

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](#).

Franklin Mine Road fault (Class A) No. 684

Last Review Date: 1993-04-29

Compiled in cooperation with the Montana Bureau of Mines and Geology

citation for this record: Machette, M.N., compiler, 1993, Fault number 684, Franklin Mine Road 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 02:02 PM.

Synopsis	The Franklin Mine Road fault forms two parallel scarps that bound the southern side of Scratchgravel Hills, northwest of Helena. The scarps are both short and surrounded by bedrock, which suggests they are not part of a longer range-bounding structure. Little detailed information exists about this structure.
Name comments	First recognized and mapped by Stickney and Bingler (1981 #559), it was later shown by Johns and others (1982 #259) as a collection of fault scarps in the northern part of a zone that they called the Scratchgravel Hills-Fort Harrison fault. Stickney and Bartholomew (written commun. 1992 #556) use the name Scratchgravel Hills fault on their digital map. We adopt the name

	<p>used by Stickney (1987 #251), which refers to a local access road. The Franklin Mine Road fault is between bedrock hills at the southern margin of the Scratchgravel Hills, northwest of Helena.</p> <p>Fault ID: Refers to fault 21, Franklin Mine Road fault, of Stickney and Bartholomew (1987 #85) and the northern part of fault 37, Scratchgravel Hills-Fort Harrison faults, of Johns and others (1982 #259)</p>
County(s) and State(s)	LEWIS AND CLARK COUNTY, MONTANA
Physiographic province(s)	NORTHERN ROCKY MOUNTAINS
Reliability of location	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> From digital map of Stickney and Bartholomew (written commun. 1992 #556).</p>
Geologic setting	Northeast-trending, down-to-the-southwest, normal fault that forms two parallel scarps on an old element of the piedmont within an erosional valley on the southern side of the Scratchgravel Hills. As mapped by Stickney (1987 #251), the traces of the fault are short, entirely within Quaternary deposits and surrounded by bedrock, which suggests they are not part of a longer range-bounding structure.
Length (km)	1 km.
Average strike	N53°E
Sense of movement	<p>Normal</p> <p><i>Comments:</i> Johns and others (1982 #259).</p>
Dip Direction	<p>SE</p> <p><i>Comments:</i> Nearly vertical according to Johns and others (1982 #259).</p>
Paleoseismology studies	
Geomorphic	Has two 1-km-long scarps on older alluvial fans, but the scarps

expression	are covered by upper Pleistocene alluvium (Stickney and Bartholomew, 1987 #85). Johns and others (1982 #259) showed as many as eight scarps in this area, but most are associated with joints in bedrock.
Age of faulted surficial deposits	Fault displaces a late Pleistocene pediment (piedmont) surface, whereas the scarps are covered by uppermost Pleistocene (Pinedale) alluvial-fan deposits (Stickney and Bartholomew, 1987 #85). However, Stickney (1987 #251) mapped the upper of the two scarps as crossing uppermost Pleistocene (Pinedale) alluvium.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> Johns and others (1982 #259) show the fault as Quaternary, whereas Stickney and Bartholomew (1987 #242; written commun. 1992 #556) indicate that the fault is late Quaternary. Since the latter compilations focused on recent faults, we use their age assignment.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Inferred low slip rate is from the apparent small height of the scarps and the fact that they appear to be older than latest Pleistocene.
Date and Compiler(s)	1993 Michael N. Machette, U.S. Geological Survey, Retired
References	#259 Johns, W.M., Straw, W.T., Bergantino, R.N., Dresser, H.W., Hendrix, T.E., McClernan, H.G., Palmquist, J.C., and Schmidt, C.J., 1982, Neotectonic features of southern Montana east of 112°30' west longitude: Montana Bureau of Mines and Geology Open-File Report 91, 79 p., 2 sheets. #251 Stickney, M.C., 1987, Quaternary geologic map of the Helena valley, Montana: Montana Bureau of Mines and Geology Geologic Map 46, 1 pl., scale 1:50,000. #242 Stickney, M.C., and Bartholomew, M.J., 1987, Preliminary

map of late Quaternary faults in western Montana: Montana Bureau of Mines and Geology Open-File Report 186, 1 pl., scale 1:500,000.

#85 Stickney, M.C., and Bartholomew, M.J., 1987, Seismicity and late Quaternary faulting of the northern Basin and Range province, Montana and Idaho: Bulletin of the Seismological Society of America, v. 77, p. 1602-1625.

#556 Stickney, M.C., and Bartholomew, M.J., 1992 written commun., Preliminary map of late Quaternary faults in western Montana (digital data): Montana Bureau of Mines and Geology (digital version of MBMG Open-File Report 186), 1 pl., scale 1:500,000.

#559 Stickney, M.C., and Bingler, E.C., 1981, Earthquake-hazard evaluation of the Helena valley area, Montana: Montana Bureau of Mines and Geology Open-File Report 83, 30 p., 1 pl., scale 1:24,000.

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