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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.

Cherry Creek fault zone (Class A) No. 1275

Last Review Date: 2000-11-30

citation for this record: **Redsteer, M.H., compiler, 2000, Fault number 1275, Cherry Creek 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 02:16 PM.**

Synopsis	The Cherry Creek fault zone is defined by a series of down-to-the-west scarps and lineaments on the western side of the Cherry Creek Range. It is subparallel to the Butte Valley fault zone [1276] to the south, both of which trend northeast. The most recent fault movement is described as probable latest Quaternary. Reconnaissance photogeologic mapping and limited analysis of scarp morphology are the sources of data. Trench investigations and detailed studies of scarp morphology have not been completed.
Name comments	Refers to the Cherry Creek fault of Schell (1981 #2843), also referred to as of the northern of two Butte Valley faults by dePolo (1998 #2845), and was also mapped by Dohrenwend and others (1992 #2480). The original name is given preference here. The Cherry Creek fault is on the western side of the Cherry Creek Range, extending northward to west of Red Butte.

	Fault ID: Refers to fault number 13 of Schell (1981 #2843) and fault EY8A (Butte Valley faults) of dePolo (1998 #2845).
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 map of Dohrenwend and others (1992 #2480). Mapping 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 to 1:62,500-scale topographic maps and photographically reduced and transferred to 1:250,000-scale topographic maps. Subsequent mapping by 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	The Cherry Creek fault zone is typical of Basin and Range extensional faulting. It is a major down-to-the-west range front fault on the western margin of the Cherry Creek Range.
Length (km)	34 km.
Average strike	N34°E
Sense of movement	Normal
Dip Direction	NW
Paleoseismology studies	
Geomorphic expression	The Cherry Creek fault zone lies on the western slope of the Cherry Creek Range and coincides with a change in elevation and topographic relief at the margin of the western range front. dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 180 m (160-200 m). Schell (1981 #2843) estimates the maximum scarp height to be 2.4 m and the maximum scarp slope angle to be 6.5?. The Cherry Creek fault zone bisects Butte Valley at an acute angle and its location corresponds to a marked change

	in valley morphology. Southeast of the fault zone, Butte Valley is higher in elevation and narrower; northwest of the fault zone, the valley is broad and flat.
Age of faulted surficial deposits	Holocene to Pleistocene.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Schell (1981 #2843) indicates that the youngest units cut by faulting are less than 15 ka. In addition, Dohrenwend and others (1992 #2480) estimated the age of faulting to be latest Pleistocene or Holocene (0-30 ka). Schell (1981 #2843) estimates a maximum scarp slope angle of 6.5? on a 2.4-m-high scarp and, therefore, Holocene movement is not likely. Thus, the more conservative age assignment based mapping by Dohrenwend and others (1992 #2480) is used here.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No data is available to determine slip rate for this fault. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.329 mm/yr for the Cherry Creek fault zone (his EY8A) 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.) suggest the slip rate during this period 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)	2000 Margaret Hisa Redsteer, U.S. Geological Survey
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. #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. #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.