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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.

Hot Springs Mountains fault zone (Class A) No. 1673

Last Review Date: 2006-06-09

citation for this record: **Adams, K., Sawyer, T.L., and Haller, K.M., compilers, 2006, Fault number 1673, Hot Springs Mountains 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 02:26 PM.**

Synopsis	This group of short, discontinuous, northeast-striking faults consist of: (1) intra basin and piedmont faults in vicinity of Black Butte at southern end of Hot Springs Mountains, (2) intermontane faults that extend from vicinity of Black Butte northeast through Hot Springs Mountains and onto northeastern piedmont slope, and (3) intra basin faults at northeast end of Hot Springs Mountains. Reconnaissance photogeologic 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Name comments	Refers to faults mapped by Slemmons (1968, unpublished Reno 1:250,000-scale map), Bell (1984 #105), and Greene and others (1991 #3487) extending northeast from Black Butte, through the

	Hot Springs Mountains, to northeastern piedmont slope of the Hot Springs Mountains near Parran railroad siding. dePolo (1998 #2845) referred to these faults as the Hot Springs Mountains fault zone. **Fault ID:** Refers in part to fault zone R24 (Hot Springs Mountain fault zone) of dePolo (1998 #2845).
County(s) and State(s)	LYON COUNTY, NEVADA CHURCHILL 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 1:250,000-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. Additional fault traces located from Slemmons (1968, unpublished Reno 1:250,000-scale map).
Geologic setting	This group of short, discontinuous, northeast-striking faults consists of: (1) intra basin and piedmont faults in vicinity of Black Butte at southern end of Hot Springs Mountains, (2) northeast-striking intermontane faults that extend from vicinity of Black Butte northeast through Hot Springs Mountains and onto northeastern piedmont, and (3) intra basin faults at northeast end of Hot Springs Mountains (Bell, 1984 #105; Greene and others, 1991 #3487).
Length (km)	43 km.
Average strike	N28°E
Sense of movement	Normal *Comments:* Not studied in detail; normal sense of movement from Slemmons (1968, unpublished Reno 1:250,000-scale map), Greene and others (1991 #3487), and dePolo (1998 #2845).
Dip Direction	SE

Paleoseismology studies	Site 1673-1 Wesnousky and others (2006 #7559) excavated a trench across a 2-m-high scarp on alluvium north of Interstate 80. Pure normal displacement of Lake Lahonton deposits were observed.
Geomorphic expression	Faults in vicinity of Black Butte are expressed as lineaments (Bell, 1984 #105) on late Pleistocene lacustrine deposits and landforms. Intermontane faults are expressed as prominent topographic lineaments and low southeast-facing scarps on Tertiary volcanic and sedimentary bedrock (Bell, 1984 #105; Greene and others, 1991 #3487). Intrabasin faults at northeastern end of Hot Springs Mountains are expressed by scarps and lineaments (Bell, 1984 #105) on late Pleistocene to Holocene (?) lacustrine sediments and beach ridges.
Age of faulted surficial deposits	Holocene; Quaternary; Tertiary. Faults displace Quaternary deposits, presumably including Holocene deposits, and displace Tertiary volcanic and sedimentary rocks (Bell, 1984 #105; Greene and others, 1991 #3487).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* The timing of most recent event is not well constrained, Wesnousky and others (2006 #7559) report that deposits that correlate with Lake Lahonton are offset in the trench. A Quaternary time is suggested based on reconnaissance photogeologic mapping of Bell (1984 #105) and from the studies of Dohrenwend and others (1996 #2846). Younger faulting may be implied by the lineaments near Black Butte mapped by Bell (1984 #105).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.01 mm/yr for the fault based on the presence or absence of scarps on alluvium and 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)	2006 Kenneth Adams, Piedmont Geosciences, Inc. Thomas L. Sawyer, Piedmont Geosciences, Inc. Kathleen M. Haller, U.S. Geological Survey
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. #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. #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. #7559 Wesnousky, S.G., Barron, A.D., Briggs, R.W., Caskey, S.J., Kumar, Senthil, and Owen, L., 2005, Paleoseismic transect across the northern Great Basin: Journal of Geophysical Research, v. 110, B05408, 25 p.