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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.

Arrow Canyon Range fault (Class A) No. 1061

Last Review Date: 1998-03-13

citation for this record: **Anderson, R.E., compiler, 1998, Fault number 1061, Arrow Canyon 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	Published reports show discrepant traces for the Arrow Canyon Range fault. The study that utilized relatively detailed aerial photos and included field study shows a shorter (13 km-long trace) than the less detailed study. Quaternary displacement has resulted in the greatest topographic relief along the central and highest part of the range, but this is part of the range is probably not adjacent to the deepest alluvial-filled basin. Bedrock is exposed in close proximity to the central part of the range base and, on the basis of drill-hole data, shows less than 200 m of basin-fill sediments in that part of Coyote Spring Valley. The northern and southern parts of the range are probably adjacent to deeper parts of the basins beneath Coyote Springs and Hidden valleys respectively.
Name comments	Name applied by Schell (1981 #2843) to the range-front fault at the western base of the Arrow Canyon Range.

	Fault ID: Refers to the central part of LV5 of dePolo (1988 #2845).
County(s) and State(s)	CLARK COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Fault trace taken from Schell (1981 #2843) who compiled trace from 1:25,000-scale color aerial photos after field studies. Location of northern 10 km, along the western base of the northern Arrow Canyon Range, from Dohrenwend and others (1991 #288).
Geologic setting	The Arrow Canyon Range fault is one of several major basin and range faults that bound generally north-trending ranges in the area north of Las Vegas Valley and northeast of Las Vegas. It bounds an east-tilted range block on the west. Near the northern end of its Quaternary trace, the fault is intersected by a 2-km-long, northeast-striking fault referred to as the Transector fault by Schell (1981 #2843), which we include as part of this fault. Schell shows the northeast part of the Transector fault as a Quaternary structure that cuts the Arrow Canyon Range fault, but Page (1998, unpub. map of Las Vegas 100,000-scale sheet) does not show it extending across Coyote Spring Valley to the Arrow Canyon Range fault. On the basis of Page's geologic mapping, the Transector fault is not shown as a cutting the Arrow Canyon Range fault in the Quaternary. To the north, the fault projects toward the southernernmost Wildcat Wash fault [1062], a similarly oriented down-to-the-west range-front fault, but the two are conspicuously misaligned.
Length (km)	25 km.
Average strike	N9°E
Sense of movement	Normal
Dip	55°-60°W *Comments:* Page (1998, unpub. map of Las Vegas 100,000-scale

	sheet) shows bedrock splays of the north part of the Arrow Canyon Range fault with west dips of 55?-60?, and in cross section he shows the main fault with similar dip.
Paleoseismology studies	
Geomorphic expression	The west-facing margin of the Arrow Canyon Range is precipitous and the transition to the piedmont is abrupt. Along most of the range front, alluvium is in fault contact with bedrock, but discontinuous west-facing scarps are formed on Quaternary deposits (Dohrenwend and others, 1991 #288). Some of the bedrock/alluvial scarps are fault-line scarps (Page, 1998, unpub. map of Las Vegas 100,000-scale sheet).
Age of faulted surficial deposits	Early to middle (or) late Pleistocene (Dohrenwend and others, 1991 #288); intermediate-age alluvial-fan deposits estimated at 15 ka to 700 ka (mostly 15 ka to 200 ka in Schell, 1981 #2843). Page (1998, unpub. map of Las Vegas 100,000-scale sheet) shows the northern part of the Arrow Canyon Range fault as cutting older alluvium estimated to be middle and early Pleistocene and buried by intermediate alluvium estimated to be upper and middle Pleistocene, in essential agreement with Dohrenwend and others (1991 #288).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The timing of most recent event is not well constrained, and the sources do not concur. Shell (1981 #2843, table A2) suggests the age of faulted deposits are 15 ka to 700 ka (mostly 15 ka to 200 ka). However, Page (1998, unpub. map of Las Vegas 100,000-scale sheet) shows the northern part of the Arrow Canyon Range fault as cutting older alluvium estimated to be middle and early Pleistocene and buried by intermediate alluvium estimated to be upper and middle Pleistocene, in essential agreement with Dohrenwend and others (1991 #288). Therefore, the assigned age is based on the latter two publications.
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. No data available on offset amounts or height or shape of scarps to guide slip-rate estimate. 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. #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.