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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.

Mockingbird Hill fault zone (Class A) No. 2013

Last Review Date: 2016-03-01

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2013, Mockingbird Hill fault zone, 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 02:23 PM.**

Synopsis	This generally northeast-trending fault zone cuts basin-fill sediment (reported Miocene to Pleistocene) that is probably equivalent to the Gila Conglomerate. The faults of the zone define the eastern margin of the Mangas graben in the vicinity of Gila, New Mexico. Evidence for late Pliocene to early Pleistocene movement is clear, and there appears to be a discordance in the level of correlative middle Pleistocene pediments. However, no detailed studies of Quaternary movement of the fault zone have been made.
Name comments	Source of name is unknown. The fault zone, as shown by Leopoldt (1981 #1218), extends from Maldonado Canyon on the

	north, south and southwest to a point about 0.5 km north of First Creek. At First Creek, the fault curves to the southeast where it may connect with the Silver City fault, a northwest-trending Tertiary fault. The west margin of the fault zone is formed by a basinward splay that extends in a north-northeast direction about 2.5 km, less than 0.5 km west of the main (longer) strand of the fault zone.
County(s) and State(s)	GRANT COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Traces from 1:24,000 scale map of Leopoldt (1981 #1218) coupled with accurate placement using photogrammetric methods. Extensions to the north and southeast are from 1:250,000-scale geologic map of Silver City quadrangle (Drewes and others, 1985 #1034).
Geologic setting	The fault zone trends north-northeast and juxtaposes younger basin-fill sediment (reported Pliocene to Pleistocene) against older basin-fill sediment, both of which comprise the classic Gila Conglomerate. The faults define the eastern margin of the Mangas graben in the vicinity of Gila, New Mexico. The fault curves southeast and may connect with the Silver City fault, which displaces sediment of the Gila Group (commonly known as the Gila Conglomerate), but not Quaternary surficial deposits.
Length (km)	7 km.
Average strike	N18°E
Sense of movement	Normal
Dip Direction	W *Comments:* Although Leopoldt (1981 #1218) did not show specific dip measurements, the relatively straight trace of the fault across hills and valleys implies a high-angle dip.
Paleoseismology	

studies	
Geomorphic expression	The eastern margin of the fault zone forms erosional fault-line escarpments between basin-fill sediment and uplifted Tertiary bedrock and appears to control the course of Bear Creek. The western margin (splay) fault causes a slight discordance in the elevation of erosional remnants of Leopoldt's (1981 #1218) unit Qp2 (the Wild Horse Mesa pediment-terrace). No fault scarps appear to be preserved on Quaternary surficial units. Leopoldt suggested that a similar-trending fault(s) controls the course of the Gila River on the basis of discordant elevations of ash beds and differential tilting of the Pliocene portion of the Gila Group east and west of the river, north of Gila.
Age of faulted surficial deposits	The western margin fault offsets erosional remnants of Leopoldt's (1981 #1218) unit Qp2. The unit is suspected to be of middle Pleistocene age on the basis of topographic and stratigraphic position, but no datable materials have been reported from the deposits. Unit Qp2 is the middle of three Pleistocene pediment-terrace units mapped by Leopoldt (1981 #1218). The eastern margin fault places basin-margin sediment of the Gila Group (reported as Pliocene to lower Pleistocene by Leopoldt, 1981 #1218) against uplifted older basin-fill sediment and older Tertiary rock. Movement on the eastern fault may be confined to the Pliocene, but likely continued into the early Pleistocene in association with movement on the western margin fault of the zone (Leopoldt, 1981 #1218).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Timing based on offset of middle Pleistocene Wild Horse Mesa pediment-terrace of Leopoldt (1981 #1218). Leopoldt states that upper Pleistocene terrace deposits are not offset by the fault
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* The lack of demonstrable late Pleistocene movement and apparent slight offset of the middle Pleistocene pediment suggests that the fault has a slip rate probably less than 0.2 mm/yr.

Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1034 Drewes, H., Houser, B.B., Hedlund, D.C., Richter, D.H., Thorman, C.H., and Finnell, T.L., 1985, Geologic map of the Silver City 1° x 2° quadrangle New Mexico and Arizona: U.S. Geological Survey Miscellaneous Investigations Map I-1310-C, 1 sheet, scale 1:250,000. #1218 Leopoldt, W., 1981, Neogene geology of the central Mangas graben, Cliff-Gila area, Grant County, New Mexico: Albuquerque, University of New Mexico, unpublished M.S. thesis, 160 p., 1 pl., scale 1:24,000.