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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BULLETIN 1441
PLATE 1

EXPLANATION

STRATIFIED ROCKS

QUATERNARY

Holocene

- Qa — Alluvium
- Qc — Colluvial deposits
- Ql — Landslide deposits

Pleistocene and Holocene

- Qgl — Glacial lake deposits
- Qt — Terrace gravel

Pleistocene(?)

- Tc — Older colluvial deposits

ANGULAR UNCONFORMITY

TERTIARY(?)

Paleocene(?)

- Tve, Tvd, Tvc, Tva, Tvb — Adel Mountain Volcanics of Lyons (1944)
  - Tve, *volcanic conglomerate*
  - Tvd, *lacustrine deposits*
  - Tvc, *trachyandesite flow*
  - Tvb, *trachybasalt flows*
  - Tva, *volcanic breccia*

UNCONFORMITY

CRETACEOUS AND TERTIARY

Upper Cretaceous and Paleocene

- TKw — Willow Creek Formation
- Ksm — St. Mary River Formation

CRETACEOUS

Upper Cretaceous

Two Medicine Formation

WESTERN FACIES

- Ktvh, Ktvg, Ktvf, Ktvfa, Ktve, Ktvd, Ktvca, Ktvc, Ktvb, Ktvaa, Ktva — Volcanic member
  - Ktvh, *clastic volcanic rocks*
  - Ktvg, *volcanic conglomerate*
  - Ktvf, *clastic volcanic rocks*; Ktvfa, *volcanic breccia*
  - Ktve, *trachyte flow*
  - Ktvd, *clastic volcanic rocks*
  - Ktvc, *ash-flow tuff*; Ktvca, *clastic volcanic rocks*
  - Ktvb, *latite flows*
  - Ktvaa, *clastic volcanic rocks*
  - Ktva, *clastic volcanic rocks*

UNCONFORMITY

- Kts — Sedimentary member

EASTERN FACIES

- Kte

Lower Cretaceous

- Kvi — Virgelle Sandstone
- Ktc — Telegraph Creek Formation

Colorado Group

- Km — Marias River Shale

DISCONFORMITY

- Kb — Blackleaf Formation

DISCONFORMITY

- Kk — Kootenai Formation

DISCONFORMITY

JURASSIC

Upper Jurassic

- Jm — Morrison Formation

Middle and Upper Jurassic

- Je — Ellis Group
  Includes Swift and Sawtooth Formations

DISCONFORMITY

MISSISSIPPIAN

Lower and Upper Mississippian

Madison Group

- Mmc — Mission Canyon Limestone

Lower Mississippian

- Ml — Lodgepole Limestone

CAMBRIAN

Middle Cambrian

- Ꞓm — Meagher Limestone
- Ꞓw — Wolsey Shale
- Ꞓf — Flathead Quartzite

UNCONFORMITY

PRECAMBRIAN

Precambrian

Belt Supergroup

- pꞒh — Helena Dolomite

Ravalli Group

- pꞒe — Empire Formation
- pꞒs — Spokane Formation
- pꞒg — Greyson Shale
- pꞒes — Empire and Spokane Formations, undivided

INTRUSIVE ROCKS

TERTIARY

Eocene

- Tm — Hornblende monzonite
- Tmp — Quartz monzonite porphyry

TERTIARY(?)

Paleocene(?)

- Tt — Trachybasalt
- Tag — Analcime gabbro

CRETACEOUS OR TERTIARY

Upper Cretaceous or Paleocene

- Tkr — Rhyolite
- Kqm — Quartz monzonite porphyry

CRETACEOUS(?)

Upper Cretaceous(?)

- Krp — Rhyodacite porphyry
- Kd — Diorite

CRETACEOUS

Upper Cretaceous

- Kt — Trachyte
- Kl — Latite

PRECAMBRIAN(?)

Upper Precambrian(?)

- pꞒga — Gabbro

LINE SYMBOLS

- Contact, showing dip where known
  Long dashed where approximately located; short dashed where inferred; dotted where concealed
- Thrust fault, showing dip where known
  Sawteeth on upper plate; long dashed where approximately located; short dashed where inferred; dotted where concealed
- Normal fault
  Long dashed where approximately located; short dashed where inferred; dotted where concealed. U, *upthrown side*; D, *downthrown side*
- Tear fault
  Short dashed where inferred; dotted where concealed; arrows show relative horizontal movement
- Anticline
  Showing crestline, direction of dip of limbs, and direction of plunge; dotted where concealed
- Overturned anticline
  Showing crestline, direction of dip of limbs, and direction of plunge; dotted where concealed
- Syncline
  Showing troughline, direction of dip of limbs, and direction of plunge; dotted where concealed
- Overturned syncline
  Showing troughline, direction of dip of limbs, and direction of plunge; dotted where concealed
- Syncline / Anticline — Bearing and direction of plunge of minor folds
- Inclined / Vertical / Overturned / Horizontal — Strike and dip of beds and lava flows
- Quartz vein
- Bentonite bed
- Adit
- Prospect pit
- Coal prospect

Base from U.S. Geological Survey
1:24,000, Comb Rock, Coburn Mountain, Roberts Mountain, and Wolf Creek, 1961
10,000-foot grid based on Montana coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

APPROXIMATE MEAN DECLINATION, 1978

SCALE 1:48 000

1 ½ 0 1 2 3 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

AREA OF THIS REPORT

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1978—677072

Geology by R. G. Schmidt; assisted by H. R. Shaw, 1959; P. Zubovic, 1960 and 1962; D. A. Swanson, 1961; C. P. Strong, Jr., 1964, 1965, and 1966

GEOLOGIC MAP OF THE WOLF CREEK AREA, LEWIS AND CLARK AND CASCADE COUNTIES, MONTANA