Mineralogy of Southwest Montana

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Covellite
MBMG Museum Butte
Presentation Outline

- Montana Geologic Provinces
- World Class Mineral Localities
- Collecting in the Pioneer Mountains

Gold, Highlands
MBMG Museum Butte
Gemstones

- Two official State Gemstones
- Montana Agate
- Sapphire

Corundum
Rock Creek

Montana Agate
The Great Plains – Sedimentary Rocks

Calcite, Barite, Gypsum, Montmorillonite, Quartz

Calcite
Carter County

Montana Agate
Yellowstone River

Barite
Cedar Creek

Pertified Wood House
Billings
The Alkalic Province - Sediments Penetrated by Alkaline Intrusive Rocks

- Aegirine, Augite, Biotite, Burbankite, Davanite, Eudialyte, Gold, Hauyne, Barytolamprophyllite, Nepheline, Olivine, Orthoclase, Phlogopite, Sanadine, Wadeite
The Absorka Province - Precambrian Metamorphics, Intrusive, and Volcanic Rocks

Calcite, Chromite, Enstatite, Gold, Opal-Hyalite, Petrified Wood
Platinum minerals

Calcite
Red Cliff
Gallatin River

Quartz replacing wood

[Map of Montana highlighting the Absorka Province]
Wyoming Archean Province - Precambrian Metamorphic and Tertiary Intrusive Rocks

- Metamorphic Rocks – Almandine, Anthophyllite, Corundum, Kyanite, Talc
- Tertiary Intrusives – Gold
- Pegmatites – Biotite, Schorl, Microcline, Muscovite, Rose Quartz

Dendritic Talc
Yellowstone Mine

Corundum
Elk Creek Mine
The Rocky Mountains – Many Rock Types

- Pegmatites – Quartz, Schorl, Microcline, Albite, Titanite, Epidote, Allanite
- Skarns – Epidote, Magnetite, Scheelite, Grossular, Spinel
- Tertiary Intrusives – Gold, Silver, Chalcocite, Galena, Hemimorphite, Pyrite, Rhodochrosite, Wulfenite

Wulfenite
Radersberg

Quartz
Homestake Pass

Diopside
Bald Mountain Skarn

Wulfenite
The Belt Basin – Metasediments and Intrusive Rocks

- Bornite, Boulangerite, Chalcopyrite, Galena, Goethite, Gold, Pyrite, Silver, Vermiculite

- Pyrite
  - Troy Mine

- Boulangerite
  - Iron Mountain Mine
World Class Localities

- Butte Ore Deposit - 146 species – 2 new minerals
- Black Pine Mine – 72 species – 3 new minerals
- Stillwater Complex – 68 species – 5 new minerals
- Boulder Batholith Pegmatites – 34 species
- Also Elkhorn Mine, Radersberg District, Philipsburg District
Butte – The Richest Hill on Earth

Anaconda Mine

Parrot Mine

Berkeley Pit
Butte - Alice Mine

Gold MBMR Museum Butte

Silver
Leonard Mine - Butte

- Covellite
- Chalcocite
- Enargite
Boston and Montana Company

Leonard Lewishon

Digenite

Barite

Bornite after Digenite
Luzonite on Covellite
Leonard Mine, Butte
Hinsdalite on Enargite
Leonard Mine, Butte
Emma Mine - Butte

Rhodochrosite
Boulder Batholith Pegmatites

Smoky Quartz
Rheanna Star
MBMG Museum Butte
Philipsburg District
Black Pine Mine – Granite County
Vesleyite
Mimetite
Kipushite
Tetrahedrite
Japan-law twin Quartz
Black Pine Mine
Olivenite – Black Pine Mine
Rhodochrosite on Quartz
Black Pine Mine
Hubnerite and Rhodochrosite on Quartz
Black Pine Mine
Radersburg District
Rosasite, Summit Mine
Mimetite, Summit Mine
Vanadanite, Jo Jo Mine
Wulfenite, James R. Lee Mine
Wulfenite on Vanadanite, Blackhawk Mine
Crystal Park
Crystal Park Amethyst
Gar Mine – Comet Mountain
Pioneer Mountains
Calvert Mine – Epidote
Calvert Mine

Grossular

Epidote
MBMG Museum Butte
Ivenhoe Mine – Browns Lake
Hecla Mine – Lion Mountain
Hecla Mine – Lion Mountain
Azurite Malachite – Lion Mountain
Smithsonite – Hecla Mine
Hemimorphite – Hecla Mine
Azurite – Indian Queen Mine
Iron Mountain Mine, Argenta
Hemimorphite Rosasite, Argenta
Ingersoll Mine
Ingersoll Mine - Chlorargyrite
Ingersoll Mine
Stacking Technology

Arthurite
Copper Stope, Majuba Hill Mine
Pershing County, Nevada
Fluorite – Warm Springs Mine
Montana!