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Quaternary Fault and Fold Database of the United States

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Eastern Granite Range fault (Class A) No. 1611

Last Review Date: 1999-03-06

citation for this record: **Sawyer, T.L., and Adams, K., compilers, 1999, Fault number 1611, Eastern Granite Range 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 02:29 PM.**

Synopsis	The Eastern Granite Range fault is the range-bounding normal fault that bound the eastern front of the Granite Range from the south end of Granite Basin along the west side of Hualapa Flat, to near mouth of South Fork of Negro Creek. The Granite Range is an east-tilted fault block. Included with the main range-front fault is a piedmont fault in Hualapa Flat southeast of Iverson Reservoir. The range-bounding fault juxtaposes Quaternary sediment against bedrock and is expressed as prominent escarpments on Tertiary bedrock. The piedmont fault is marked by a southeast-facing scarp on deposits as young as latest Pleistocene. Reconnaissance photogeologic mapping and regional geologic mapping are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.
Name comments	Refers to faults mapped by Bonham (1969 #2999), Slemmons (1974, unpublished Lovelock 1? X 2? sheet), and Dohrenwend

	and others (1991 #285) along east side of the Granite Range. dePolo (1998 #2845) referred to these faults as the Eastern Granite Range fault. **Fault ID:** Refers to faults LL9A and LL9B of dePolo (1998 #2845).
County(s) and State(s)	WASHOE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are primarily based on 1:250,000-scale map of Dohrenwend and others (1991 #285) which was produced by analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to scale of the photographs. Fault locations were checked against 1:250,000-scale photogeologic map of Slemmons (1974, unpublished Lovelock 1? X 2? sheet) and 1:250,000-scale bedrock map of Bonham (1969 #2999).
Geologic setting	This range-bounding normal fault bounds the eastern front of the Granite Range (Dohrenwend and Moring, 1991 #281), which is an east-tilted fault block according to Stewart (1978 #2866).
Length (km)	32 km.
Average strike	N°W
Sense of movement	Normal *Comments:* As shown by Dohrenwend and others (1991 #285).
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	Range-bounding faults juxtapose Quaternary sediment against bedrock and are expressed as prominent escarpments on Tertiary bedrock (Bonham, 1969 #2999; Dohrenwend and others, 1991 #285). dePolo (1998 #2845) reported that fault scarps are present along the range front; however, Dohrenwend and others (1991

	#285) did not show any. The piedmont fault in Hualapa Flat is marked by a southeast-facing scarp on deposits as young as latest Pleistocene. dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 207 m (183-232 m) along the northern part of the fault and 98 m (73-122 m) along the southern part.
Age of faulted surficial deposits	Little is known about the specific age of faulted deposits, but Quaternary alluvium appears to be juxtaposed against bedrock along the range-front faults depression (Dohrenwend and others, 1991 #285). The fault scarp in Hualapa Flat is on deposits as young as latest Quaternary.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The timing of most recent event is not well constrained. Age assignment reflects the inferred age from the mapping of Dohrenwend and others (1991 #285) for the range-front fault. The timing of the most recent event may be considerably younger if the post-Lake Lahontan scarp in Hualapa Flat is related to faulting on the range-front fault.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed data exists to determine slip rates for this fault. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.389 mm/yr to the northern part of the fault and 0.199 mm/yr to the southern part based on an empirical relationship between his preferred maximum basal facet height and vertical slip rate. The size of the facets (tens to hundreds of meters, as measured from topographic maps) indicates they are the result of many seismic cycles, and thus the derived slip rate reflects a long-term average. However, the late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) and the height of the topographic escarpments on Tertiary basalt suggest the slip rate is of a lesser magnitude. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1999 Thomas L. Sawyer, Piedmont Geosciences, Inc.

	Kenneth Adams, Piedmont Geosciences, Inc.
References	#2999 Bonham, H.F., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p., 1 pl., scale 1:250,000. #2845 dePolo, C.M., 1998, A reconnaissance technique for estimating the slip rate of normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p. #285 Dohrenwend, J.C., McKittrick, M.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Lovelock 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2178, 1 sheet, scale 1:250,000. #2866 Stewart, J.H., 1978, Basin-range structure in western North America—A review, *in* Smith, R.B., and Eaton, G.P., eds., Cenozoic tectonics and regional geophysics of the western cordillera: Geological Society of America Memoir 152, p. 1-31, scale 1:2,500,000.