatorski (1981, p. 64-65).
28. Illinois River district	10,000-16,000e(1953)	10,000-16,000	—	X	—	—	—	—	—	—	—	X	—	—
29. Lower Applegate district	>10,000e	>10,000	—	—	—	(X)	—	—	X?	—	—	X	—	—
30. Waldo district	~213,800	~213,800	—	—	—	(+)	—	—	X?	—	—	X	—	—
30a. Queen of Bronze mine (incl. Frog Pond mine)	~6,000	~6,000	—	—	—	—	—	—	+	—	0	—	—	Elevatorski (1981, p. 65); Brooks and Ramp (1968, p. 262).
Lane County	~50,000	*[1]	—											
31. Blue River district	>10,200	>10,200(a)	—	—	—	X	—	—	—	—	—	—	—	—
32. Bohemia district	~38,600 (1952)	<38,600(a)	—	—	—	X	—	—	—	—	—	(X)	—	—
Malheur County	~27,400	*[1]	—											
33. Malheur district	~10,000	~10,000	—	—	—	—	—	—	—	—	—	X	—	—
Mormon Basin district (see also Baker County)	[2]~10,000	>10,000(a)	—	—	—	X	—	—	—	—	—	(X)	—	—
PENNSYLVANIA	>43,151	1960-1975 prod. withheld no prod. 1976-1980	unknown											
Lebanon County	—	—	—											
1. Cornwall district	[5]43,151	[5]67,000	—	—	+	—	—	—	—	—	—	—	—	—
Berks County	—	—	—											
2. Grace mine	unknown	withheld	—	—	+	—	—	—	—	—	—	—	—	—
SOUTH CAROLINA	~319,000e	>319,000[3]	350,000											
Chesterfield County	—	—	—											
1. Brewer mine	~22,000e	~22,000	—	—	—	—	—	X	—	—	0	X	—	Elevatorski (1981, p. 66).
Fairfield County														
4. Ridgeway prospect	—	—	350,000	X	—	—	—	—	—	—	X	—	—	Schreiber and Emerson (1984).
Kiff prospect	—	—	—	—	—	—	—	—	—	—	0	—	—	do
Lancaster County	—	—	—											
2. Haile mine	220,000e	~220,000	—	—	—	X	—	—	+	—	0	X	—	Henry Bell III (written commun., 1982); Elevatorski (1981. p. 65).
McCormick County	—	—	—											
3. Dorn mine	~44,000e	~44,000	—	—	—	—	—	—	+	—	0	—	—	Elevatorski (1981, p. 66).
SOUTH DAKOTA	[4]27,723,400	~37,815,800	>2,536,400											
Lawrence County	27,574,000	37,629,500	—											
1. Lead-Deadwood region	27,150,000	>37,261,500	very large	—	—	—	—	—	—	—	—	—	—	
1a. Homestake mine	24,450,000	34,561,550	>750,000	—	—	—	—	—	—	X	X	X	—	Elevatorski (1981, p. 66); Wall Street Jour., (May 15, 1985, p. 26).

[1]County production data from Oregon too fragmentary estimate.
[2]Production from Malheur County part of the district.
[3]Only production reported in Cherokee Co. was in 1981; amount withheld.
[4]Production data from J. J. Norton, written commun., 1982; total including 200 thousand oz not allocated to the districts below.
[5]Revised data from A. A. Socolow, (written. commun, 1985).

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Through 1981	Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
SOUTH DAKOTA														
Lawrence County (cont'd)														
1b. Bald Mountain (incl. Portland and Ruby Basin) district	2,210,000	2,210,000	1,512,400	—	—	—	—	—	—	X	X	—	—	Norton (1983, p. 3); Canadian Mining Jour. (1983, v. 104, no. 3, p. 27).
1c. Garden-Maitland district	150,000	150,000	—	—	—	X	—	—	—	—	0	—	—	Elevatorski (1981, p. 67).
1d. Placers	200,000	>200,000	—	—	—	—	—	—	—	—	—	X	—	—
1e. Other mines	140,000	140,000	—	—	—	X	—	—	—	—	—	X	—	J. J. Norton, written commun., 1982).
2. Ragged Top-Squaw Creek-Carbonate district	84,000	84,000	—	—	—	X	—	—	—	—	—	(X)	—	M. J. Tipton (written commun., 1986).
3. Galena-Roubaix (incl. Gilt Edge Mine) district	140,000	140,000	274,000	X	—	—	—	—	—	—	X	X	—	Mining Jour. (1984, v. 303, no. 7778, p. 190); M. J. Tipton (written commun., 1986).
7. Tinton district	>100,000	>100,000	—	X	—	—	—	—	—	—	0	X	—	M. J. Tipton (written commun., 1986)
Pennington County	>149,000	>149,400	—											
4. Keystone district	~94,000	~94,000	—	X	—	X	—	—	—	—	0	(X)	—	Elevatorski (1981, p. 67).
5a. Hill City district	>23,000 (1939)	>23,000	—	X	—	X	—	—	—	—	0	—	—	Elevatorski (1981, p. 67); J.J. Norton, (written commun., 1982)
5b. Rockford district	6,000	6,000	—	—	—	—	—	—	—	X	0	—	—	M. J. Tipton (written commun., 1986); J.J. Norton, (written commun., 1982)
6. Rockerville placer district	20,000	20,000	—	—	—	—	—	—	—	—	—	X	—	—
TENNESSEE														
Polk County	—	—	—											
1. Ducktown district	14,872	>16,870	unknown	—	—	—	—	—	+	—	—	—	—	—
UTAH	[1]15,742,000	22,456,900 (2,329,900)	>7,475,800											
Beaver County	~55,800	~57,300	—											
1. San Francisco district	~33,400	~33,400	—	—	—	+	—	—	—	—	—	—	—	—
1a. Horn Silver mine	—	—	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 80).
1b. Golden Reef mine	—	—	—	—	—	—	—	—	—	—	0	—	—	~~Elevatorski (1981, p. 80).~~
Box Elder County	—	—	—											
18. Vipont	—	—	—	—	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p. 80).
Iron County	—	—	—											
2. Stateline district	12,760 (1943)	>12,760	60,000	—	—	X	—	—	—	—	0	—	—	Elevatorski (1982, p. 101); Eng. Mining Jour. Internat. Dir. (1983, v. 9, no. 12, p. 7).
Juab County	—	—	16,545											
3. Tintic district (incl. East Tintic district)	2,648,000	3,413,300*(e)	[2]>6,545	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 77); Skilling (1985, v. 74, no. 3, p. 6).
4. Drum Mountain-Detroit district (incl. Thomas Caldera property area)	—	—	10,000	—	—	—	—	—	—	—	X	—	—	Elavatorski (1981, p. 75); Mining Eng. (1983, v. 35, no. 5, p. 547).
Piute County	~240,000	~241,000*	—											
5. Gold Mountain district	~159,000	159,000	—	X	—	—	—	—	—	—	—	—	—	
5a. Deer Trail mine	—	—	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 80).
6. Mount Baldy district	77,500	77,500	—	—	—	+	—	—	—	—	—	—	—	
Salt Lake County	~10,651,000	16,693,500*(e)	~5,000,000											
7. Cottonwood district	~30,275	~30,300	—	—	(+)	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 81).
8. Bingham (West Mountain) district	~10,610,000	~16,700,000	~5,000,000e	—	(+)	+	—	+	—	—	—	(X)	—	Tooker (198).
Summit and Wasatch Counties	790,000	>1,311,500*	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 79).
9. Park City-Blue Ledge (Uinta)														

[1]Total includes 80 thousand oz not allocated to the districts below.
[2]Tintic mine, 1984.

Mining districts or deposits	Cumulative production and reserves (troy ounces): Beginning to 1959	Cumulative production and reserves (troy ounces): Through 1981	Cumulative production and reserves (troy ounces): Announced reserves or resources	Deposit Types: Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	References Cited
UTAH														
Tooele County	~1,257,000	~1,301,800*(e)	2,399,300											
10. Mercur (Camp Floyd) district	~1,115,000	~1,115,000	1,536,800	—	—	—	—	—	—	—	X	—	—	Mine Development Bimonthly (1983, v. 1, no. 1, p. 6).
11. Ophir (Rush Valley) district	~104,000	—	—	—	—	+	—	—	—	—	X	—	—	Elevatorski (1981, p. 81).
12. Stockton (Rush Valley) district	—	¹105,500	—	—	—	—	—	—	—	—	—	—	—	—
13. Gold Hill (Clifton) district	~26,000 (1951)	~26,000	²191,500	—	+	+	—	—	—	—	0	—	—	World Mining (1983, v. 36, no. 2, p. 55).
14. Willow Springs district	~11,650 ³	~11,650	—	—	—	X	—	—	—	—	—	—	—	
15. Carr Fork mine		39,700	671,000	—	+	—	—	—	—	—	—	—	—	W. J. Garmoe (written commun., 1982).
Utah County	—	—	—											
16. American Fork district	~45,000	~45,000	—	—	—	+	—	—	—	—	0	—	—	Elevatorski (1981, p. 81).
17. East Tintic district (incl. in Juab County)														
VIRGINIA	167,558	167,558	unknown											
Fauquier County	—	—	—											
1. Franklin Mine	~10,000e (1935)	~10,000	—	X	—	—	—	—	—	—	0	—	—	Elevatorski (1981, p. 82).
Fluvanna and Goochland Counties	—	—	—											
2. Tellurium, Moss, and Busby mines	~16,000e (1931)	~16,000	—	X?	—	—	—	X	—	—	—	—	—	—
Orange County	—	—	—											
3. Vaucluse mine	>50,000 (1938)	>50,000	—	—	—	X	—	—	—	—	0	X	—	Elevatorski (1981, p. 82).
Spotsylvania County	—	—	—											
4. Whitehall mine	90,000e? (1881)	90,000?	—	X	—	—	—	—	—	—	—	X	—	P. C. Sweet, (written commun., 1985).
WASHINGTON	⁴>2,300,000e	⁵>2,823,600	>2,361,800											
Chelan County	>646,900	⁶1,049,800	2,334,000											
1. Blewett (Peshastin) district	⁷~82,300	~82,300	—	—	—	X	—	—	—	—	—	X	—	—
2. Chelan Lake (Holden) district	>332,800	~⁶600,000	—	—	—	+	—	—	—	—	—	—	—	—
3. Entiat district	>10,000e (1930)	>10,000	—	X	—	—	—	—	—	—	—	(X)	—	
4. Wenatchee district	~190,000	420,000	2,234,000	—	—	—	—	—	—	—	X	—	—	Skillings (1983, v. 72, no. 35, p. 5); Calif. Mining Jour. (1984, v. 53, no. 8, p. 17).
Ferry County	>839,000	⁶>>962,600	27,800											
5. Republic district	836,400e	⁸>1,890,500(a)	27,800	—	—	+	—	—	—	—	X	(X)	—	Elevatorski (1981, p. 82); Eng. Mining Jour. (1985, v. 186, no. 2, p. 69).
King County	—	—	—											
6. Buena Vista-Miller River district	unknown	⁶10,700	—	X	—	—	—	—	—	—	—	—	—	Eng. Mining Jour. (1983, v. 9, no. 3, p. 7).

[1] Stockton and Ophir districts production combined since 1960.
[2] Yellow Hammum mine.
[3] Early production included in Bingham district; 1960 through 1981 production from Carr Fork mine.
[4] Bureau of Mines production data from 1957-1965 included production from Pennsylvania; total includes 274.3 thousand oz not allocated to districts below.
[5] Production data for 1977-1979 only; data in other years withheld by Bureau of Mines; several placer districts produced >10,000 oz, but unrecorded.
[6] Cumulative production through 1963 from MacLaren and others (1966, p. 85-87).
[7] Data from Weaver (1911, p. 71).
[8] Written commun., Raymond Lasmanis, 1985.

Mining districts or deposits	Cumulative production and reserves (troy ounces)			Deposit Types										References Cited
	Beginning to 1959	Through 1981	Announced reserves or resources	Quartz lode	Skarn	Polymetallic vein and replacement	Bonanza	Dispersed (porphyry)	Massive sulfide	Iron formation	Disseminated	Placer	Saprolite	
WASHINGTON														
Kittitas County	~50,000e	90,000	—											
7. Swauk district	>>10,000	[1]50,000	—	X	—	—	—	—	—	—	—	X	—	—
Okanogan County	85,000-90,000e	103,000-111,000	—	—										
8. Cascade district	10,000-15,000e	10,000-15,000	—	X	—	—	—	—	—	—	—	—	—	—
9. Methow district	>16,470	~16,470	—	X	—	—	—	—	—	—	0	(X)	—	Elevatorski (1981, p. 83).
10. Myers Creek district	>9,500	[1]24,700	—	—	+	+	—	—	—	—	—	—	—	—
11. Oroville-Nighthawk district	~50,000e (1921)	[1]54,800	—	—	—	+	—	+	—	—	—	X	—	—
Snohomish County	>350,000e	~350,000	—											
12. Monte Cristo district	~344,000e (1917)	[1]~227,000	—	—	—	—	—	+	—	—	0	(X)	—	Elevatorski (1981, p. 84).
13. Silverton district	(1909)	[1]~114,900	—	—	—	+	—	—	—	—	—	(X)	—	—
Stevens County	>52,150	[1]56,500	—											
14. Orient district	~45,060	~45,100	—	—	—	—	—	X	—	—	—	—	—	—
Whatcom County	[2]>91,600 (1953)	~[1]193,000?	—											
15. Mount Baker district	~55,000e (1948)	[1]43,300	—	—	—	X	—	—	—	—	—	(X)	—	—
16. Slate Creek district	>29,170 (1933-1953)	[1]149,700	—	—	—	X	—	—	—	—	—	—	—	—
WISCONSIN														
Forest County	—	—	unknown											
1. Crandon district	none	none	unannounced[3]	—	—	—	—	±	±	—	—	—	—	Dutton and Prinz (1976, p. 117); Mining Jour. (1982, v. 299, no. p. 375).
Oneida County	—	—	—											
2. Rhinelander-Pelican district	none	none	unannounced[3]	—	—	—	—	—	±	—	—	—	—	Dutton and Prinz (1976, p. 117).
Rusk County	—	—	—											
3. Flambeau (Ladysmith) district	none	none	unannounced[3]	—	—	—	—	—	±	—	—	—	—	Dutton and Prinz (1976, p. 117).
WYOMING	~82,000	~82,100	>>146,000,000											
Albany County	—	—	—											
1. Douglas Creek district	10,000-12,000	>12,000	—	X	—	+	—	—	—	—	0	X	—	Hausel, (1980, p. 21); Elevatorski (1981, p. 84).
Fremont County	—	—	—											
2. Atlantic City-South Pass district	>325,000	>325,000	—	X	—	—	—	—	—	—	0	X	—	Hausel (1980, p. 7); Elevatorski (1981, p. 84).
4. Dixie Springs district	unknown	unknown	>28,500,000	—	—	—	—	—	—	—	—	X	—	Hausel (1980, p. 18).
Park County	—	—	—											
3. Kirwin district	minor	minor	unknown, but large	—	—	(+)	—	+	—	—	—	—	—	Wilson (1964).
Teton County	—	—	~146,000,000	—	—	—	—	—	—	—	X	—	—	Antweiller and Love (1967); Hausel (1980, p. 57).

[1]Cumulative production through 1963 from MacLaren and others (1966, p. 85-87).
[2]Production data from 1903-1952 (Hunting, 1955, p. 34-35).
[3]Undeveloped district, byproduct gold reserves unannounced, but substantial.