

History and General Information

Chouteau County was one of the original nine counties in the State and covers about 87 miles in an east-west direction and 60 miles in a north-south direction.

No economic metallic mineral deposits, such as gold, silver, or lead are known to exist in the county, although there have been unverified reports of beryl in the vicinity of the Rocky Boy stock, east of Big Sandy.

Some coal reserves have been defined and some oil and gas wells have been drilled on the Sherard or Birch Creek anticline in T. 25 N., R. 17 E., section 17. Some occurrences of fluorite have been documented, but not in commercial amounts.

In the late 1920's and early 1930's, the demand for sodium sulphate in the glass industry in the northwest and for the pulp industry in Montana, created an interest in deposits in this county.

Glacial outwash scattered over much of the county provides a source of sand and gravel. Physically durable rock suitable for use as riprap or ballast could be quarried at a number of localities in the Highwood Mountains.

By 1972, there had been about 167 oil and gas wells drilled in this county.

Geology

There are no known metallic mineral resources in Chouteau County. However, this does not preclude the possibility that such resources could be found in the future, particularly in the Highwood or Bears Paw Mountains.

Much of the western part of the county is underlain by Cretaceous shale of the Colorado Group. It is very likely that some beds within this shale are suitable for use in the manufacture of lightweight aggregate. The Claggett Shale exposed in the northeastern part of the county contains several beds of bentonite. The quality of the bentonite in these beds is not known.

Sodium sulphate occurs in high concentrations in the intermittent lakes in Shonkin Sag, southeast of Fort Benton. The lakes are located in a topographically low area which carried the waters of the Missouri River in glacial times. The lakes have no outlet and practically dry up during the summer. They are named White Lake, Lost Lake, Shoukin Lake, Big Lake, and Kingsbury or "Alkali" Lake. If the sodium sulphate is present in large quantities, these deposits might be of commercial significance (Ackerman, W.C., 1956-1957, unpublished data, p. 31).

The concentration of sodium sulphate is due to many seasons of evaporative concentration of runoff water

and in seepage of ground water. When the ground is saturated, the grey to white crystals of sodium sulphate hydrate form in and on the muddy sides and bottoms of the lakes.

Although the various hydrates of sodium sulphate salts are most widely used in the wood pulp and paper industry, they have a wide application to uses in many basic industries. Sodium sulphate is more soluble in warm water than in cold, thus fluctuations in temperature between winter and summer, or even night and day, can cause the decahydrate, mirabilite, to either crystallize and precipitate or to redissolve. Other salts are not so readily affected.

Bannatyne Field produced thousands of barrels of oil annually from Jurassic rocks. Gas discoveries in T. 27 N., R. 16 E., lie on the Bearpaw Arch.

Only 11 of the wells drilled reached rocks of Cambrian age; 6 reached Devonian; 64 reached Mississippian; 10 reached Jurassic; and 76 only drilled only into Cretaceous rocks.

The occurrence of coal has been described by Bowen (1914) and Pierce and Hunt (1937). Thin coal beds were mapped in the Eagle, Judith River, and the Fort Union Formations. The thickest coal bed (subbituminous coal) in the county was reported at 7 feet, occurring in the Fort Union Formation at the Mackton Mine located in T. 28 N., R. 14 E., section 18, about 6 miles east of Big Sandy. The coal mining potential is limited due to the limited extent of the Fort Union Formation. The coal beds in the Eagle and Judith River Formations are thin and discontinuous, and are said to hold small economic interest.

References

Bowen, C.F., 1914, The Big Sandy coal field, Chouteau County, Montana: U.S. Geological Survey Bulletin 541H, pp. 356-378.

Groff, S.L., 1963, Montana Bureau of Mines and Geology, written report in files.

Miller, M.R., 1972, Montana Bureau of Mines and Geology, written correspondence in files.

Pierce, W.G., and Hunt, C.B., 1937, Geology and mineral resources of north-central Chouteau, western Hill, and eastern Liberty Counties, Montana: U.S. Geological Survey Bulletin 847F, pp. 225-264.

Sahinen, U.M., 1948, Montana Bureau of Mines and Geology, Preliminary report on sodium sulphate in Montana, in files, 9 p.