

BASIN DESCRIPTION

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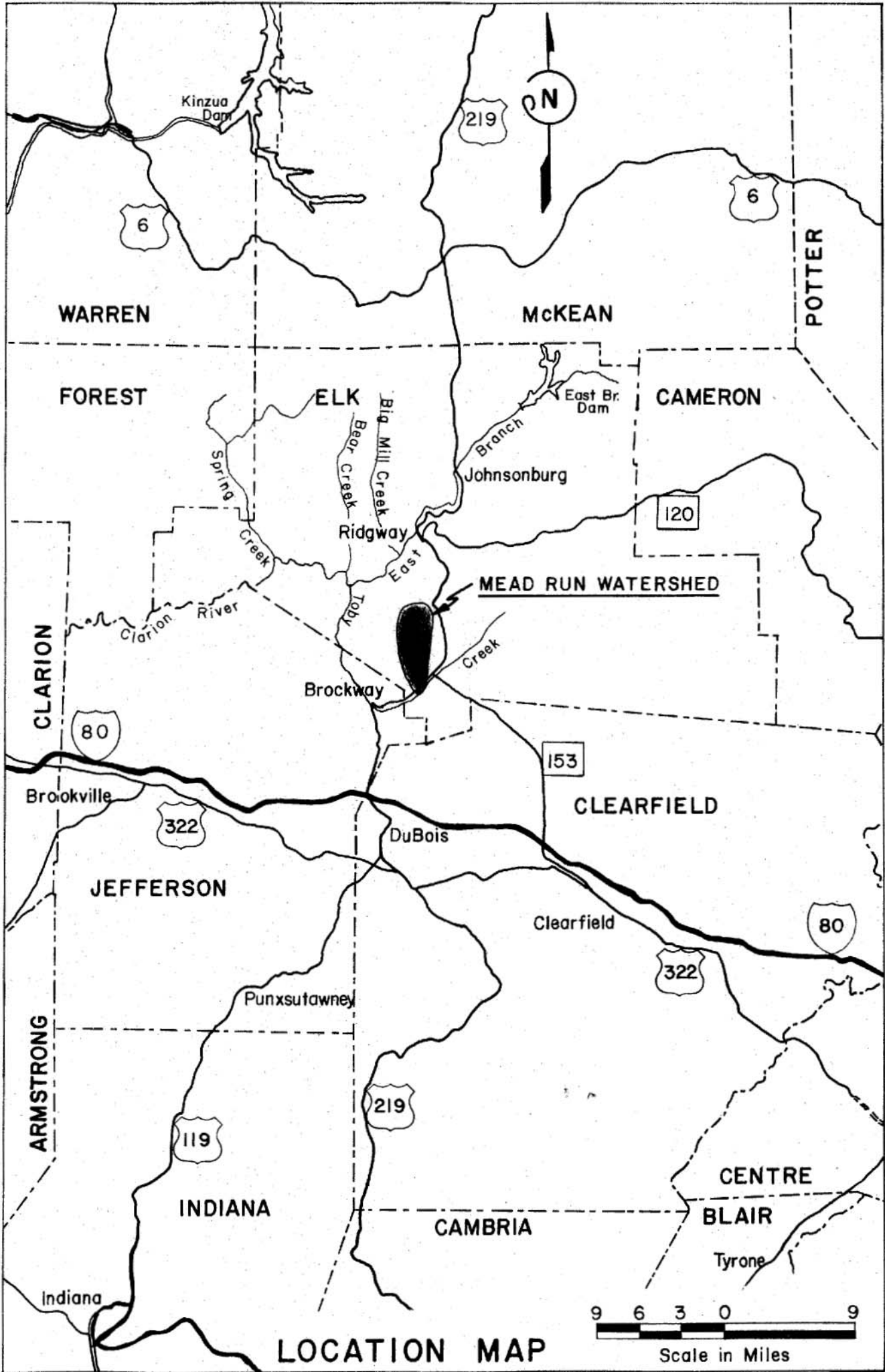
LOCATION

Mead Run Watershed is situated in south central Elk County, Pennsylvania. The watershed is bounded on the north by the north boundary of Horton Township, on the south by Brockport, and is centered near Horton City. The center of the watershed is approximately 20 miles north of Dubois and 10 miles south of Ridgway. The 8.9 square mile watershed is approximately 7.2 miles long and 1.7 miles wide. The main stream is approximately 6.5 miles long. Mead Run flows in a southerly direction to its confluence with Little Toby Creek at Brockport. From there, Little Toby Creek flows west to Toby Creek and then north to its confluence with the Clarion River near Carman, Pennsylvania.

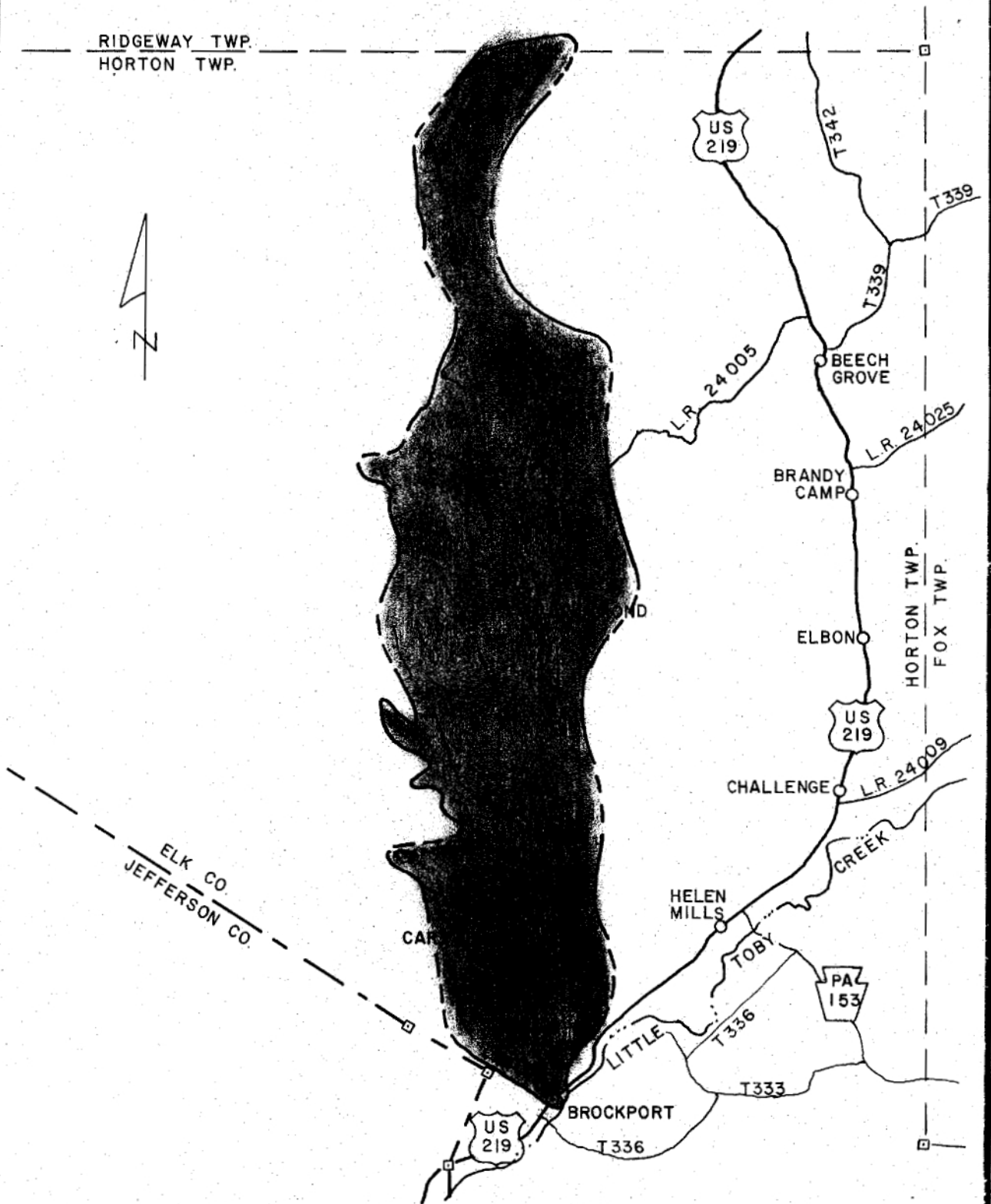
There are no named tributaries to Mead Run and the watershed is entirely situated within Horton Township.

PHYSIOGRAPHY

The topography of the Mead Run Watershed is influenced by structured features imposed by the Shawmut or Mead Run basin which is located between the Fourth Anticlinal Axis and the Boon's Mountain Third Anticlinal Axis. The topography of the watershed is broken and irregular. These features are responsible for a total relief of 737 feet from the northern end of the watershed to its confluence with Little Toby Creek at Brockport. The stream courses are influenced by both anticlinal axis and basin direction.



MEAD RUN
WATERSHED LOCATION
SL 132-6



FEB 4, 1974
SCALE: 1" = 1 MILE

GEOLOGY

Surface formations in the Mead Run Watershed range from the lower 65 feet of Pennsylvanian Conemaugh Formation, 327 feet of the Pennsylvanian Allegheny Group, 185 feet of the Pennsylvanian Pottsville Group, 10 feet of the Mississippian Mauch Chunk Formation, and approximately 200 feet of the Mississippian Pocono Group located just west of the Shawmut Reservoir. The total stratigraphic thickness is approximately 787 feet.

The Allegheny group contains the most important formations in the watershed. These are the coal measures ranging vertically from the Clarion formation to the Upper Freeport formation. The Pottsville group contains the Upper and Lower Alton formations. The formations comprising the Allegheny group consist of shales, clays, sandstones, slates and limestone deposited during a period of fluctuating mild tectonic activity.

This varying activity is also responsible for conditions existing today. The drainage from the mines on the Clarion, Lower Kittanning and Middle Kittanning seams is predominantly acidic with large concentrations of iron and sulfate. The mine drainage from the Upper Kittanning, Lower Freeport and Upper Freeport seams is predominantly alkaline with relatively high concentrations of iron (generally in the ferric state) and sulfate. This may be caused by the association of fresh water limestone in the form of thin beds or concretions within the underclays of the U.K., L.F., and U.F. formations. The mildly fluctuating rate of submergence and the variable base level resulted in an open water to swamp to fluvial-deltaic depositional sequence responsible for complex stratigraphic nature of the coal deposits. Such an environment of deposition often contains areas of restricted water and high biochemical oxygen demand, resulting in an atmosphere of reduction. The high content

of sulfuric compounds such as pyrite and marcasite in the coal seams and adjacent strata reflect this condition. Limestone was occasionally deposited and/or precipitated in back swamp areas during periods of the sedimentary cycle. When this limestone occurs below a coal seam, the acidity caused by oxidation and hydrolysis of these iron disulfides in the mine drainage is neutralized to various degrees. The resultant higher pH causes the ferrous iron to be precipitated as ferric hydroxide or yellowboy.

The high concentrations of magnesium and manganese may also result from this limestone and through oxidization may also be precipitated out along portions of Mead Run.