

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Geologic Map of the Bearshack Creek Quadrangle,
McCone and Prairie Counties, Montana

By

R.B. Colton, J.P. McGraw, and S.L. Durst

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

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DESCRIPTION OF MAP UNITS

- Qa1 **Alluvium (Holocene)**--Light-brown and gray, generally well-stratified and well-sorted clay, silt, sand, and gravel. Unit limited to areas characterized by meander or braided patterns on aerial photographs. Surface of unit may be subject to occasional flooding. Less than a few meters thick under flood plains of tributaries
- Qac **Alluvial-colluvium (Holocene)**--Light-brown and gray, poorly sorted and poorly stratified clay, silt, sand, and gravel deposited by gravity and slope wash. Color and texture of the colluvium reflect the parent material upslope. May interfinger with alluvium; includes alluvial fans and much windblown clay, silt, and sand. As much as 10 m (33 ft) thick, but generally less than 5 m (16 ft). Soil profiles range from well developed to poorly developed
- Qbf **Baked and fused bedrock (clinker) (Holocene and Pleistocene)**--Red to orange, baked shale, sandstone, and siltstone of the Fort Union Formation that was heat-metamorphosed by combustion of lignite to hard, dense porcellanite and, locally, black, vesicular, glassy, scoriaceous, buchite which forms linings of chimneys and veins in porcellanite. As much as 6 m (20 ft) thick, but generally less than 3 m (10 ft)
- Qe **Eolium (Holocene to Pleistocene)**--Light-brown to light-gray clay, silt, sand, granules, and pebbles. Pebbles were carried up into eolium by bioturbation. Present mainly as a thin veneer as much as 2 m (6 ft) thick on sand and gravel deposits; may be thicker on older and higher sand and gravel deposit (Tmg and Trg)

Tpg **Sand and gravel, undivided (Pliocene)**--Light-brown to light-gray, well-stratified, and well-sorted to poorly sorted sand and gravel. Thickness as much as 10 m (33 ft), but generally less than 3 m (10 ft). Unit generally limited to altitudes between 945 m (3,100 ft) and 762 m (2,700 ft). May include some sand and gravel of Pleistocene age

Tmg **Sand and gravel (Miocene)**--Light-brown to light-gray, well-stratified to poorly stratified, and well-sorted to poorly sorted sand and gravel. Thickness as much as 10 m (33 ft), but generally less than 6 m (20 ft). Unit generally limited to altitudes between 975 m (3,200 ft) and 945 m (3,100 ft). May include some Pliocene and Pleistocene sand and gravel

Trg **Rimroad Formation of Howard (1960) (Miocene)**--Light-brown to gray, well-sorted to poorly sorted, and well-stratified to poorly stratified sand and gravel. A thin diamicton overlies the ash locally. Total thickness 45 m (149 ft), comprised of 7 m (23 ft) sand and gravel overlying 4.3 m (14 ft) of ash¹, 34 m (112 ft) of sand and gravel; remnants are generally less than 20 m (66 ft) thick. The base of the formation is at an altitude of approximately 975 m (3,200 ft) in the southeast part of the quadrangle and rises southwestward 10 m (33 ft). Map unit may include some small thin Pliocene sand and gravel deposits

--A-- **Volcanic ash bed**

Tfu **Fort Union Formation (Paleocene)**--Tongue River Member(?) (Collier and Knechtel, 1939). Yellowish- or light-brown shale and sandstone containing numerous lignite beds. Estimated thickness underlying highest parts of the quadrangle is more than 270 m (843 ft)

¹The Rimroad Gravel of Howard (1960) contains volcanic ash 7.1±1.4 years old and much sand, silt, and clay in addition to gravel. Therefore, the name is revised to Rimroad Formation and the age is limited to Miocene. The age of the volcanic ash was determined by Nancy B. Naeser who counted fission tracks in zircons from the ash (Colton, Naeser, and Wilcox, 1983).

-  **Contact**--Dashed where approximately located
- w** **Water**
-  **Abandoned coal mine**
-  **Gravel pit**

REFERENCES CITED

Collier, A.J., and Knechtel, M.N., 1939, The coal resources of McCone County, Montana: U.S. Geological Survey Bulletin 905, 80 p.

Colton, R.B., Naeser, N.D., and Wilcox, R.E., 1983, Seven million-year-old volcanic ash on Missouri-Yellowstone River drainage divide near Circle, Montana: Geological Society of America Abstracts, Rocky Mountain and Cordilleran Sections, v. 15, no. 5, abstract no. 24842, p. 414.

Howard, A.D., 1960, Cenozoic history of northeastern Montana and northwestern North Dakota with emphasis on the Pleistocene: U.S. Geological Survey Professional Paper 326, p. 17.

CORRELATION OF MAP UNITS

