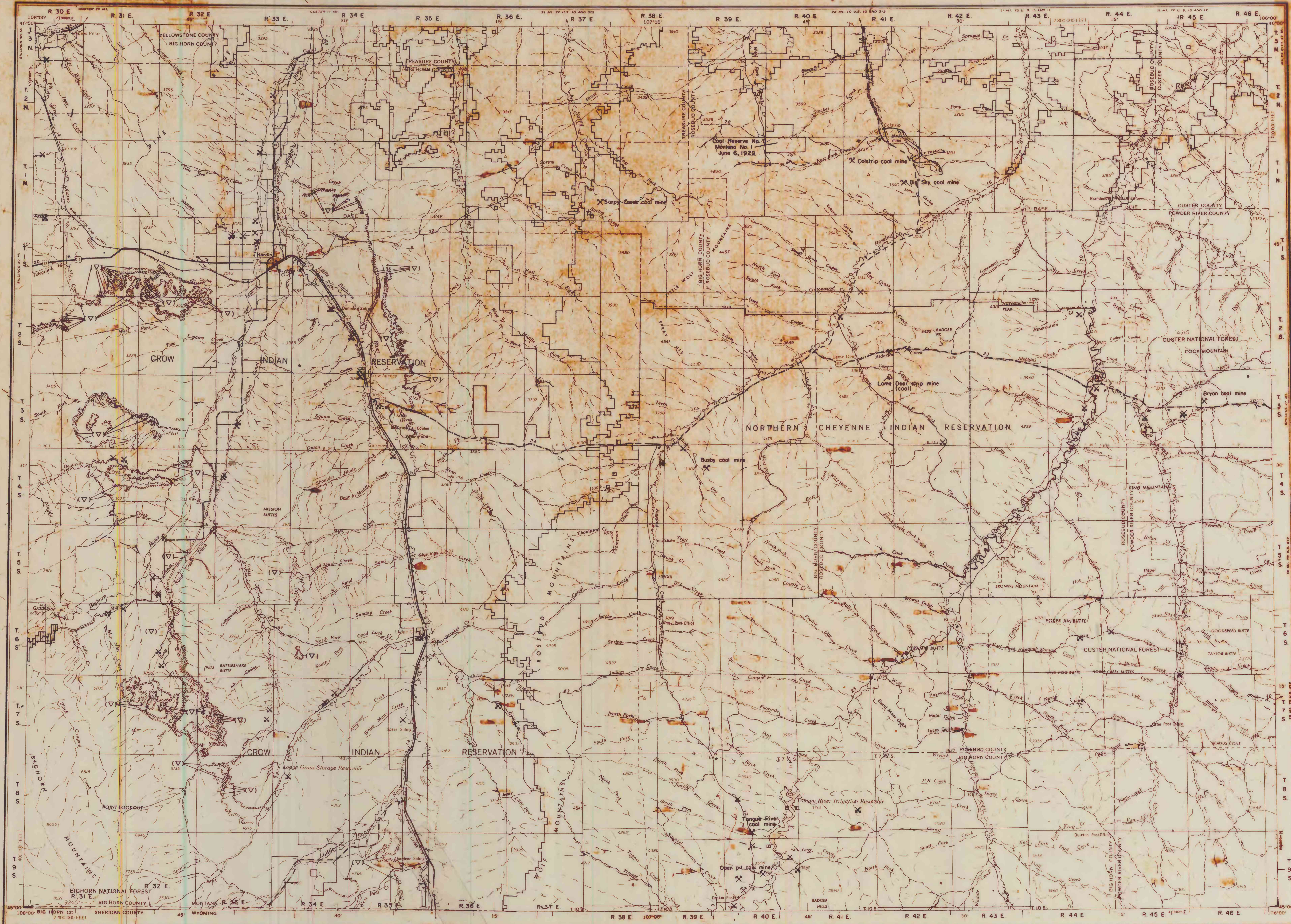


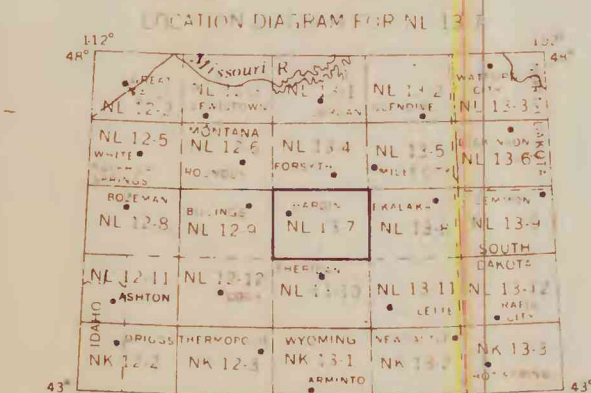
74-263

EXPLANATION  
MINERAL

- WITHDRAWN LANDS
- Lands withdrawn pending classification for coal
  - Lands withdrawn pending classification for coal and phosphate
  - Lands withdrawn for oil shale
  - Lands withdrawn pending classification for phosphate
  - Naval Oil Shale Reserve
  - Naval Petroleum Reserve
- CLASSIFIED LANDS
- Coal
  - Phosphate
  - Sodium
- LANDS VALUABLE PROSPECTIVELY FOR RETENTION OF FEDERAL MINERAL RIGHTS  
(Inclusions, where present, are on valuable side of boundaries.)
- Asphaltic materials
  - Coal
  - Geothermal resources
  - Oil and gas
  - Phosphate
  - Potassium
  - Sodium
- KNOWN LEASING AREAS  
(defined and undefined)
- Known geologic structure of producing oil and gas fields
  - Known geothermal resources area
  - Known coal leasing area
  - Known oil shale leasing area
  - Known phosphate leasing area
  - Known potassium leasing area
  - Known sodium leasing area
- Symbols show reported locations of mines, prospects, and occurrences of selected minerals. Inactive mines are not distinguished, nor is the size or grade of the mineral occurrence indicated. Each mineral occurrence is located to the nearest quarter section within a section. Multiple occurrences of the same mineral within a quarter are not differentiated from a single occurrence. Several different minerals at the same locality are shown by symbols in parenthesis with a leader and dot:
- Beryllium, tungsten, and columbian-tantalum at the same locality
- Certain symbols such as those for gold, silver, copper, lead, zinc, tungsten, and molybdenum; chromium, cobalt, nickel, and platinum; and uranium and vanadium may be combined in a single symbol to show several different minerals at the same locality. Examples of combined symbols are:
- Copper, gold, lead, and zinc    Chromium, cobalt, and nickel    Uranium and vanadium
- Areas of numerous or widespread occurrences of one or more minerals are shown by a dotted outline. Symbols are shown inside the outlined area or by a leader. An isolated occurrence of a different mineral within such an area is shown by a dot and a leader. Examples are:
- Bentonite occurs throughout area    Local occurrence of fluorapatite at dot within an area of widespread occurrence of beryllium, tungsten, and columbian-tantalum
- | MINERAL                | MINERAL               | MINERAL                       |
|------------------------|-----------------------|-------------------------------|
| Aluminum               | Titaniferous iron     | Fuller's earth                |
| Antimony               | Titanium              | Gold and ornamental stones    |
| Arsenic                | Tungsten              | Graphite                      |
| Beryllium              | Uranium               | Gypsum                        |
| Bismuth                | Vanadium              | H. H. line                    |
| Cadmium                | Zinc                  | Indium                        |
| Cesium and Rubidium    | Zirconium and hafnium | Kaolin                        |
| Chromium               |                       | Kyanite group                 |
| Cobalt                 |                       | L. H. line                    |
| Columbian and Tantalum |                       | Lithium minerals              |
| Copper                 |                       | Magnetite                     |
| Germanium              |                       | Magnesium sulfate             |
| Gold                   |                       | Meerschaum                    |
| Iron                   |                       | Mica                          |
| Lead                   |                       | Mineral pigments              |
| Manganese              |                       | Nephelite                     |
| Mercury                |                       | Olivine                       |
| Molybdenum             |                       | Quartz                        |
| Nickel                 |                       | Serpentine                    |
| Platinum group         |                       | Silica sand                   |
| Rare earths            |                       | Strontium minerals            |
| Silver                 |                       | Sulphur                       |
| Selenium               |                       | Talc, soapstone               |
| Tellurium              |                       | Volcanic ash, pumice, Perlite |
| Thorium                |                       | Vermiculite                   |
| Fin                    |                       | Wollastonite                  |
- WATER
- Land classified or withdrawn for waterpower or reservoir sites



Prepared by the Army Map Service (AMST) Corps of Engineers, U.S. Army, Washington, D.C. Compiled in 1955 by photogrammetric methods. Mineral data were derived by USGS, USGS and USGS. Aerial photography 1951. Photographic field annotated in 1954. Limited revision by U.S. Geological Survey 1954.



LEASABLE MINERAL AND WATERPOWER LAND CLASSIFICATION MAP  
HARDIN QUADRANGLE, MONTANA, WYOMING

SHOWING  
LANDS WITHDRAWN, CLASSIFIED, AND VALUABLE PROSPECTIVELY FOR LEASABLE MINERALS  
AND OCCURRENCES OF OTHER SELECTED MINERALS  
LANDS WITHDRAWN OR CLASSIFIED FOR WATERPOWER AND RESERVOIR SITES

Compiled by Andrew F. Boteman, Jr., Elizabeth G. Allen, and Gale A. Lutz  
1974

Not all classification categories or mineral occurrences shown in the explanation are present in this quadrangle. Categories shown apply only to any public lands included within boundaries. The leasable minerals in public domain lands named in the various mineral leasing acts as amended over the years are coal, oil, gas, and oil shale; phosphates, or phosphate rock; chlorides, sulfates, carbonates, borates, silicates or nitrates of potassium and of sodium; sulphur in Louisiana and New Mexico; and native asphalt, solid and semisolid bitumen, and bituminous rock (including oil-impregnated rock or sands from which oil is recoverable only by special treatment after the deposit is mined or quarried). All minerals are leasable on federal acquired lands and restricted allotted and tribal Indian lands.

The entire quadrangle area is classified as valuable for oil and gas; no land in this quadrangle is classified as valuable for asphaltic materials, geothermal resources, oil shale, phosphate, or potassium.

Known geologic structures and known coal leasing areas are shown on a separate overlay.

All information on this map compiled as of June 1, 1974.

U. S. Geological Survey  
OPEN FILE REPORT  
This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.

74-263