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.**

## Eglington fault (Class A) No. 1733

**Last Review Date: 1999-05-10**

***citation for this record:*** **Anderson, R.E., compiler, 1999, Fault number 1733, Eglington 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 02:24 PM.**

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| **Synopsis** | The alluvial-fan and basin-fill deposits that form the floor of Las Vegas Valley contain several gently sloping, scarps as much as 30 m high in a zone about 27 km long and varying from 6 km wide in the south to 12 km wide in the north. The Eglington fault forms a prominent scarp at the northern end of broad arcuate zone (convex west) that extends through metropolitan Las Vegas. There is a contemporary debate as to whether this and associated scarps [1120] are tectonic, or of polygenetic origin that would include major enhancement by processes of dissolution and/or hydrocompaction. Little is known about the offset of the basin-floor bedrock units beneath these scarps or of their structural significance in the development of the Las Vegas basin. Most of the scarps are not known to be located over intrabasin faults, but the northeast-striking Eglington scarp is apparently situated over a large basement offset (about 200 m) buried beneath about 2 km of basin-fill sediment. Although unlikely, reports addressing the fault suggest it may have recurrence interval of a few thousand years and a slip rate as high as 1.5 mm/yr. |

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| **Name comments** | Referred to as the Eglington fault by dePolo (1998 #2845). This fault forms scarps of uncertain origin in the northern part of Las Vegas Valley in the vicinity of Las Vegas, Nev.<br><br>**Fault ID:** Refers to fault number LV12 by dePolo (1998 #2845). |
| **County(s) and State(s)** | CLARK COUNTY, NEVADA |
| **Physiographic province(s)** | BASIN AND RANGE |
| **Reliability of location** | Good<br>Compiled at 1:100,000 scale.<br><br>*Comments:* The scarp was mapped at 1:250,000 scale by Bell and Price (1992 #2419; 1993 #4703) and at that same scale by Dohrenwend and others (1991 #288) as part of a photogeologic compilation of Quaternary faults. The traces used herein are compiled from an unpublished geologic map of the Las Vegas 1? x1/2? quadrangle (scale 1:100,000) in preparation by the U. S. Geological Survey (R. Page, written commun, 1998). |
| **Geologic setting** | The alluvial fan and basin-fill deposits that form the floor of Las Vegas Valley contain several high scarps in a zone about 27 km long and varying from 6 km wide in the south to 12 km wide in the north (Mifflin, 1999 #4709). The northeast-striking Eglington scarp is the northernmost of this group, the others being described separately [1120]. The scarps in the south strike mostly north-northwest and, as traced north, curve to the northeast suggesting a broadly arcuate shape (convex west) extending through metropolitan Las Vegas. This shape is similar to that of the Frenchman Mountain fault [1117] (Bell and dePolo, 1998 #4710). There is a contemporary debate as to whether these scarps are tectonic or of polygenetic origin that would include major enhancement by processes of dissolution and/or hydrocompaction (dePolo and Ramell, 1998 #4707; Mifflin, 1998 #4709; Zuckerman, 1998 #4713). Little is known of the offset of the basin floor beneath these scarps or of their structural significance in the development of the Las Vegas basin. Most are not known to be located over intrabasin faults, but the Eglington scarp at the north margin of the group is apparently situated over a large basement offset (about 200 m) buried beneath about 2 km of basin-fill sediments (Slemmons, 1998 #4708, Bell, 1998 #4710). |

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| **Length (km)** | 11 km. |
| **Average strike** | N28°E |
| **Sense of movement** | Normal<br><br>*Comments:* Bell and dePolo (1998 #4710) noted that faults in Las Vegas Valley parallel those in and adjacent to the marginal mountain ranges, faults that have both normal and strike slip. |
| **Dip Direction** | E; SE<br><br>*Comments:* Probably steep to moderate, typical of Basin-Range faults. Displacements across the broad zone are generally down to the east and southeast. |
| **Paleoseismology studies** | |
| **Geomorphic expression** | Most scarps in Las Vegas Valley are highly modified by urbanization. There was no systematic effort to describe them prior to their modification over the past 4-5 decades. In general, they are formed on alluvial-fan and basin-fill sediments and are broad gentle geomorphic features with heights of as much as 30 m. |
| **Age of faulted surficial deposits** | Recent unpublished geologic mapping at 1:100,000 scale (R. Page, written commun., 1998) shows most scarps formed on deposits of Pliocene and Quaternary age or Pleistocene age or as forming the boundary between deposits of those ages and deposits of late Pleistocene and Holocene age. Deposits with an estimated age of 14-30 ka are offset at the northeast-trending Eglington scarp at the north margin of the scarp area (Bell and dePolo, 1998 #4710). |
| **Historic earthquake** | |
| **Most recent prehistoric deformation** | late Quaternary (<130 ka)<br><br>*Comments:* If the Eglington scarp is associated with paleoearthquakes, the last displacement event probably occurred 14-30 ka (Bell and dePolo, 1998 #4710). For the other scarps [1120], the last faulting event is probably much older, Quaternary to perhaps Pliocene along some scarps. Geodetic monitoring of |

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| | subsidence caused by overdrafting of groundwater in Las Vegas Valley is interpreted (Bell and dePolo, 1998 #4710) as having reactivated faults. |
| **Recurrence interval** | *Comments:* According to Slemmons (1998 #4708) recurrence intervals are unconstrained. |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* Slip rates of 1-1.5 mm/yr are estimated for the Eglington scarp (dePolo and Ramell, 1998 #4707; Bell and dePolo, 1998 #4710), but even the proponents of a predominantly tectonic origin of the scarps, question the tectonic significance of such high rates. dePolo (1998 #2845) did not include preferred rates in his tabulation, but dePolo and Ramelli (1998 #4707) suggested a rate of about 1.0 mm/yr. Other than evidence for fairly recent faulting (14-30 ka, Bell and dePolo, 1998 #4710), 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)** | 1999<br>R. Ernest Anderson, U.S. Geological Survey, Emeritus |
| **References** | #4710 Bell, J.W., and dePolo, C.M., 1998, On the origin of Quaternary fault scarps in Las Vegas valley, *in* dePolo, C.M., ed., Proceedings of a conference on seismic hazards in the Las Vegas region: Nevada Bureau of Mines and Geology Open-File Report 98-6, p. 70.<br><br>#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.<br><br>#4707 dePolo, C.M., and Ramelli, A.R., 1998, Quaternary and suspected Quaternary faults in Nevada south of 37° N. Latitude, *in* dePolo, C.M., ed., Proceedings of a conference on seismic hazards in the Las Vegas region: Nevada Bureau of Mines and Geology Open-File Report 98-6, p. 25.<br><br>#288 Dohrenwend, J.C., Menges, C.M., Schell, B.A., and Moring, |

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| | 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.<br><br>#4709 Mifflin, M.D., 1998, Observations on the origin of Las Vegas compaction scarps, *in* dePolo, C.M., ed., Proceedings of a conference on seismic hazards in the Las Vegas region: Nevada Bureau of Mines and Geology Open-File Report 98-6, p. 44-69.<br><br>#4708 Slemmons, D.B., 1998, Seismotectonic setting for the Las Vegas basin, Nevada, *in* dePolo, C.M., ed., Proceedings of a conference on seismic hazards in the Las Vegas region: Nevada Bureau of Mines and Geology Open-File Report 98-6, p. 41.<br><br>#4713 Zuckerman, J.M., 1998, The controversy over the origin of the Eglington fault, *in* dePolo, C.M., ed., Proceedings of a conference on seismic hazards in the Las Vegas region: Nevada Bureau of Mines and Geology Open-File Report 98-6, p. 197-204. |