Jump to Navigation

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.

West Muddy Creek fault (Class A) No. 652

Last Review Date: 1993-04-01

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: **Haller, K.M., compiler, 1993, Fault number 652, West Muddy Creek fault, 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 02:03 PM.**

Synopsis	History of fault is poorly known, no detailed work has been completed. There is little general agreement in the time of most recent movement. Fault is complimentary basin-bounding fault to the East Muddy Creek fault [651].
Name comments	Scholten and others (1955 #69) is an early reference to West Muddy Creek fault and might be source of its name. Fault extends from south of Warm Springs Creek southward to near headwaters of Williamson Wood Canyon. **Fault ID:** Refers to number 10 (West Muddy Creek fault) of Witkind (1975 #317).

County(s) and State(s)	BEAVERHEAD COUNTY, MONTANA
Physiographic province(s)	NORTHERN ROCKY MOUNTAINS
Reliability of location	Poor Compiled at 1:250,000 scale. *Comments:* Fault trace is from 1:700,000-scale map of Ostenaa and Wood (1990 #318).
Geologic setting	High-angle, down-to-east, normal fault bounding southwest side of Muddy Creek basin.
Length (km)	20 km.
Average strike	N19°W
Sense of movement	Normal *Comments:* (Scholten and others, 1955 #69)
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	Scholten and others (1955 #69) state that fault forms distinctive scarp separating Madison Group from Tertiary sedimentary and volcanic basin fill in Muddy Creek basin.
Age of faulted surficial deposits	
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Fault has no features indicative of late Quaternary movement, but is considered it to be potential seismic source (Ostenaa and Wood, 1990 #318). Witkind (1975 #317) shows fault as late Cenozoic but suggests it might not have been active since Oligocene. Pierce and Morgan (1992 #539) indicate that this fault was active during the Tertiary but do not preclude

	Quaternary movement. Bartholomew and Lewis examined several sites along the fault and found no evidence suggesting late Quaternary faulting (M.J. Bartholomew, written commun. 1997). Because details are lacking, the fault is included in this compilation. Due to the lack of agreement in the timing of the most recent movement, a Quaternary age is assigned here.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Inferred low slip rate based on lack of data to indicate late Quaternary slip.
Date and Compiler(s)	1993 Kathleen M. Haller, U.S. Geological Survey
References	#318 Ostenaa, D., and Wood, C., 1990, Seismotectonic study for Clark Canyon Dam, Pick-Sloan Missouri Basin Program, Montana: U.S. Bureau of Reclamation Seismotectonic Report 90-4, 78 p., 1 pl. #539 Pierce, K.L., and Morgan, L.A., 1992, The track of the Yellowstone hot spot—Volcanism, faulting, and uplift, *in* Link, P.K., Kuntz, M.A., and Platt, L.B., eds., Regional geology of eastern Idaho and western Wyoming: Geological Society of America Memoir 179, p. 1-53, 1 pl. #69 Scholten, R., Keenmon, K.A., and Kupsch, W.O., 1955, Geology of the Lima region, southwestern Montana and adjacent Idaho: Geological Society of America Bulletin, v. 66, p. 345-404. #317 Witkind, I.J., 1975, Preliminary map showing known and suspected active faults in western Montana: U.S. Geological Survey Open-File Report 75-285, 36 p. pamphlet, 1 sheet, scale 1:500,000.