

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](#).

Central Steptoe fault zone (Class A) No. 1238

Last Review Date: 2000-10-26

citation for this record: Redsteer, M.H., compiler, 2000, Fault number 1238, Central Steptoe 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 northern part of this long fault zone is comprised of a linear series of down-to-the-west scarps. However, to the south of Mosier Canyon the fault broadens to form a zone 2.5-3 km wide zone consisting of short and discontinuous subparallel scarps. Reconnaissance, photogeologic mapping and limited field inspection of scarps are the sources of data for the Central Steptoe fault. Trench investigations and detailed studies of scarp morphology have not been completed.
Name comments	Refers to the Central Steptoe fault zone mapped by (Schell, 1981 #2843), part of the Southeast Steptoe Valley fault swarm of dePolo (1998 #2845). It was also mapped as a Quaternary fault by Dohrenwend and others (1992 #2480), who extended the fault further northward. This long fault extends along the western range front of the Schell Creek Range, from the central part of Steptoe Valley, south of U.S. Highway 93 (near Willow Creek), northward

	<p>through the town of McGill, Nevada, to 2 km south of Fitzhugh Creek. For convenience, we have included several additional faults to the north that have the same trend, dip direction and geologic setting. These include a group of northeast-trending faults concentrated in a zone about 10 km long and terminating in the proximity of Schellbourne Pass and a 3-km-long, northeast-trending fault terminating in the proximity of South Butte Well.</p> <p>Fault ID: Refers to fault 127 of Schell (1981 #2843) and part of fault EY10 of dePolo (1998 #2845).</p>
County(s) and State(s)	WHITE PINE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	<p>Good Compiled at 1:100,000 scale.</p> <p><i>Comments:</i> Location based on 1:250,000-scale map of Dohrenwend and others (1992 #2480). Mapping based on photogeologic analysis of 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.</p>
Geologic setting	The Central Steptoe fault 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 Schell Creek Range; it forms the eastern margin of the central part of the Steptoe Valley. The western the Schell Creek Range is composed of uplifted Paleozoic clastic and carbonate rocks that been folded and faulted, and less deformed Eocene to Oligocene volcanic rocks (Hose and Blake, 1976 #4341).
Length (km)	103 km.
Average strike	N9°E
Sense of movement	Normal

	<i>Comments:</i> Shown as normal by (Schell (1981 #2844)).
Dip	10.5° W <i>Comments:</i> Near surface dip estimate from Schell (1981 #2843) from scarp on the southern extent of the fault (south of Mosier Canyon). This dip seems anomalously shallow for a Basin and Range normal fault.
Paleoseismology studies	
Geomorphic expression	The fault is marked by a moderately high (13 m) scarp (Schell, 1981 #2844), and prominent topographic lineaments on Quaternary deposits of the central Steptoe Valley (Dohrenwend and others, 1992 #2480). To the north the fault coincides with an abrupt change in elevation and juxtaposes bedrock against Quaternary alluvium forming a prominent range front fault.
Age of faulted surficial deposits	Early to middle Pleistocene and/or late Pleistocene according to reconnaissance photogeologic analysis by Dohrenwend and others (1992 #2480), as well as Tertiary and Paleozoic (Hose and Blake, 1976 #4341).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> Although timing of most recent prehistorical event is not well constrained, reconnaissance studies by Dohrenwend and others (1992 #2480) and by Schell (1981 #2843; 1981 #2844) suggests a late Pleistocene time based on photogeologic interpretation.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> 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)	2000 Margaret Hisa Redsteer, U.S. Geological Survey
References	<p>#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.</p> <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.</p> <p>#4341 Hose, R.K., and Blake, M.C., Jr., 1976, Geology and mineral resources of White Pine County, Nevada: Nevada Bureau of Mines and Geology Bulletin 85, 105 p.</p> <p>#2843 Schell, B.A., 1981, Faults and lineaments in the MX Siting 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.</p> <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.</p>

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