Jump to Navigation

Quaternary Fault and Fold Database of the United States

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Railroad Valley fault zone, Mount Hamilton section (Class A) No. 1380a

Last Review Date: 1998-06-30

citation for this record: **Redsteer, M.H., and Sawyer, T.L., compilers, 1998, Fault number 1380a, Railroad Valley fault zone, Mount Hamilton section, 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 02:14 PM.**

Synopsis	**General:** Railroad Valley fault zone is a long, down-to-the west, normal fault along the east side of Railroad Valley. Reconnaissance photogeologic mapping of tectonic geomorphic features and two site-specific studies of scarp morphology are the sources of data. Trench investigations and detailed studies of scarp morphology along the entire length of the fault zone have not been completed. **Sections:** This fault has 3 sections. Although not studied in detailed, the general movement history defines the sections expressed here. The northern and southern sections are characterized by older movement. The central section has had late Quaternary movement.
Name	**General:** Refers to the East Railroad fault of Schell (1981

comments	#2844), the Mount Hamilton fault (89 in Schell, 1981 #2843), in part to the Currant fault of Nitchman (1991 #2547), and to the Railroad Valley fault zone of dePolo (1998 #2845). The later name is used herein. The fault zone extends along the eastern margins of Railroad Valley and southern Newark Valley, bounding from north to south the White Pine, Grant, and the northern Quinn Canyon Ranges. **Section:** The northern part of the fault was named the Mount Hamilton fault (89) by Schell (1981 #2843); Mount Hamilton is a prominent peak within Pognip Ridge, a west facing promontory of the White Pine Range. The fault extends from Mount Hamilton south to a few kilometers north of Current Creek. We retain the original fault name as a section name herein. **Fault ID:** Referred to as the fault 89 and 100 by Schell (1981 #2843). dePolo (1998 #2845) shows this fault as LD1 on his index map but clearly the fault is EY15 (Mt. Hamilton fault) in his tables.
County(s) and State(s)	WHITE PINE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location based on 1:250,000-scale maps of Schell (1981 #2844) and of Dohrenwend and others (1991 #287; 1992 #2480). Original mapping by Schell (1981 #2843; 1981 #2844) based on photogeologic analysis of primarily 1:24,000-scale color aerial photography supplemented with 1:60,000-scale black-and-white aerial photography, transferred by inspection to 1:62,500-scale topographic maps and photographically reduced and directly transferred to 1:250,000-scale topographic maps , and field verification. Mapping by Dohrenwend and others (1991 #287; 1992 #2480) based on photogeologic 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.
Geologic setting	Moderately dipping, down-to-the-west, normal fault that bounds Railroad Valley, and the range front of the northern Quinn

	Canyon, Grant, and White Pine Ranges. There may be as much as 4.8 km of total vertical separation across the fault zone (Bortz and Murray, 1979 #2853; Anderson and others, 1983 #2852).
Length (km)	This section is 25 km of a total fault length of 140 km.
Average strike	N11°E (for section) versus N10°E (for whole fault)
Sense of movement	Normal *Comments:* (Schell, 1981 #2844; Dohrenwend and others, 1991 #287; Nitchman, 1991 #2547)
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	This part of the fault is marked by fault scarps and lineaments on surficial deposits at range front and crossing piedmont slope, truncated piedmont slopes, a few fault facets, and by abrupt well-defined piedmont-hillslope transitions juxtaposing Quaternary alluvium against bedrock (Schell, 1981 #2844; Dohrenwend and others, 1991 #287; 1992 #2480; Nitchman, 1991 #2547). dePolo (1998 #2845) indicates that only relict basal facets are present along this range front.
Age of faulted surficial deposits	Paleozoic rocks, Quaternary sediment. The southern part of the section has scarps on Early to middle Pleistocene (130 to 1,500 k.y.) deposits or undifferentiated Pleistocene deposits (Dohrenwend and others, 1991 #287); post Bruhnes-Matuyana magnetic reversal (15-700 ka) (Schell, 1981 #2843).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Both Schell (1981 #2843), and Dohrenwend and others (1991 #287; 1992 #2480) considered the last fault movement to be of Quaternary age.
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 0.001 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 Margaret Hisa Redsteer, U.S. Geological Survey Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#2852 Anderson, R.E., Zoback, M.L., and Thompson, G.A., 1983, Implications of selected subsurface data on the structural form and evolution of some basins in the northern Basin and Range province, Nevada and Utah: Geological Society of America Bulletin, v. 94, p. 1055-1072. #2853 Bortz, L.C., and Murray, D.K., 1979, Eagle Springs oil field, Nye County, Nevada, *in* Newman, G.W., and Goode, H.D., eds., Basin and Range Symposium and Great Basin field conference: Rocky Mountain Association Geologists and Utah Geological Association, p. 441-453. #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. #287 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Lund 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2180, 1 sheet, scale 1:250,000. #2480 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Ely 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2181, 1 sheet, scale 1:250,000. #2547 Nitchman, S.P., 1991, Currant fault: Nevada Bureau of Mines and Geology Fault Evaluation Report , 2 p., 1 scarp profile.

	#2843 Schell, B.A., 1981, Faults and lineaments in the MX Sitting Region, Nevada and Utah, Volume I: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 77 p. #2844 Schell, B.A., 1981, Faults and lineaments in the MX Siting Region, Nevada and Utah, Volume II: Technical report to U.S. Department of [Defense] the Air Force, Norton Air Force Base, California, under Contract FO4704-80-C-0006, November 6, 1981, 29 p., 11 pls., scale 1:250,000.