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Quaternary Fault and Fold Database of the United States

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Sheep Range fault (Class A) No. 1064

Last Review Date: 1998-04-03

citation for this record: **Anderson, R.E., compiler, 1998, Fault number 1064, Sheep 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 02:19 PM.**

Synopsis	North-striking fault system on the eastern side of the northern Sheep Range consisting of northern and southern parts with opposed displacement sense and a 2- to 3-km-wide zone of overlap. Time of last displacement estimated to be late Quaternary (<130 ka) based on inspection of 1:25,000-scale aerial photos and reconnaissance field study.
Name comments	Name applied by Schell (1981 #2843) to a north-striking fault system on the eastern flank of the northern Sheep Range extending northward for about 30 km from the Clark/Lincoln County line. dePolo (1988 #2845) refers to this as the Eastern Sheep Range fault zone. **Fault ID:** Equivalent to fault LV4 of dePolo (1988 #2845).
County(s) and	CLARK COUNTY, NEVADA

State(s)	LINCOLN COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Fault trace is taken from Schell (1981 #2843) who compiled it from 1:25,000-scale aerial photos following field studies. The southern part (within the Las Vegas 1? x 2? sheet) is also shown by Dohrenwend and others (1991 #288), but was compiled from 1:60,000-scale photos. As it is traced southward, the range margin steps about 1 km to the east, roughly at the Lincoln/Clark county line. Dohrenwend and others (1991 #288) show east-facing scarps in a 6-km-long area south of the step, whereas Schell (1981 #2843) only shows lineaments.
Geologic setting	The north-striking Sheep Range fault is one of several north-trending Basin and Range faults north and northeast of Las Vegas Valley, but it is not a major range-bounding structure. Displacement in the southern part is down to the east (Schell, 1981 #2843; Dohrenwend and others, 1991 #288). That part of the fault appears to separate the structurally intact uplifted block of the northern Sheep Range (Jayko, 1990 #1553) from the basin beneath Coyote Spring Valley, but it is not considered a main range-bounding fault (Dohrenwend and others, 1991 #288). Displacement on the northern part is down to the west, and part of an extensive system of down-to-the-west faults on which the displacement increases northward toward the northeast-striking Maynard Lake fault zone [1122] in the Caliente 1? x 2? sheet. Faults of that zone were classified as "hinging normal faults" by Jayko (1990 #1553).
Length (km)	46 km.
Average strike	N0°E
Sense of movement	Normal *Comments:* The down-to-the-east and down-to-the-west parts of the fault appear to overlap 2-3 km, linked by a narrow zone of northeast-striking connecting faults (Schell, 1981 #2843).
Dip	Steep

	Comments: As illustrated by Jayko (1990 #1553).
Paleoseismology studies	
Geomorphic expression	Part of the Sheep Range fault has been portrayed as a fault juxtaposing Quaternary alluvium against bedrock, but not as a major range-front fault (Dohrenwend and others, 1991 #288). The morphology of the eastern side of the Sheep Range would be similar to that along a major range-front fault and may be characterized by "fault juxtaposition of Quaternary alluvium against bedrock, fault scarps and lineaments on surficial deposits along or immediately adjacent to range front, a general absence of pediments, abrupt piedmont-hillslope transitions, steep bedrock slopes, faceted spurs, wineglass valleys, and subparallel systems of high-gradient, narrow, steep-sided canyons orthogonal to range front" (Dohrenwend and others, 1991 #288). However, the Sheep Range fault would be significantly less extensive and fault scarps would be substantially lower, shorter, and less continuous than those along a major range-front fault (Dohrenwend and others, 1991 #288).
Age of faulted surficial deposits	The youngest offset unit recognized by Schell (1981 #2843) is his intermediate-age alluvial-fan deposits (table A2, p. A6) which has an estimated age of 15 ka to probably about 200 ka (table 3, p. 23). The oldest unit not displaced is the young-age alluvial-fan deposits (table A2, p. A6), which have an estimated age of about 15 ka (table 3, p. 23). The youngest scarps recognized along the southern part of the fault by Dohrenwend and others (1991 #288) are on depositional or erosional surfaces that are late Pleistocene and (or) Holocene (Q2-3 surfaces with estimated ages of <30 ka). They also showed scarps on depositional or erosional surfaces that are late Pleistocene (Q2 surfaces with estimated ages between 10 ka and 130 ka) and early to middle and (or) late Pleistocene (Q1-2 surfaces with estimated ages between 10 ka and 1.6 Ma).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* The probable age of the youngest displacement along the Sheep Range fault is noted by Schell (1981 #2843) to be late Pleistocene (which he defined as >15 ka and <700 ka). As noted

	above, Schell (1981 #2843) suggested that the youngest unit displaced by the fault is late Pleistocene (10-130 ka).
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 0.01 mm/yr for the fault based on the presence 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 R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#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. #288 Dohrenwend, J.C., Menges, C.M., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Las Vegas 1° by 2° quadrangle, Nevada, California, and Arizona: U.S. Geological Survey Miscellaneous Field Studies Map MF-2182, 1 sheet, scale 1:250,000. #1553 Jayko, A.S., 1990, Shallow crustal deformation in the Pahranagat area, southern Nevada, *in* Wernicke, B.P., ed., Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada: Geological Society of America Memoir 176, p. 213-236. #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.