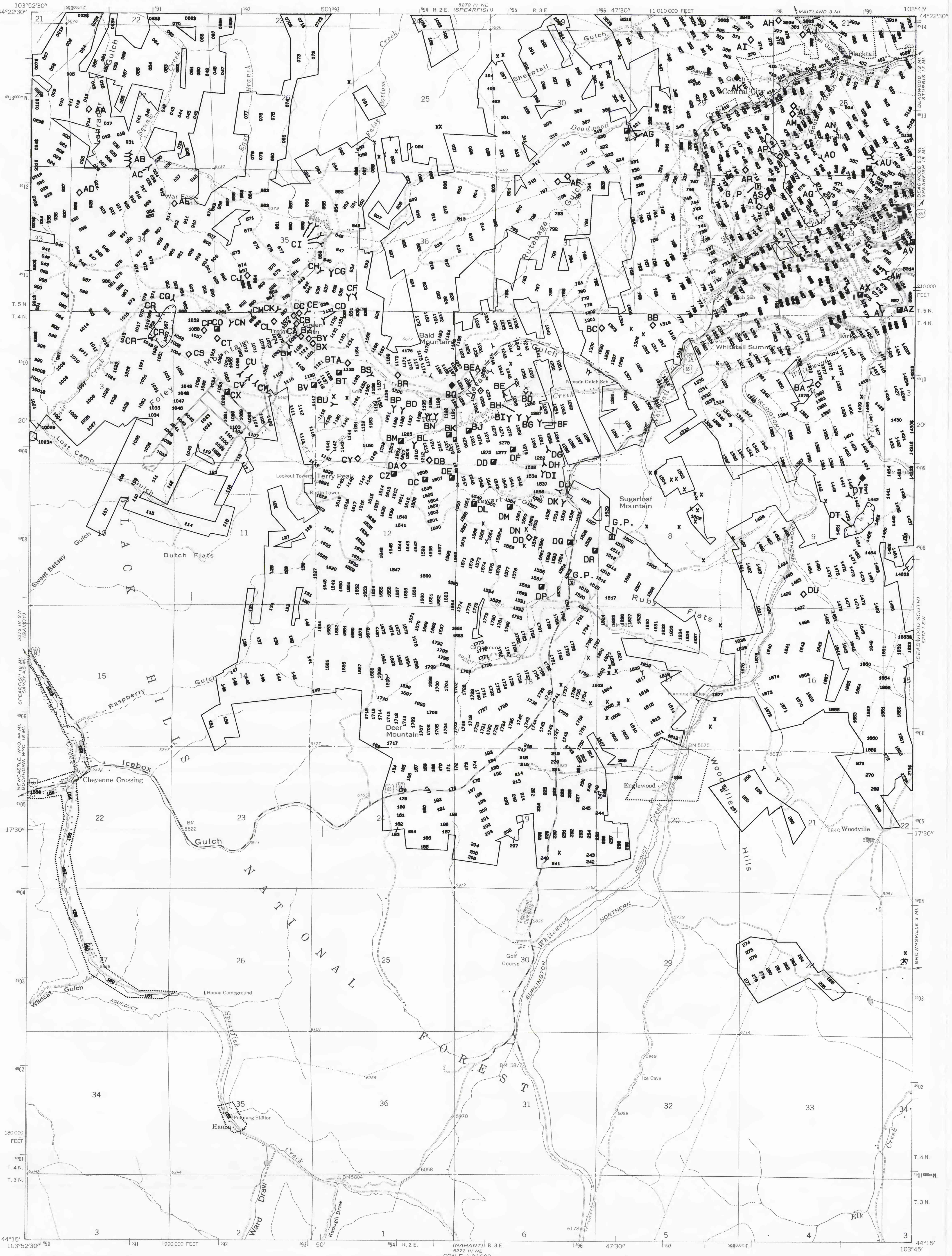
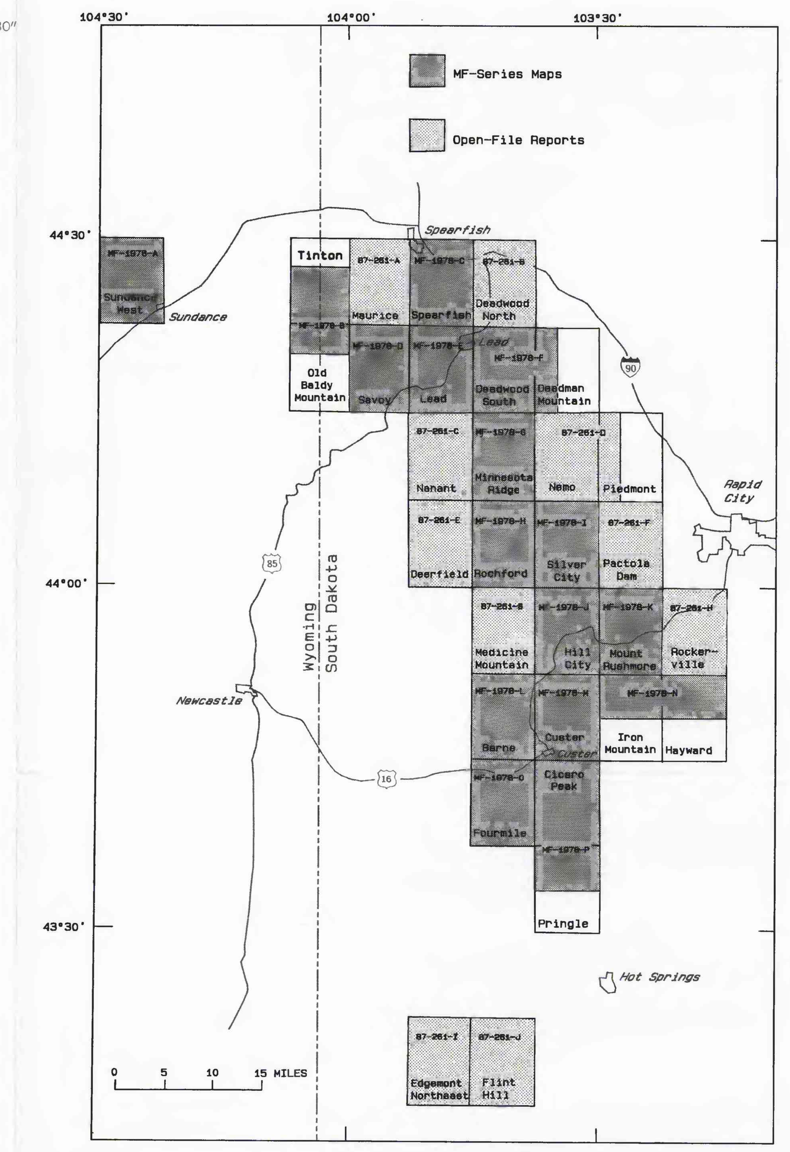
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF–1978–E
PAMPHLET ACCOMPANIES MAP





INDEX MAP SHOWING MINES AND PROSPECTS MAPS (MF-SERIES MAPS AND OPEN-FILE REPORTS) IN THE BLACK HILLS REGION

EXPLANATION

Mine--Location known. Distinguished from prospect by name of mine next to symbol. Alternate names or synonym(s) in parentheses. If there is enough space on the map, the entire mine name and synonym(s) are shown; otherwise, mine name may be abbreviated and synonym(s) deleted from map. Full mine names and all synonyms are shown in the "Alphabetic list of mines"

- Adit
- Shaft
- Open pit or other type of opening
- Gravel pit

Mine--Approximate location shown. Open pit, shaft, adit, or other type of opening

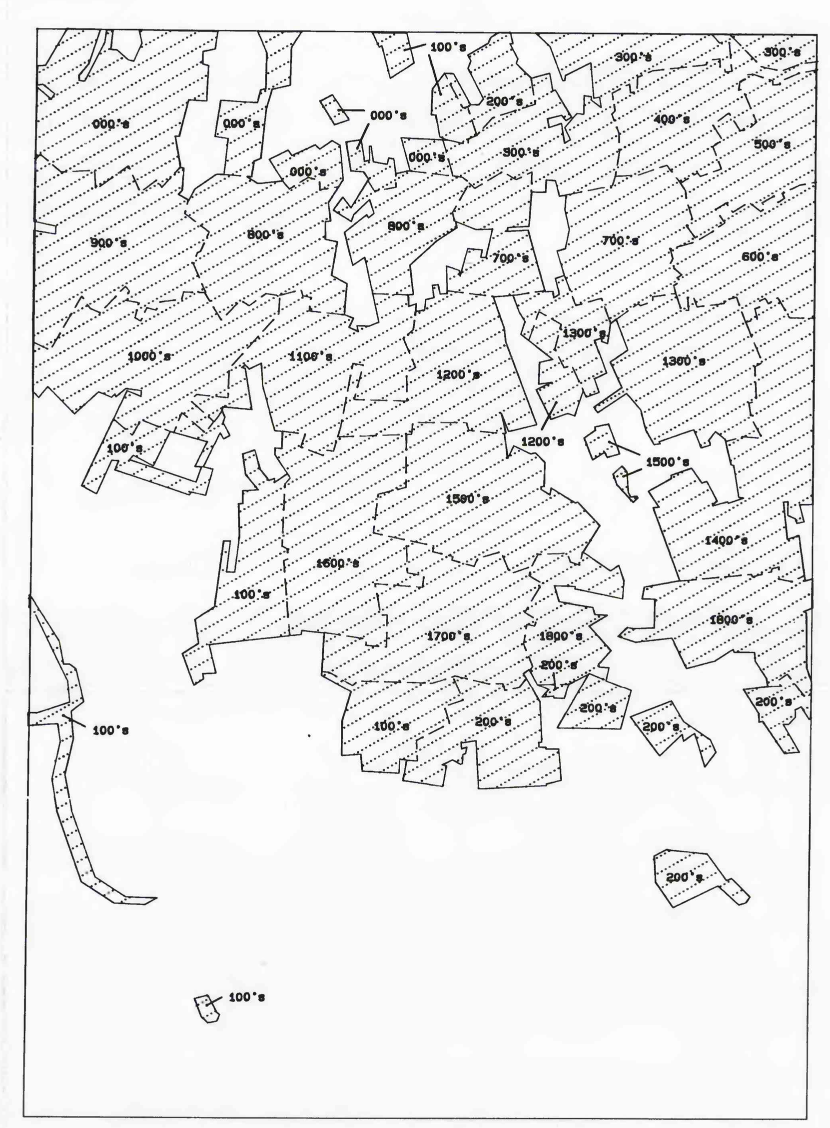
Prospect

- Adit
- Shaft
- Pit

Patented claim--See alphabetic and numeric lists of patented claims. Asterisk (*) indicates part of claim extends into adjacent quadrangle. Dollar sign ($) indicates most of claim in adjacent quadrangle. Boundaries between claims not shown

002 Lode claim--Orientation of number parallel to long axis of claim

004$ Placer claim--Number approximately in center of claim



INDEX MAP OF THE LEAD QUADRANGLE SHOWING APPROXIMATE LOCATION OF NUMBERED PATENTED MINING CLAIMS (FOR EXAMPLE, 1700's INDICATES NUMBERS FROM 1700 to 1799). SEE PAMPHLET FOR LISTS OF CLAIMS

INTRODUCTION

This map is one in a set of 26 maps (see index map) at 1:24,000 scale of the Black Hills region of South Dakota and Wyoming on which are shown a geologic classification of mines, a bibliography of mineral deposits, and locations of active and inactive mines, prospects, and patented mining claims. Some of these maps are published as U.S. Geological Survey Miscellaneous Field Studies Maps (MF series) and some as U.S. Geological Survey Open-File Reports (OF series); see index map. An earlier unpublished version of this set of maps was the data base from which plate 4 (scale 1:250,000) of DeWitt and others (1986) was compiled. Subsequent to that publication the set has been revised and updated and prospects and patented claims have been added. These revised and more detailed 1:24,000-scale maps should be used for the equivalent areas of plate 4 of DeWitt and others (1986).

SOURCES OF INFORMATION

Outlines of patented mining claims were obtained from 1:24,000-scale Forest Service Status Plats, available for inspection at the U.S. Forest Service, Rocky Mountains Region, 11,117 West 8th Avenue, Denver, CO 80225. Names of most patented claims were obtained from Wilhelm and others (1978). Other names were obtained from the Lawrence County Courthouse, Deadwood, South Dakota. Claims have been located as accurately as possible, but this map is not intended to be used for legal nor precise locations of mining claims.

Locations of mines and prospects were compiled from all available published and unpublished data. The locations of active and inactive mines in this quadrangle were taken from Allsman (1940), Connolly (1927, 1933), Irving (1899), O'Harra (1902), Shapiro and Gries (1970), U.S. Bureau of Mines (1954, 1986), and U.S. Geological Survey (1986). Also, in some instances, different sources of information gave conflicting location information for mines with the same name. Where possible, this conflict was resolved by comparing the name of the mine to adjacent patented claims, by comparing the description of the deposit to the known geology and topography of the area, or by communication with past owners of the property. In some instances, a unique location could not be determined with existing information; in that event the most logical location was chosen. The location of some or many mines on this map may differ from those in present data bases such as the U.S. Bureau of Mines Mineral Inventory Location System (MILS) or the U.S. Geological Survey Mineral Resources Data System (MRDS), formerly the Computerized Resources Information Bank (CRIB).

Locations of prospects in this quadrangle were taken from Bayley (1972), Parkhill (1976), and Shapiro and Gries (1970). Because many quadrangles, or parts of quadrangles, have not been mapped in as much detail as other quadrangles, comparison of the density of prospects from one quadrangle to another, or even within one quadrangle, should not be attempted. As an example, part of a quadrangle may be shown on the map as having more prospects than another part, but the first part may have been mapped in greater detail than the second part. Similarly, a part of a quadrangle may have many prospects that are not shown on this map because the original source of information did not map prospect pits.

Because so many articles have been written concerning mineral deposits in the Lead quadrangle, the references are divided into 1) geologic and mining articles concerning the Homestake mine and 2) other geologic papers that deal primarily with Phanerozoic mineral deposits. References concerning the Homestake mine include those by Anonymous (1905, 1931a, 1931b), Artus (1962), Bayley (1972), Bidgood (1977), Blackstone (1916), P. H. Bond (1970), W. D. Bond (1982), Chinn (1969), Clark and Sharwood (1913), Connolly and O'Harra (1929), Connolly (1974), Darton and Paige (1925), DeWitt and others (1986), Dodge (1942), Fiedler (1970), Gustafson (1933), Hewett (1903), Homestake Mining Company (1976), Hosted and Wright (1923), Irving and Emmons (1904), Irving, Emmons, and Jaggar (1904), Jaggar (1904), Jeffries and Tczap (1978), Kleinkopf and Redden (1975), Koch and Link (1967, 1971), Koschmann and Bergendahl (1968), Kulp and others (1956), Machacha (1982), Mathisrud and Sumner (1967), McCarthy (1976), McConnell (1964), McLaughlin (1931a, 1931b, 1933a, 1933b, 1949a, 1949b), Merrill (1904), Moore (1925), Myron (1928), Nelson (1981), Nicholas (1908), Noble (1939, 1950), Noble and Harder (1948), Noble, Harder, and Slaughter (1949), O'Harra (1916), Paige (1913, 1923, 1924), Pock (1984), Raychaudhuri (1964), Redden and Norton (1975), Rickard (1895), Robie (1926), Rye, Doe, and Delevaux (1974), Rye and Rye (1974), Sawkins and Rye (1974, 1975), Semple (1911), Sharwood (1911a), Simmons (1933), Jesse Simmons (1913b), Sisselman (1976), Slaughter (1968a, 1968b), Tesch (1974), Waterland and Connolly (1966), Wayland (1935, 1936), Wolfgram (1977), Wright (1926, 1937), Wright and Hosted (1921), A. B. Yates (1926), B. C. Yates (1904, 1926), and Zeitner (1964, 1976a, 1976b).

References concerning Phanerozoic mineral deposits and geology include those by Anderson (1915), Bayley (1972), Connolly (1927), Connolly and O'Harra (1929), Darton (1909), Darton and Paige (1925), Devereux (1882), DeWitt and others (1986), Fox (1984), Fredlund and Cope (1968), Geibink and Paterson (1986), Goodrich (1937), Grout and Schwartz (1927), Heidt (1977), Hughes (1924), Hummel (1952), Jaggar (1901, 1904), Jumnongthai (1979), Karner (1981), Kirchner (1971), Kleinkopf and Redden (1975), Koschmann and Bergendahl (1968), Kulik (1965), Larsen (1977), Lisenbee (1981), Manion (1916a, 1916b), McCracken and Johnson (1923), Miller (1962), Norton (1983), Norton and Redden (1975), Olson (1976), Paige (1924), Parkhill (1976), Raychaudhuri (1964), Roberts and Rapp (1965), Runner and Hartman (1918), Shapiro and Gries (1968, 1970), Sharwood (1911b), Simmons (1910, 1913a, 1913c, 1914), Slaughter (1937), Smith (1896, 1897), Storms (1899), Usiriprisan (1979), Vickers (1954), Willard (1914, 1916), and Zeitner (1977).

PRECISION OF LOCATION INFORMATION

All mine symbols except the unfilled diamond (◇) indicate that the location of the deposit is known within a 200-foot radius. The type of opening at a mine (adit, shaft, open pit, trench, and others) is designated by one of ten different symbols. The unfilled diamond symbol indicates that the location is known only to within a 1/4 mile radius and that the type of mine opening is unknown.

Mines and prospects whose locations could not be verified to within closer than a 1/4 mile radius were not plotted on the map.

PATENTED CLAIM AND MINE LISTS

In the pamphlet, patented mining claims are listed both numerically and alphabetically. Mines are listed alphabetically. For ease in locating the claim or mine on the map, the legal description (section, township, range) is given.

Each patented claim on the map is represented by a number keyed to the numeric and alphabetic listings in the pamphlet. Where possible, the claim numbers are plotted approximately in the center of the claim and parallel to its long axis. Boundaries between adjacent claims are not shown. An asterisk (*) following a claim number indicates that most of the claim is in this quadrangle, but it extends into the adjacent quadrangle. A dollar sign ($) following a claim number indicates that most of the claim is in the adjacent quadrangle, but part of it is in this quadrangle. Claims outlined with a solid line are patented lode claims; claims outlined with a dotted line are patented placer claims. Many placer workings on unpatented claims have not been plotted on the maps, principally because the workings lacked a name.

On the map, the most common or most used name of a mine is normally next to its mine symbol. If there is space, any alternate names or synonyms are in parentheses following the most common name. On some maps, where space does not permit showing the first name or any alternate names, the names are shown by a single letter, two letters, or an abbreviation of the name; the mines are keyed to that letter or abbreviation in the alphabetic and numeric lists. Mines with more than one name have the alternate name(s) or synonym(s) shown in parentheses in the alphabetic lists. The first alternate name or synonym is also alphabetized in the alphabetic list of mines; second or third alternate names may not be alphabetized. Uncertain alternate names are not alphabetized and are followed by a query (?).

CLASSIFICATION OF MINES AND DEPOSITS

Mines and deposits are categorized according to geologic criteria of age, environment of formation, and contained metals, as in DeWitt and others (1986, p. 52-53). Deposit-type letter designations (C, L, and so on), corresponding to those in DeWitt and others (1986), are used in the alphabetic list of mines. The criteria used for the deposit types are briefly summarized below and are explained more fully in DeWitt and others (1986).

PRINCIPAL TYPES OF DEPOSITS

C--Early Proterozoic carbonate-, silicate-, and sulfide-facies iron-formations are syngenetic stratiform deposits of gold, silver, and arsenic formed in a submarine environment about 1.8-2.2 Ga. The metals were concentrated in sedimentary and volcaniclastic rocks by biologic, sedimentologic, or hydrothermal processes.

L--Cambrian paleoplacers are bedded sedimentary deposits of gold formed in a surface weathering environment about 500 Ma. Rivers concentrated heavy detrital minerals along stream channels.

S and T--Paleocene or Eocene vein and replacement deposits are predominantly in Paleozoic strata as discordant to concordant bodies containing base and precious metals. Mineralization took place in an epithermal environment about 50-60 Ma by hydrothermal alteration and metallization of wall rocks near Tertiary intrusive bodies. S, base-metal-rich deposits containing lead, zinc, and silver, and minor amounts of copper and gold. T, precious-metal-rich deposits containing gold and minor amounts of silver, lead, zinc, and copper.

U and V--Paleocene or Eocene disseminated and porphyry-type deposits are fracture-filling, vein, and disseminated concentrations of base and precious metals formed in a plutonic to subvolcanic environment about 50-60 Ma. Fracturing and hydrothermal alteration of Tertiary quartz-bearing igneous rocks resulted in precipitation of sulfide minerals rich in base and precious metals. U, base-metal-rich deposits containing molybdenum, lead, and minor amounts of silver and copper. V, precious-metal-rich deposits containing gold, copper, and minor amounts of silver and lead.

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MAP SHOWING LOCATIONS OF MINES, PROSPECTS, AND PATENTED MINING CLAIMS, AND CLASSIFICATION OF MINERAL DEPOSITS IN THE LEAD 7½-MINUTE QUADRANGLE, BLACK HILLS, SOUTH DAKOTA

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