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.

Hays Canyon Range fault zone (Class A) No. 1464

Last Review Date: 1998-07-19

citation for this record: **Sawyer, T.L., compiler, 1998, Fault number 1464, Hays Canyon Range 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 02:05 PM.**

Synopsis	This plateau-bounding fault is largely inferred along east side of Surprise Valley, from about Fortynine Creek south to Nevada State 447, based on the prominent curvilinear escarpment along west front of the Hays Canyon Range. A few faults in the northern part of the zone are expressed as prominent topographic lineaments on Tertiary basalt. Other faults in the immediate area only cut Tertiary rocks and are not included. The main fault appears to be mostly concealed by post-pluvial (<13 ka) piedmont-slope deposits. Reconnaissance photogeologic mapping of the fault zone and regional geologic mapping are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.
Name	Range-front fault mapped by Slemmons (1966, unpublished Vya

comments	1? X 2? sheet) and Bonham (1969 #2999) that extends along the east border of Surprise Valley from about Fortynine Creek south along west front of the Hays Canyon Range to Nevada State 447. dePolo (1998 #2845) referred to this structure as the Hays Canyon Range fault zone. **Fault ID:** Refers to fault V4 of dePolo (1998 #2845).
County(s) and State(s)	LASSEN COUNTY, CALIFORNIA WASHOE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Poor Compiled at 1:100,000 scale. *Comments:* Fault locations are from 1:250,000-scale maps of Slemmons (1966, unpublished Vya 1? X 2? sheet); mapping based on analysis of 1:60,000-scale AMS photography transferred to mylar overlaid onto a 1:250,000-scale topographic map using proportional dividers. Fault location is considered to be poor because the presence of the fault is inferred (Slemmons, 1966, unpublished Vya 1? X 2? sheet; Bonham, 1969 #2999).
Geologic setting	This plateau-bounding fault is largely inferred along east side of Surprise Valley, from about Fortynine Creek south to Nevada State 447, based on the prominent curvilinear escarpment along west front of the Hays Canyon Range.
Length (km)	52 km.
Average strike	N1°E
Sense of movement	Normal *Comments:* Not studied in detail; sense of movement is inferred from topography (Slemmons, 1966, unpublished Vya 1? X 2? sheet).
Dip Direction	W; NW
Paleoseismology studies	
Geomorphic expression	This plateau-bounding fault is expressed as the prominent escarpment along west front of the Hays Canyon Range

	(Slemmons, 1966, unpublished Vya 1? X 2? sheet); although this fault was not shown by Dohrenwend and Moring (1991 #281). These faults only known to displace Tertiary basalt, but evidence for young movement appears to be mostly removed by post-pluvial (<13 ka) piedmont-slope deposits. dePolo (1998 #2845) indicates there are no basal fault facets along this fault.
Age of faulted surficial deposits	Tertiary. Near north end of zone faults displace Tertiary basalt (Bonham, 1969 #2999; Dohrenwend and Moring, 1991 #281). The main range front controls the eastern margin of the Surprise Valley, and may have a history of Quaternary deformation.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent event is not well constrained, a Quaternary time is suggested based on reconnaissance photogeologic mapping of Slemmons (1966, unpublished Vya 1? X 2? sheet).
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) reported a reconnaissance vertical slip rate of 0.001 mm/yr for the fault based on the absence of scarps on alluvium and the absence of basal facets. The late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) support a low slip rate. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1998 Thomas L. Sawyer, 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. #281 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Vya 1° by 2° quadrangle, Nevada, Oregon, and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2174, 1 sheet, scale 1:250,000.