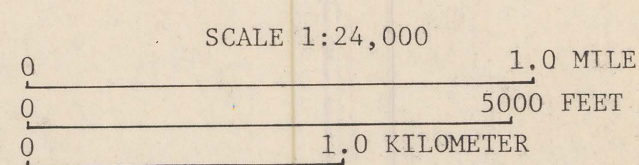




BASE FROM U.S. GEOLOGICAL SURVEY
BOX ELDER CREEK, LESLIE CREEK,
COALWOOD, AND OLIVE QUADRANGLES
CONTOUR INTERVAL 20 FEET

MARGUERITE GLENN



PRELIMINARY GEOLOGIC MAP OF THE PUMPKIN CREEK EMRIA STUDY SITE
BOX ELDER CREEK, LESLIE CREEK, COALWOOD, AND OLIVE QUADRANGLES,
POWDER RIVER COUNTY, MONTANA

BY
MARGUERITE GLENN
1978

EXPLANATION

- Qa** ALLUVIUM (HOLOCENE)—Unconsolidated clay, silt, sand, and lenses of gravel in and adjacent to the principal streams. Areas shown as Qa are the areas of alluvial valley floor and include stream channel, flood plain, and low alluvial terrace deposits. Some very small areas of it are not shown. In the southeast part of the study site these areas are generally the same as the areas of Qa mapped by Malde and Boyles (1976, Stacey & SW map).
- Qao** OTHER ALLUVIAL DEPOSITS (HOLOCENE)—Unconsolidated clay, silt, sand, and lenses of gravel adjacent to valley floors of principal streams, in and adjacent to tributary streams, and in the upper reaches of the principal streams. Includes upper stream channel, older flood plain, alluvial terrace deposits, and, locally, some alluvial fan and slopewash deposits.
- Qt** TERRACE DEPOSITS (HOLOCENE AND PLEISTOCENE)—Unconsolidated silt, sand, and gravel; contains pebbles, cobbles, and boulders of clinker, siltstone, and silty limestone, and sparse petrified wood; at terrace levels as much as 160 feet (49 m) above the principal streams; probably equivalent to Qtpl and Qtp3 as mapped by Bass (1932) in the Ashland coal field and to the Qtu, Qtp1, and Qtp3 as mapped by Bryson (1951) in the Coalwood coal field.
- Tft** TONGUE RIVER MEMBER OF THE PORT UNION FORMATION (PALEOCENE)—Light-gray, yellowish-gray, and tan mudstone, siltstone, sandstone, and silty limestone; gray shale, brown carbonaceous shale, and coal. Unidentified pelecypod and gastropod fossils were observed in the NW corner of sec. 20, T. 3 S., R. 49 E., in carbonaceous shale about 10 feet (3 m) below the base of a tan very fine grained massive sandstone and about 100 feet (30.5 m) above the base of the Sawyer coal. Silicified wood is abundant in the Stump coal bed, but is rare elsewhere. The exposed thickness of the Tongue River Member is about 800 feet (244 m).
- CONTACT**—Dashed where approximately located
- FAULT**—U, upthrown side; D, downthrown side
- COAL BED**—Contact drawn on base of bed. Dashed where inferred; dotted where concealed by alluvial deposits. Triangle indicates a locality at which coal was measured or observed. Thickness shown is in feet. Letters and numbers designate names of coal beds as follows:
- P Pawnee
L6 Local, unnamed coal, 70-90 feet (21-27 m) below Pawnee and 300 feet (91 m) above Sawyer
X X, seen only as clinker 55-80 feet (17-24 m) above Stump
L5 Local, unnamed coal, 120-130 feet (38-40 m) below Pawnee and 250 feet (76 m) above the base of the Sawyer coal. May equal Stump
St Stump, 240-300 feet (73-92 m) above Sawyer
L4 Local, unnamed coal, 185-200 feet (56-61 m) above Sawyer

- MW Mackin-Walker, 80-120 feet (24-38 m) above Sawyer, locally splits into MW1 (lower) and MW2 (upper), as much as 40 feet (12 m) apart
L3 Local, unnamed coal, 50-75 feet (15-23 m) above Sawyer
S Sawyer
A A, split from base of Sawyer by 2-60 feet (1-19 m) of rock
K Knobloch, 120-140 feet (38-43 m) below Sawyer, locally has additional coal (K1) about 30 feet (9 m) below
FG Flowers-Goodale, 40-60 feet (12-19 m) below Knobloch, locally splits into FG1 (lower) and FG2 (upper), about 10 feet (3 m) apart
L2 Local, unnamed coal, about 15 feet (5 m) below Flowers-Goodale
B Broadus, correlated with Flowers-Goodale (Bryson, 1951, p. 83)
A Allen, about 40 feet (12 m) below Flowers-Goodale
L1 Local, unnamed coal, about 100 feet (30 m) below Flowers-Goodale
- AREA OF BURNED COAL BED**—Dotted line indicates approximate limit of burned coal. Heat from the burning coal bed has baked or fused the overlying rocks into a predominantly reddish resistant rock called clinker

- FWM1** **DRILL HOLE**—Number shown above
El. 3600 Altitude of surface shown in feet above mean sea level
S 15 Thickness of coal bed in feet
3430 Altitude of base of coal bed in feet above mean sea level
14 Thickness of lower split of coal bed in feet
3415 Altitude of base of lower split of coal bed in feet above mean sea level
(1 p.) Thickness of parting within Sawyer coal bed in feet

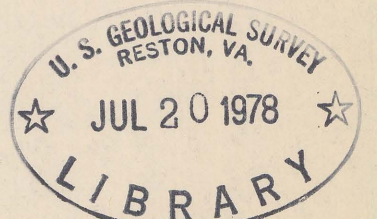
Holes drilled for the EMRIA study and their respective columns on the accompanying geologic sections are shown as follows:
FWM1-FW11, Holes drilled by U.S. Geological Survey
76101, 77102-77110, Holes drilled by the U.S. Bureau of Reclamation
77118-77137, Holes drilled by Montana Bureau of Mines and Geology and U.S. Geological Survey

Previously drilled holes from which data (Matson, Blumer, and Wegelin, 1973, pls. 15, 17; geophysical and drillers' logs) were used are shown as follows:
US-A-HS-C, US-D, and US-F, Holes drilled by U.S. Geological Survey
BR3, BR9, BR10, PC1-PC17, PC26, PC27, PC32, and PC33, Holes drilled by Northern Pacific Railroad and Montana Bureau of Mines and Geology
Greer-El Paso 100-3 NPRR, Wolf 13, 15, 16, and 14-13 NPRR, Abandoned holes drilled in exploration for oil and gas

ABANDONED COAL MINE

REFERENCES

- Bass, N. W., 1932, The Ashland coal field, Rosebud, Powder River, and Custer Counties, Montana: U.S. Geol. Survey Bull. 831-B, p. 19-105.
- Bryson, R. P., 1951, The Coalwood coal field, Powder River County, Montana: U.S. Geol. Survey Bull. 973-B, p. 23-106.
- Malde, H. E., and Boyles, J. W., 1976, Maps of alluvial valley floors and stripable coal in forty-two 7 1/2 minute quadrangles, Big Horn, Rosebud, and Powder River Counties, southeast Montana: U.S. Geol. Survey Open-File Rept. 76-162.
- Matson, R. E., Blumer, J. W., and Wegelin, L. A., 1973, Quality and reserves of stripable coal, selected deposits, southeastern Montana: Montana Bur. Mines and Geology Bull. 91, 135 p.



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Montana (Pumpkin Creek EMRIA region) Geol.
1:25,000
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