Jump to Navigation

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.

Gabbs Valley fault zone (Class A) No. 1322

Last Review Date: 1998-07-19

citation for this record: **Adams, K., and Sawyer, T.L., compilers, 1998, Fault number 1322, Gabbs Valley 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 02:15 PM.**

Synopsis	These short generally subparallel faults bound both sides of a small horst and are widely distributed on piedmont slopes and on floor of southeastern Gabbs Valley. An approximately 6-km-long fault ruptured in the 1932 Cedar Mountain earthquake, in addition to two short strands on the valley floor. Reconnaissance and locally detailed photogeologic mapping of the fault zone and studies of late Cenozoic geology and historical faulting are the sources of data.
Name comments	Refers to a group of faults mapped in southeastern Gabbs Valley by Gianella and Callaghan (1934 #1515; 1934 #1516), Dohrenwend (1982 #2481), Molinari (1984 #2917), Ekren and Byers (1986 #2906; 1986 #2907), dePolo (1994 #2458), and Bell (unpublished map of Quaternary faults and lineaments, Monte Cristo Valley). dePolo (1998 #2845) named it the Gabbs Valley fault system.

	Fault ID: Includes faults T1B and T1C (Gabbs Valley fault system) of dePolo (1998 #2845).
County(s) and State(s)	MINERAL COUNTY, NEVADA NYE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Locations chiefly from 1:250,000-scale map by Dohrenwend (1982 #2481) based on photogeologic analysis of 1:58,000-nominal-scale color-infrared photography and from 1:48,000 geologic map by Ekren and Byers (1986 #2906; 1986 #2907); 1932 rupture traces are from 1:48,000-scale map of dePolo (1994 #2458), which is a detailed compilation of 1932 rupture zone based on original mapping by Gianella and Callaghan (1934 #1515) and by Molinari (1984 #2917) supplemented by photogeologic analysis of 1:12,000-scale low-sun-angle aerial photography and field reconnaissance.
Geologic setting	These short, generally subparallel faults bound both sides of a small horst and are widely distributed on piedmont slopes and the floor of southeastern Gabbs Valley.
Length (km)	24 km.
Average strike	N18°E
Sense of movement	Normal *Comments:* Sense of movement from Ekren and Byers (1986 #2906; 1986 #2907) ; however, dePolo (1994 #2458) suggests that lateral movement is suggested by the right echelon steps of some of the 1932 scarps.
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	The faults are expressed as scarps on Quaternary-Tertiary and Quaternary alluvium and as north-striking faults which juxtapose high-level, piedmont-slope surfaces against bedrock along both

	sides of a small north-trending horst composed of Tertiary rock in southeastern Gabbs Valley (Ekren and Byers, 1986 #2906; 1986 #2907). The 1932 ruptures are predominately down to the west and formed small scarps a few centimeters high (dePolo, 1994 #2458). Post-faulting erosion has considerably modified the 1932 features (Yount and others, 1993 #621). dePolo (1998 #2845) indicates that there are no basal fault facets.
Age of faulted surficial deposits	Quaternary; Tertiary. Scarps and lineaments have been mapped on Quaternary-Tertiary, Quaternary piedmont-slope, and on Quaternary valley-floor deposits (Gianella and Callaghan, 1934 #1515; Molinari, 1984 #2917; Ekren and Byers, 1986 #2906; 1986 #2907; Yount and others, 1993 #621).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent prehistorical event is not well constrained, a Pleistocene time is suspected based on reconnaissance photogeologic mapping by Dohrenwend (1982 #2481).
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 Kenneth Adams, Piedmont Geosciences, Inc. Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#2458 dePolo, C.M., 1994, Surface faulting associated with the December 20, 1932 Cedar Mountain earthquake, central Nevada: Nevada Bureau of Mines and Geology Open-File Report OF-94-4, scale 1:24,000.

#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.

#2481 Dohrenwend, J.C., 1982, Map showing late Cenozoic faults in the Walker Lake 1° by 2° quadrangle, Nevada-California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1382-D, 1 sheet, scale 1:250,000.

#2906 Ekren, E.B., and Byers, F.M., Jr., 1986, Geologic map of the Murphys Well, Pilot Cone, Copper Mountain, and Poinsettia Spring quadrangles, Mineral County, Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-1576, scale 1:48,000.

#2907 Ekren, E.B., and Byers, F.M., Jr., 1986, Geologic map of the Mount Annie NE, Mount Annie, Ramsey Spring and Mount Annie SE quadrangles, Mineral and Nye Counties, Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-1579, scale 1:48,000.

#1515 Gianella, V.P., and Callaghan, E., 1934, The Cedar Mountain, Nevada, earthquake of December 20, 1932: Bulletin of the Seismological Society of America, v. 24, p. 345- 377.

#1516 Gianella, V.P., and Callaghan, E., 1934, The earthquake of December 20, 1932, at Cedar Mountain, Nevada, and its bearing on the genesis of Basin Range structure: Journal of Geology, v. 42, p. 1-22.

#2917 Molinari, M.P., 1984, Late Cenozoic structural geology of Stewart and Monte Cristo Valleys, Walker Lane of west-central Nevada, *in* Lintz, J., Jr., ed., Western geological excursions: Geological Society of America, Annual Meeting, Reno, Nevada, v. 4, p. 219-231.

#621 Yount, J.C., Bell, J.W., dePolo, C.M., and Ramelli, A.R., 1993, Neotectonics of the Walker Lane, Pyramid Lake to Tonopah, Nevada—Part I, *in* Lahren, M.M., Trexler, J.H., Jr., and Spinosa, C., eds., Crustal evolution of the Great Basin and the Sierra Nevada: Reno, Mackay School of Mines, University of Nevada, Geological Society of America, Cordilleran/Rocky Mountain section meeting, Reno, Nevada, May 19-21, 1993, Guidebook, p. 383-391.