

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the [interactive fault map](#).

Faults of Brimstone Basin area (Class A) No. 760

Last Review Date: 1998-03-23

citation for this record: Pierce, K.L., compiler, 1998, Fault number 760, Faults of Brimstone Basin area, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>, accessed 12/14/2020 02:02 PM.

Synopsis	The Brimstone Basin is a graben bounded by and including normal faults. The main published information presents an ambiguous situation. Text on the published map suggests deposits of the last glaciation are offset, but the map shows that these same deposits mantle preexisting scarps. In this compilation, the faults are shown as post-Pinedale (<15 ka) pending further verification. This group of faults extends along the eastern side of the valley of the Yellowstone River, and as such may be a northern extension of the Upper Yellowstone River Valley faults [761].
Name comments	This group of faults is located in the Brimstone Basin area, between the Clear Creek faults [759] and the Upper Yellowstone Valley faults [761].
County(s) and	

County(s) and State(s)	PARK COUNTY, WYOMING
Physiographic province(s)	MIDDLE ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:125,000 scale. <i>Comments:</i> Mapped at 1:62,500 scale and described by Richmond and Pierce (1972 #2277). Fault traces recompiled at 1:125,000-scale on map with topographic base.
Geologic setting	Northward extension of faults on east side of upper Yellowstone valley. They are only about 5 km southeast of the eastern margin of the Yellowstone caldera.
Length (km)	8 km.
Average strike	N17°W
Sense of movement	Normal
Dip Direction	E; W <i>Comments:</i> Not known, probably near 60?
Paleoseismology studies	
Geomorphic expression	In their text, Richmond and Pierce (1972 #2277) noted that "Pinedale till and kame deposits are locally offset 5-20 feet by these faults", whereas they mapped the faults as "short dashed," which indicated that faults "are topographically expressed but mantled by map unit." In this case, the deposits were shown to be Pinedale till and kame deposits.
Age of faulted surficial deposits	Richmond and Pierce (1972 #2277) noted offset of recessional glacial deposits of the most recent glaciation (Pinedale), which ended about 15,000 yrs B.P. The compiler has not confirmed that these deposits are offset.
Historic earthquake	
Most recent prehistoric	latest Quaternary (<15 ka)

deformation	<i>Comments:</i> Richmond and Pierce (1972 #2277) present an ambiguous situation. Their text indicates deposits of the last glaciation are offset, but the map shows that these same deposits mantle preexisting scarps. In this compilation, the faults are shown as post-Pinedale (<15 ka) pending further verification.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> These faults may offset Pinedale deposits as much as 1.5-6 m (5-20 ft), but the associated recurrence intervals are not known. In addition, the compiler has not confirmed this offset. On the basis of slip rate estimates for other similar faults in the area, these are assigned to the <0.2 mm/yr slip rate category.
Date and Compiler(s)	1998 Kenneth L. Pierce, U.S. Geological Survey, Emeritus
References	#2277 Richmond, G.M., and Pierce, K.L., 1972, Surficial geologic map of the Eagle Peak quadrangle: U.S. Geological Survey Miscellaneous Geologic Investigations I-637, scale 1:62,500. #1057 U.S. Geological Survey, 1972, Surficial geologic map of Yellowstone National Park: U.S. Geological Survey Miscellaneous Geologic Investigations I-710, 1 sheet, scale 1:125,000.

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