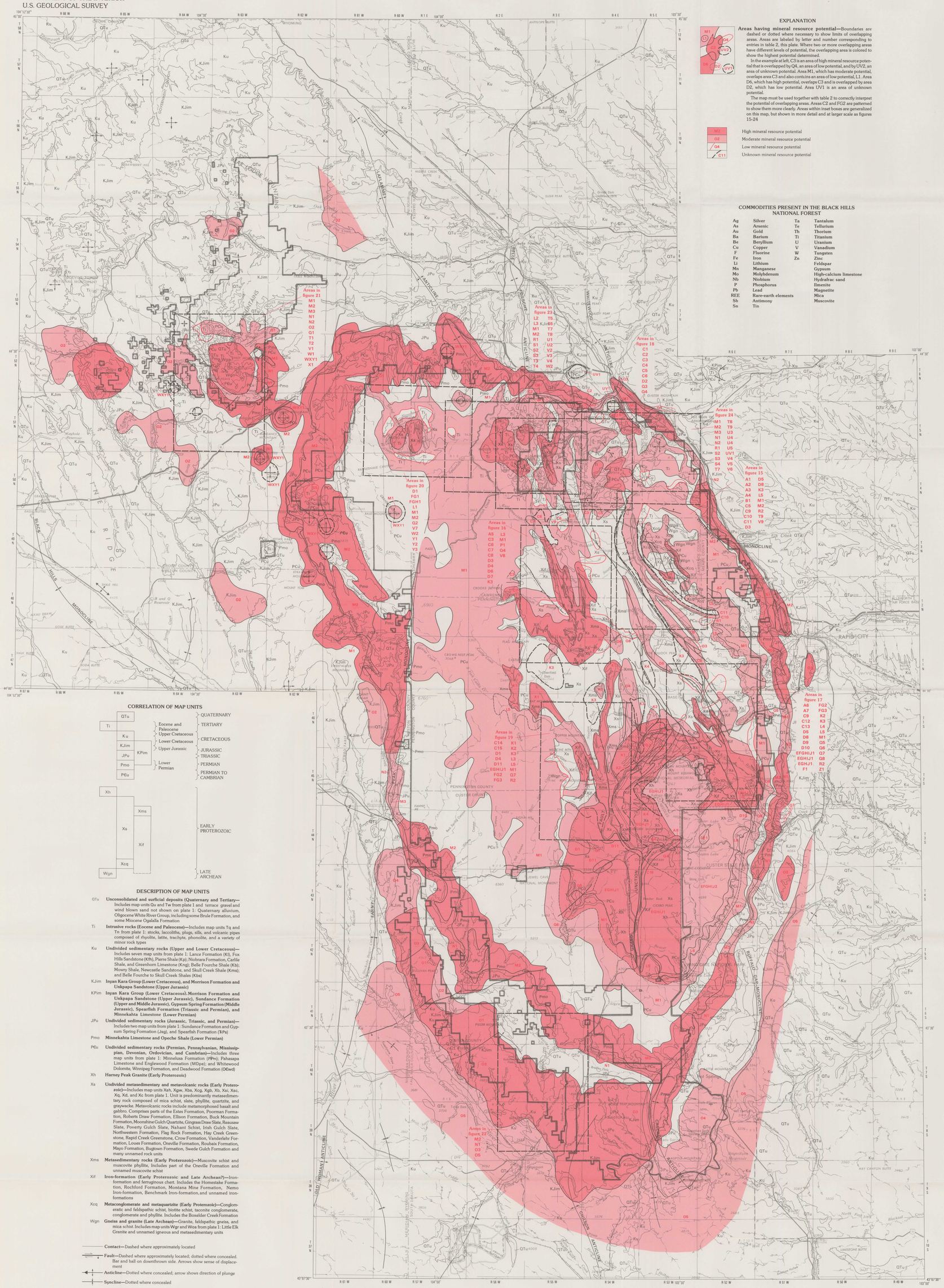



## EXPLANATION




**Areas having mineral resource potential**—Boundaries are dashed or dotted where necessary to show limits of overlapping areas. Areas are labeled by letter and number corresponding to entries in table 2, this plate. Where two or more overlapping areas have different levels of potential, the overlapping area is colored to show the highest potential determined.

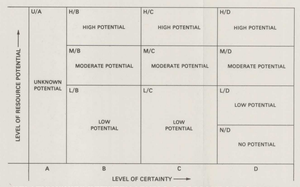
In the example at left, C3 is an area of high mineral resource potential that is overlapped by Q4, an area of low potential, and by UV2, an area of unknown potential. Area M1, which has moderate potential, overlaps area C3 and also contains an area of low potential, L1. Area D6, which has high potential, overlaps C3 and is overlapped by area D2, which has low potential. Area UV1 is an area of unknown potential.

The map must be used together with table 2 to correctly interpret the potential of overlapping areas. Areas C2 and FG2 are patterned to show them more clearly. Areas within inset boxes are generalized on this map, but shown in more detail and at larger scale as figures 15-24

M3 — High mineral resource potential
O2 — Moderate mineral resource potential
Q4 — Low mineral resource potential
C11 — Unknown mineral resource potential

## COMMODITIES PRESENT IN THE BLACK HILLS NATIONAL FOREST

| | | | |
|---|---|---|---|
| Ag | Silver | Ta | Tantalum |
| As | Arsenic | Te | Tellurium |
| Au | Gold | Th | Thorium |
| Ba | Barium | Ti | Titanium |
| Be | Beryllium | U | Uranium |
| Cu | Copper | V | Vanadium |
| F | Fluorine | W | Tungsten |
| Fe | Iron | Zn | Zinc |
| Li | Lithium | | Feldspar |
| Mn | Manganese | | Gypsum |
| Mo | Molybdenum | | High-calcium limestone |
| Nb | Niobium | | Hydrafrac sand |
| P | Phosphorus | | Ilmenite |
| Pb | Lead | | Magnetite |
| REE | Rare-earth elements | | Mica |
| Sb | Antimony | | Muscovite |
| Sn | Tin | | |




## RELATIONSHIPS BETWEEN LEVELS OF RESOURCE POTENTIAL AND LEVELS OF CERTAINTY

### Levels of resource potential

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

### Levels of certainty

- D — Data define geologic environment and level of resource potential and indicate resource-forming processes in all or part of the area
- C — Data partially define geologic environment and indicate a resource potential and indicate resource-forming process in some of the area
- B — Data partially define geologic environment and suggest level of resource potential
- A — Available data not adequate for evaluation of resource potential

## TYPES OF DEPOSITS

- **A** — Archean(?) and Proterozoic taconitic iron-formation: stratiform metasedimentary deposits formed in submarine environment about 2.2-2.5 Ga when iron and silica were concentrated in sedimentary rocks by volcanic or chemical processes
- **B** — Proterozoic quartz-pebble conglomerate: stratiform metasedimentary deposits formed in shallow-water environment about 2.2 Ga when uranium and thorium were concentrated in sedimentary rocks by low-temperature fluids
- **C** — Proterozoic carbonate-, silicate-, and sulfide-facies iron-formation: syngenetic stratiform deposits formed in submarine environment about 1.8-2.2 Ga when gold and arsenic were concentrated in sedimentary and volcaniclastic rocks by biologic, sedimentologic, or hydrothermal processes
- **D** — Proterozoic veins and shear zones: discordant veins formed in a metamorphic and tectonic environment about 1.6-1.9 Ga when hydrothermal solutions concentrated precious and base metals in metasedimentary rocks
- **E, F, G, H, I, J** — Proterozoic pegmatite: formed in igneous and metamorphic environment about 1.6-1.8 Ga when late-stage magmatic products of the Harney Peak Granite concentrated trace metals in the surrounding metamorphic rocks and the granite
- **K** — Proterozoic muscovite-rich schist: bedded metamorphic deposits formed in near-surface environment about 1.7-2.0 Ga when extreme weathering and leaching of metals concentrated aluminum in shale
  - Proterozoic pyrite-rich slate: possible stratabound deposits formed in reducing environment about 1.7-2.0 Ga when iron, carbon, and, possibly, precious metals, were concentrated in deep-water mud and silt
- **L** — Paleoplacer: bedded sedimentary deposits formed in surface-weathering environment about 500 Ma when rivers concentrated heavy detrital minerals, especially gold, along stream channels
  - Paleobeach: bedded sedimentary deposits formed in surface marine environment about 500 Ma when wave action created clean concentrations of well-rounded silica sand
- **M** — High-calcium limestone: bedded sedimentary deposits formed in shallow-water marine environment about 250-350 Ma by precipitation of calcium carbonate from seawater and accumulation of organisms rich in calcium carbonate
- **N** — Gypsum: bedded sedimentary deposits formed in shallow-water marine and surface environment about 250 Ma when restricted basins of seawater evaporated in an arid climate to form deposits of salt and related minerals
- **O** — Roll-front deposits: stratabound deposits formed in near-surface environment by low-temperature fluids rich in uranium and vanadium
- **P** — Bog iron deposits: colluvial concentrations of iron-rich material formed in present-day surface-weathering environment characterized by cool, moist conditions
- **Q** — Placer: bedded sedimentary deposits formed in terrestrial environment by rivers transporting and concentrating heavy minerals, especially gold, in stream channels
- **R** — Paleocolluvium: stratabound deposits formed in surface-weathering environment about 500 Ma by minor transport of iron-rich materials from underlying Proterozoic rocks
- **S, T** — Vein and replacement deposits: discordant to concordant base- and precious-metal-rich deposits formed in epithermal environment about 60 Ma by hydrothermal alteration and metallization of Paleozoic wall rocks near Tertiary plutonic bodies
- **U, V** — Disseminated and porphyry-type deposits: fracture-filling, vein, and disseminated concentrations of base and precious metals formed in plutonic to subvolcanic environment about 60 Ma by fracturing and hydrothermal alteration of Tertiary quartz-bearing plutonic complexes
- **W, X, Y** — Disseminated and carbonatite deposits: fracture-filling, vein, and disseminated concentration of base and precious metals and rare-earth-element-rich metals formed in plutonic to subvolcanic environment about 50-60 Ma by fracturing and metasomatic alteration of Tertiary alkaline igneous complexes and associated carbonatite
- **Z** — Vein deposits: discordant to concordant veins formed in tectonic environment about 65 Ma by hydrothermal fluids rich in base metals

Table 2. Description of areas having mineral resource potential for locatable resources in and adjacent to the Black Hills National Forest

[REE, rare-earth elements; level of potential/level of certainty explained in schematic diagram, this plate; commodities listed in order of relative importance; where variable sizes of deposits are shown, the most probable size is listed first]

| Map area | Resource potential | Level of potential/ level of certainty | Commodities (by-products) | Size, type of deposit |
|---|---|---|---|---|
| A1 | High------- | H/D | Fe (Ti)---------- | Large, stratiform sedimentary. |
| A2 | Moderate-- | M/D | Fe (Ti)---------- | Medium, stratiform sedimentary. |
| A3 | Moderate-- | M/D | Fe (Ti)---------- | Medium, conglomeratic sedimentary. |
| A4 | High------- | H/D | Fe (Ti)---------- | Large, conglomeratic sedimentary. |
| A5 | Low-------- | L/D | Fe (Ti, Au, Ag)---------- | Small, stratiform sedimentary. |
| A6 | Low-------- | L/D | Fe (Mn, Au, Ag, Cu)---------- | Medium, stratiform sedimentary. |
| A7 | High------- | H/D | Fe (Mn, Ti)---------- | Medium, stratiform sedimentary. |
| A8 | Low-------- | L/D | Fe (Ti, Au)---------- | Small, stratiform sedimentary. |
| B1 | Moderate-- | M/D | U (Au)---------- | Small-medium, conglomeratic sedimentary stratiform. |
| C1 | High------- | H/D | Au (Ag, As)---------- | Large, syngenetic stratiform. |
| C2 | Moderate-- | M/D | Au (Ag, As)---------- | Large, syngenetic stratiform. |
| C3 | Moderate-- | M/D | Au (Ag, As)---------- | Medium, syngenetic stratiform. |
| C4 | Moderate-- | M/D | Au (Ag, As)---------- | Large, syngenetic stratiform. |
| C5 | Moderate-- | M/D | Au (Ag, As)---------- | Small-medium, syngenetic stratiform. |
| C6 | Unknown--- | U/A | Au (Ag)---------- | Size unknown, syngenetic stratiform. |
| C7 | High------- | H/D | Au (Ag, As)---------- | Medium, syngenetic stratiform. |
| C8 | Moderate-- | M/C | Au (Ag, As)---------- | Large, syngenetic stratiform. |
| C9 | Moderate-- | M/C | Au (Ag, Cu, As)---------- | Small, syngenetic stratiform. |
| C10 | Moderate-- | M/C | Au (Ag, As)---------- | Medium, syngenetic stratiform. |
| C11 | Unknown--- | U/A | Au (Ag, As)---------- | Medium-small, syngenetic stratiform. |
| C12 | High------- | H/D | Au (Ag, As, Cu, Mo)---------- | Medium, syngenetic stratiform. |
| C13 | Moderate-- | M/C | Au (Ag, Cu)---------- | Small-medium, syngenetic stratiform. |
| C14 | High------- | H/C | Au (Ag, As)---------- | Small-medium, syngenetic stratiform. |
| C15 | Moderate-- | M/C | Au (Ag, As)---------- | Small, syngenetic stratiform. |
| C16 | Moderate-- | M/C | Au (Ag, As)---------- | Small-medium, syngenetic stratiform. |
| D1 | Moderate-- | M/D | Au, Ag (Cu)---------- | Small, vein or shear zone. |
| D2 | Moderate-- | M/D | Au, Ag, Pb (Zn, As)---------- | Small-medium, vein. |
| D3 | Low-------- | L/C | Au, Ag---------- | Small, vein or shear zone. |
| D4 | Moderate-- | M/D | Au, Ag (Zn)---------- | Small-medium, vein. |
| D5 | Moderate-- | M/C | Au, Ag (Pb, Sb)---------- | Small, vein or shear zone. |
| D6 | Moderate-- | M/C | Au, Ag (Cu)---------- | Small, vein. |
| D7 | Moderate-- | M/D | Au, Ag (As, Zn)---------- | Small, vein. |
| D8 | Low-------- | L/A | Au, Ag---------- | Small, vein or shear zone. |
| D9 | Moderate-- | M/C | Au, Ag---------- | Small, vein. |
| D10 | High------- | H/D | Au, Ag (As, Pb, Zn)---------- | Small-medium, vein or shear zone. |
| D11 | Low-------- | L/D | Au, Ag---------- | Small, vein. |
| EFGHIJ1 | Moderate-- | M/D | Feldspar, mica (pegmatite commodities). | Medium-small, pegmatite. |
| EFGHIJ2 | Moderate-- | M/C | Pegmatite commodities---------- | Medium-small, pegmatite. |
| EGHIJ1 | High------- | H/D | Pegmatite commodities---------- except Sn. | Small-medium, pegmatite. |
| EGHI1 | High------- | H/D | Feldspar, mica, Li---------- (pegmatite commodities except Sn, Be). | Small, pegmatite. |
| EGHJ1 | High------- | H/D | Pegmatite commodities---------- except Sn and mica. | Small-medium, pegmatite. |
| EHIJ1 | High------- | H/D | Feldspar, mica, Be---------- (pegmatite commodities except Sn, Li). | Small, pegmatite. |
| F1 | Low-------- | L/D | W (Sn)---------- | Small, skarn or vein. |
| FG1 | High------- | H/D | Sn, Li (W, Ta, pegmatite commodities). | Small, pegmatite. |
| FG2 | High------- | H/D | Sn, Li (W, Ta, Nb), ---------- (pegmatite commodities). | Small, pegmatite or quartz vein. |
| FG3 | Moderate-- | M/C | Sn, Li (pegmatite---------- commodities, W, Ta). | Small, pegmatite. |
| FGH1 | Moderate-- | M/D | Sn, Li, feldspar (W, Ta, pegmatite commodities). | Small, pegmatite. |
| K1 | High------- | H/D | Muscovite (magnetite, Ilmenite). | Large, bedded metamorphic. |
| K2 | Moderate-- | M/C | Muscovite (magnetite,---------- Ilmenite). | Large, bedded metamorphic. |
| K3 | Unknown--- | U/A | Au, Ag, V, Cu---------- | Large, stratabound. |
| K4 | Unknown--- | U/A | Au, Ag, V, Cu---------- | Medium-small, stratabound or vein. |
| L1 | Low-------- | L/C | Au---------- | Small-medium, paleoplacer. |
| L2 | Moderate-- | M/D | Au---------- | Small, paleoplacer. |
| L3 | Low-------- | L/C | Au---------- | Small, paleoplacer. |
| L4 | Low-------- | L/C | Au---------- | Small, paleoplacer. |
| L5 | Moderate-- | M/D | Hydrafrac sand---------- | Medium, paleobeach. |
| L6 | Low-------- | L/C | Hydrafrac sand---------- | Medium, paleobeach. |
| M1 | Moderate-- | M/D | High-calcium limestone---------- | Medium, bedded sedimentary. |
| M2 | High------- | H/D | High-calcium limestone---------- | Large, bedded sedimentary. |
| M3 | Moderate-- | M/D | High-calcium limestone---------- | Large-medium, bedded sedimentary. |
| N1 | High------- | H/D | Gypsum---------- | Medium, bedded sedimentary. |
| N2 | Moderate-- | M/D | Gypsum---------- | Medium, bedded sedimentary. |
| O1 | High------- | H/C | U, V---------- | Medium, stratabound. |
| O2 | Moderate-- | M/C | U, V---------- | Medium-small, stratabound. |
| O3 | High------- | H/D | U, V---------- | Medium, stratabound. |
| O4 | Moderate-- | M/B | U, V---------- | Small-medium, stratabound. |
| O5 | Moderate-- | M/C | U, V---------- | Medium-large, stratabound. |
| P1 | Moderate-- | M/D | Fe (Au)---------- | Small-medium, colluvium. |
| Q1 | Moderate-- | M/C | REE, Mn, Th, Ti (Au,---------- Pb, U). | Small-medium, placer. |
| Q2 | Moderate-- | M/D | Au, Sn, W, Ta---------- | Small, placer. |
| Q3 | Moderate-- | M/B | Au---------- | Medium-small, placer. |
| Q4 | Low-------- | L/D | Au---------- | Small-medium, placer. |
| Q5 | Moderate-- | M/D | Au---------- | Small-medium, placer. |
| Q6 | Moderate-- | M/D | Au (Sn, Ta)---------- | Small, placer. |
| Q7 | Low-------- | L/C | Au---------- | Small, placer. |
| Q8 | Low-------- | L/C | Au (Sn, W)---------- | Small-medium, placer. |
| R1 | Moderate-- | M/D | Fe---------- | Medium-small, stratabound. |
| R2 | Low-------- | L/B | Fe---------- | Small, stratabound. |
| S1 | High------- | H/D | Pb, Ag, Zn, Au (W)---------- | Small-medium, vein or replacement. |
| S2 | Low-------- | L/C | Pb, Ag (Sn, Au)---------- | Small, replacement or vein. |
| S3 | Moderate-- | M/D | Pb, Zn (Ag, Au)---------- | Small, replacement. |
| S4 | High------- | H/B | Pb, Ag, Zn (Au)---------- | Medium-small, replacement or vein. |
| S5 | Low-------- | L/D | Pb, Zn (Ag)---------- | Small, replacement or vein. |
| T1 | Low-------- | L/A | Au, Ag (Th, U)---------- | Small, vein. |
| T2 | High------- | H/D | Au, Ag, Mn, REE, Pb, Th---------- (Ba, U). | Small-medium, vein or replacement. |
| T3 | Moderate-- | M/D | Au, Ag (Te, Cu)---------- | Small, vein or replacement. |
| T4 | Moderate-- | M/D | Au, Ag (As, F, Te)---------- | Medium, vein or replacement. |
| T5 | Moderate-- | M/D | Au, Ag (Te, As)---------- | Medium-small, vein or replacement. |
| T6 | Moderate-- | M/D | Au, Ag, W (As)---------- | Small-medium, vein or replacement. |
| T7 | Moderate-- | M/C | Au, Ag (As, Te)---------- | Medium-small, vein or replacement. |
| T8 | Low-------- | L/A | Au, Ag (Pb, Zn)---------- | Small, vein or replacement. |
| T9 | Moderate-- | M/C | Au, Ag (Cu)---------- | Small, vein. |
| U1 | High------- | H/D | Mo, Cu (Ag, W, Pb)---------- | Medium, disseminated or porphyry. |
| U2 | Moderate-- | M/C | Mo, Ag (Pb)---------- | Medium-small, disseminated. |
| U3 | Moderate-- | M/C | Mo, Cu (Ag, Pb, Zn)---------- | Medium, disseminated. |
| U4 | Moderate-- | M/B | Mo, Cu (Ag, Pb, Zn)---------- | Medium, disseminated. |
| U5 | Low-------- | L/B | Mo, Cu (Ag, Pb)---------- | Medium-small, disseminated. |
| UV1 | Unknown--- | U/A | Mo, Cu (Ag, Pb)---------- | Size unknown, vein or disseminated. |
| V1 | Moderate-- | M/B | Au, Ag (Th, U)---------- | Medium-small, disseminated. |
| V2 | High------- | H/D | Au, Ag (Cu)---------- | Medium, disseminated or porphyry. |
| V3 | High------- | H/D | Au, Ag---------- | Medium-small, disseminated or porphyry. |
| V4 | Moderate-- | M/C | Au, Ag (Cu)---------- | Small, disseminated or porphyry. |
| V5 | Moderate-- | M/D | Au, Ag (Pb, Zn)---------- | Medium-small, disseminated or porphyry. |
| V6 | High------- | H/D | Au, Ag (Pb, Te, F)---------- | Medium, disseminated or porphyry. |
| V7 | Moderate-- | M/C | Au, Cu (REE)---------- | Small-medium, disseminated. |
| V8 | Low-------- | L/C | Au, Ag (Cu, Zn)---------- | Small, disseminated. |
| V9 | Low-------- | L/C | Au, Ag---------- | Small, disseminated or breccia pipe. |
| W1 | High------- | H/D | Th, REE, Ba, Mn (U, P,---------- Au, F, Ag). | Large, disseminated. |
| W2 | Moderate-- | M/B | Th, REE (Au)---------- | Small, disseminated. |
| WX1 | Unknown--- | U/A | REE, Th, U, Au, Ag---------- | Size unknown, disseminated or vein. |
| X1 | High------- | H/D | REE, Th, Ba, Mn (U, P,---------- Au, F, Ag). | Large, disseminated. |
| Y1 | High------- | H/D | Au, Cu, Ag (REE)---------- | Medium, disseminated or breccia pipe. |
| Y2 | Low-------- | L/C | Au, REE---------- | Small, disseminated. |
| Y3 | High------- | H/D | Au, Fe, Cu (Ti, Mn)---------- | Medium-small, disseminated. |
| Z1 | Moderate-- | M/D | Pb, Zn, Ag (Au, Cu)---------- | Small, vein. |

## CORRELATION OF MAP UNITS




## DESCRIPTION OF MAP UNITS

- QTu — **Unconsolidated and surficial deposits (Quaternary and Tertiary)**—Includes map units Qu and Tw from plate 1 and terrace gravel and wind blown sand not shown on plate 1: Quaternary alluvium, Oligocene White River Group, including some Brule Formation, and some Miocene Ogallala Formation
- Ti — **Intrusive rocks (Eocene and Paleocene)**—Includes map units Tq and Tn from plate 1: stocks, laccoliths, plugs, sills, and volcanic pipes composed of rhyolite, latite, trachyte, phonolite, and a variety of minor rock types
- Ku — **Undivided sedimentary rocks (Upper and Lower Cretaceous)**—Includes seven map units from plate 1: Lance Formation (Kl), Fox Hills Sandstone (Kfh), Pierre Shale (Kp); Niobrara Formation, Carlile Shale, and Greenhorn Limestone (Kng); Belle Fourche Shale (Kb); Mowry Shale, Newcastle Sandstone, and Skull Creek Shale (Kms); and Belle Fourche to Skull Creek Shales (Kbs)
- KJim — **Inyan Kara Group (Lower Cretaceous), and Morrison Formation and Unkpapa Sandstone (Upper Jurassic)**
- KPim — **Inyan Kara Group (Lower Cretaceous), Morrison Formation and Unkpapa Sandstone (Upper Jurassic), Sundance Formation (Upper and Middle Jurassic), Gypsum Spring Formation (Middle Jurassic), Spearfish Formation (Triassic and Permian), and Minnekahta Limestone (Lower Permian)**
- JPu — **Undivided sedimentary rocks (Jurassic, Triassic, and Permian)**—Includes two map units from plate 1: Sundance Formation and Gypsum Spring Formation (Jsg), and Spearfish Formation (TRPs)
- Pmo — **Minnekahta Limestone and Opeche Shale (Lower Permian)**
- PEu — **Undivided sedimentary rocks (Permian, Pennsylvanian, Mississippian, Devonian, Ordovician, and Cambrian)**—Includes three map units from plate 1: Minnelusa Formation (PIPm); Pahasapa Limestone and Englewood Formation (MDpe); and Whitewood Dolomite, Winnipeg Formation, and Deadwood Formation (OEwd)
- Xh — **Harney Peak Granite (Early Proterozoic)**
- Xs — **Undivided metasedimentary and metavolcanic rocks (Early Proterozoic)**—Includes map units Xsh, Xgw, Xbs, Xcg, Xgb, Xb, Xsi, Xsc, Xq, Xd, and Xc from plate 1. Unit is predominantly metasedimentary rock composed of mica schist, slate, phyllite, quartzite, and graywacke. Metavolcanic rocks include metamorphosed basalt and gabbro. Comprises parts of the Estes Formation, Poorman Formation, Roberts Draw Formation, Ellison Formation, Buck Mountain Formation, Moonshine Gulch Quartzite, Gingrass Draw Slate, Reausaw Slate, Poverty Gulch Slate, Nahant Schist, Irish Gulch Slate, Northwestern Formation, Flag Rock Formation, Hay Creek Greenstone, Rapid Creek Greenstone, Crow Formation, Vanderlehr Formation, Louie Formation, Oreville Formation, Roubaix Formation, Mayo Formation, Bugtown Formation, Swede Gulch Formation and many unnamed rock units
- Xms — **Metasedimentary rocks (Early Proterozoic)**—Muscovite schist and muscovite phyllite. Includes part of the Oreville Formation and unnamed muscovite schist
- Xif — **Iron-formation (Early Proterozoic and Late Archean?)**—Iron-formation and ferruginous chert. Includes the Homestake Formation, Rochford Formation, Montana Mine Formation, Nemo Iron-formation, Benchmark Iron-formation, and unnamed Iron-formations
- Xcq — **Metaconglomerate and metaquartzite (Early Proterozoic)**—Conglomeratic and feldspathic schist, biotite schist, taconite conglomerate, conglomerate and phyllite. Includes the Boxelder Creek Formation
- Wgn — **Gneiss and granite (Late Archean)**—Granite, feldspathic gneiss, and mica schist. Includes map units Wgr and Wos from plate 1: Little Elk Granite and unnamed igneous and metasedimentary units

**Contact**—Dashed where approximately located

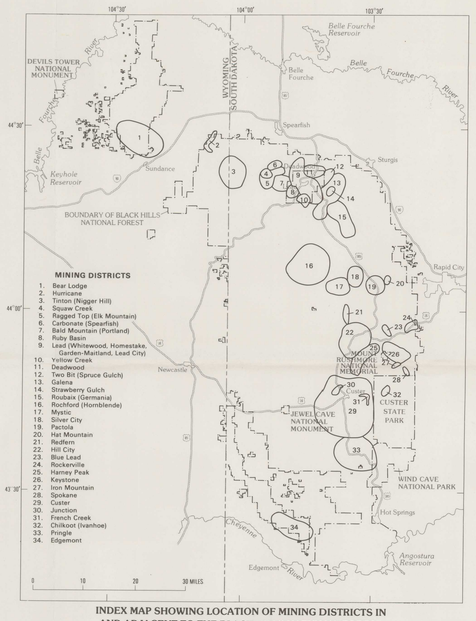
**Fault**—Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side. Arrows show sense of displacement

**Anticline**—Dotted where concealed; arrow shows direction of plunge

**Syncline**—Dotted where concealed

**Monocline**—Axis located on steepest part of structure

**Dome**




### MINING DISTRICTS

1. Bear Lodge
2. Hurricane
3. Tinton (Nigger Hill)
4. Squaw Creek
5. Ragged Top (Elk Mountain)
6. Carbonate (Spearfish)
7. Bald Mountain (Portland)
8. Ruby Basin
9. Lead (Whitewood, Homestake, Garden-Maitland, Lead City)
10. Yellow Creek
11. Deadwood
12. Two Bit (Spruce Gulch)
13. Galena
14. Strawberry Gulch
15. Roubaix (Germania)
16. Rochford (Hornblende)
17. Mystic
18. Silver City
19. Pactola
20. Hat Mountain
21. Redfern
22. Hill City
23. Blue Lead
24. Rockerville
25. Harney Peak
26. Keystone
27. Iron Mountain
28. Spokane
29. Custer
30. Junction
31. French Creek
32. Chilkoot (Ivanhoe)
33. Pringle
34. Edgemont

INDEX MAP SHOWING LOCATION OF MINING DISTRICTS IN AND ADJACENT TO THE BLACK HILLS NATIONAL FOREST

Base from U.S. Geological Survey
Gillette, 1955 (revised 1975); Hot Springs, 1955 (revised 1978);
Newcastle, 1955 (revised 1975); Rapid City, 1953 (revised 1978).

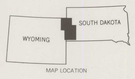
SCALE 1:250 000

5 0 5 10 MILES

5 0 5 10 KILOMETERS

NATIONAL GEODETIC VERTICAL DATUM OF 1929

1986 MAGNETIC DECLINATION FOR THIS SHEET VARIES FROM 11°00' EASTERLY IN THE SOUTHEASTERN CORNER TO 12°30' EASTERLY IN THE NORTHWESTERN CORNER. MEAN ANNUAL CHANGE IS 0°06.5' WESTERLY.




MAP LOCATION

Mineral resource data compiled by Ed DeWitt and J.A. Redden, 1985.
Geology compiled by Ed DeWitt, Anna Burack Wilson, David Buscher and J.A. Redden, 1985.

# MINERAL RESOURCE POTENTIAL MAP SHOWING LOCATABLE COMMODITIES IN THE BLACK HILLS NATIONAL FOREST AND ADJACENT AREA, SOUTH DAKOTA AND WYOMING