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.

Northern Virginia Range fault (Class A) No. 1661

Last Review Date: 1999-03-26

citation for this record: **Adams, K., and Sawyer, T.L., compilers, 1999, Fault number 1661, Northern Virginia Range 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 02:26 PM.**

Synopsis	This small group of intermontane faults bound a small closed basin in northern Virginia Range and extend from near western front of range northeast to the Truckee River canyon near Lagomarsino Canyon. Faults adjacent to the more than 6-m-deep closed depression offset Pleistocene and Holocene alluvium and juxtapose these deposits against Tertiary bedrock, providing evidence for young movement. Detailed surficial and bedrock geologic mapping and regional geologic mapping are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.
Name comments	Refers to faults mapped by Bonham (1969 #2999), Bell and Bonham (1987 #3643), Greene and others (1991 #3487), Bonham and Bell (1993 #2427) in northern Virginia Range extending from

	near western front of range northeast to Truckee River canyon near Lagomarsino Canyon. dePolo (1998 #2845) referred to these faults as the Northern Virginia Range fault. **Fault ID:** Refers in part to fault R21 (Northern Virginia Range fault) of dePolo (1998 #2845).
County(s) and State(s)	WASHOE COUNTY, NEVADA STOREY COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are primarily based on 1:24,000-scale surficial and bedrock geologic mapping of Bonham and Bell (1993 #2427). Additional faults in the group located from 1:250,000-scale regional bedrock map of Bonham (1969 #2999).
Geologic setting	This small group of intermontane faults bound a small closed basin in the northern Virginia Range and extend from near the western front of range northeast to the Truckee River canyon near Lagomarsino Canyon (Bonham, 1969 #2999; Bonham and Bell, 1993 #2427). Faults adjacent to the more than 6-m-deep closed depression offset Pleistocene and Holocene alluvium and juxtapose these deposits against Tertiary bedrock, providing evidence for young movement (Bonham and Bell, 1993 #2427). The northernmost fault primarily involves bedrock, but also apparently displaces alluvium in the Truckee River canyon near Hafed (Bonham, 1969 #2999).
Length (km)	12 km.
Average strike	N26°E
Sense of movement	Normal *Comments:* (Bonham and Bell, 1993 #2427)
Dip Direction	NW; SE
Paleoseismology studies	
Geomorphic	Faults are expressed as discontinuous northwest- and southeast-

expression	facing scarps adjacent to a closed depression that appear to define a two-kilometer-long graben that is nearly one kilometer wide (Bonham and Bell, 1993 #2427). Intermontane faults north and south of the closed depression are expressed by prominent topographic lineaments including topographic escarpments and aligned saddles and sidehill benches (Bonham, 1969 #2999; Bonham and Bell, 1993 #2427). dePolo (1998 #2845) reports a maximum preferred basal fault facet height of 49 m (37-61 m).
Age of faulted surficial deposits	Holocene; Pleistocene; Tertiary. Bonham and Bell (1993 #2427) mapped faults that displace Holocene basin-fill deposits, Pleistocene alluvium, and Tertiary volcanic rocks.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Although timing of most recent event is not well constrained, a latest Quaternary time is suspected based on the large-scale mapping of Bonham and Bell (1993 #2427).
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 o 0.147 mm/yr 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 low. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1999 Kenneth Adams, Piedmont Geosciences, Inc. Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#3643 Bell, J.W., and Bonham, H.F., 1987, Geologic map of the Vista quadrangle: Nevada Bureau of Mines and Geology Map

	4Hg, scale 1:24,000. #2999 Bonham, H.F., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p., 1 pl., scale 1:250,000. #2427 Bonham, H.F., Jr., and Bell, J.W., 1993, Geologic map, Steamboat quadrangle: Nevada Bureau of Mines and Geology Map 4Fg, 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. #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.