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.

unnamed fault in eastern Dixie Valley (Class A) No. 1688

Last Review Date: 1999-03-31

citation for this record: **Sawyer, T.L., compiler, 1999, Fault number 1688, unnamed fault in eastern Dixie Valley, 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 02:26 PM.**

Synopsis	This distributed group has short range-front faults bounding east front of Clan Alpine Mountains and piedmont faults extending from north end of Louderback Mountains into eastern Dixie Valley; southwestern piedmont fault had as much as 0.2 m vertical displacement in 1954 Fairview Peak-Dixie Valley earthquakes. Reconnaissance and detailed photogeologic mapping of the faults and a few scarp measurements are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.
Name comments	Refers to faults mapped by Bell (1984 #105), Greene and others (1991 #3487), Caskey (1996 #2437), and Caskey and others (1996 #2439) extending from north end of the Louderback Mountains into eastern Dixie Valley and along west side of Clan

	Alpine Mountains.
County(s) and State(s)	CHURCHILL COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are based on 1:250,000-scale map of Bell (1984 #105). Mapping is from photogeologic analysis of 1:40,000-scale low sun-angle aerial photography, supplemented with 1:12,000-scale aerial photography of selected areas, several low-altitude aerial reconnaissance flights, and field reconnaissance of major structural and stratigraphic relationships. Southwestern piedmont fault trace is from 1:48,000-scale map of Caskey (1996 #2437; reproduced in Caskey and others, 1996 #2439). Mapping based on detailed photogeologic analysis of 1:10,000- to 1:12,000-scale vertical, low-sun-angle aerial photography, transferred by inspection to 1:24,000-scale mylar orthophotos and directly to 1:24,000-scale topographic maps, that were then reduced to 1:48,000-scale; mapping also based on detailed field mapping and numerous measurements of fault offsets along fault.
Geologic setting	This distributed group has short range-front faults bounding east front Clan Alpine Mountains and piedmont faults extending from north end of Louderback Mountains into eastern Dixie Valley (Bell, 1984 #105; Greene and others, 1991 #3487; Caskey, 1996 #2437; Caskey and others, 1996 #2439); southwestern piedmont fault had as much as 0.2 m vertical displacement in 1954 Fairview Peak-Dixie Valley earthquakes (e.g., Caskey, 1996 #2437). The 1954 rupture pattern suggests that this fault is related to the Gold King fault [1691], Louderback Mountains fault [1689], the West Gate fault [1692], and southern part of the Dixie Valley fault zone [1687b].
Length (km)	12 km.
Average strike	N19°E
Sense of movement	Normal *Comments:* Not studied in detail; sense of movement from

	displacement measurements of Caskey (1996 #2437) and inferred from topography.
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	Piedmont faults are expressed as scarps; one west-facing scarp extends for about 2 km and its southern part was uplifted 0.2 m or less in 1954. Range-front faults are expressed as topographic lineaments coinciding with Quaternary alluvium-bedrock contacts that, at least locally, are mapped as fault contacts (Bell, 1984 #105; Greene and others, 1991 #3487; Caskey, 1996 #2437; Caskey and others, 1996 #2439).
Age of faulted surficial deposits	Quaternary; Tertiary. Undifferentiated Quaternary piedmont-slope deposits are faulted along piedmont faults and are locally juxtaposed against Tertiary bedrock along range-front faults (Bell, 1984 #105; Greene and others, 1991 #3487).
Historic earthquake	Fairview Peak earthquake 1954 Dixie Valley earthquake 1954
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent paleoevent is not well constrained, a Quaternary time is suggested based on mapping of Bell (1984 #105), Caskey (1996 #2437), Caskey and others (1996 #2439), Greene and others (1991 #3487), and Dohrenwend and others (1996 #2846).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A low slip rate is inferred from general knowledge of slip rates estimated for other faults in the region and low height of topographic lineaments on Tertiary rocks.
Date and Compiler(s)	1999 Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#105 Bell, J.W., 1984, Quaternary fault map of Nevada—Reno sheet: Nevada Bureau of Mines and Geology Map 79, 1 sheet, scale 1:250,000.

#2437 Caskey, S.J., 1996, Surface faulting, static stress changes, and earthquake triggering during the 1954 Fairview Peak (M (sub s) = 7.2) and Dixie Valley (M (sub s) = 6.8) earthquakes, central Nevada: Reno, University of Nevada, Mackay School of Mines, unpublished Ph.D. dissertation, 144 p.

#2439 Caskey, S.J., Wesnousky, S.G., Zhang, P., and Slemmons, D.B., 1996, Surface faulting of the 1954 Fairview Peak (Ms 7.2) and Dixie Valley (Ms 6.8) earthquakes, central Nevada: Bulletin of the Seismological Society of America, v. 86, no. 3, p. 761-787.

#2846 Dohrenwend, J.C., Schell, B.A., Menges, C.M., Moring, B.C., and McKittrick, M.A., 1996, Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada, *in* Singer, D.A., ed., Analysis of Nevada's metal-bearing mineral resources: Nevada Bureau of Mines and Geology Open-File Report 96-2, 1 pl., scale 1:1,000,000.

#3487 Greene, R.C., Stewart, J.H., John, D.A., Hardyman, R.F., Silberling, N.J., and Sorensen, M.L., 1991, Geologic map of the Reno 1° by 2° quadrangle, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2154-A, scale 1:250,000.