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Quaternary Fault and Fold Database of the United States

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Southern Huntington Valley fault zone (Class A) No. 1715

Last Review Date: 2000-06-28

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Synopsis	The Southern Huntington Valley fault zone is comprised of a series of aligned, down-to-the-west, north-northeast-striking, mid-valley normal faults about 30 km long. The zone also includes several parallel north-northeast-striking mid-valley faults to the northwest. The fault zone may be the basinward extension of the Northern Huntington Valley fault zone [1714], a range-front fault zone that may itself be part of the Ruby Mountains fault system. Some scarps of the Southern Huntington Valley fault zone contain steep slopes superimposed on an older scarp, indicative of recurrent movement. Based on scarp profile morphology, the most recent faulting appears to be about the same age or slightly older than the highest Lake Bonneville shoreline (14.5 ka), and thus is latest Pleistocene or Holocene in age. Based on age of offset sediments, the latest movement on the fault appears to be Holocene.

Name comments	Named by Barnhard (1985 #428) for a north-northeast-striking group of scarps in the southwestern part of the Elko 1?x2? quadrangle and northeastern part of the Ely 1?x2? quadrangle. As compiled, the fault zone extends from east of Sadler Basin south and includes scarps mapped by Dohrenwend and others (1992 #2480) that cross Huntington Valley along Conners Creek to approximately the east base of the Diamond Mountains about 1.5 km east of Corta Spring. Dohrenwend and others (1991 #286) noted additional parallel scarps and lineaments. As such, the main fault extends from Sherman Creek on the north to near Corta Spring. The entire fault zone is 10 km wide at the northern end. dePolo (1998 #2845)includes this fault in the Ruby Mountains fault system. **Fault ID:** Referred to as fault EK5E (Ruby Mountains fault system) by dePolo (1998 #2845).
County(s) and State(s)	ELKO COUNTY, NEVADA WHITE PINE COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* The main trace in the Elko sheet was mapped at 1:250,000 scale by Barnhard (1985 #428) from field study and compilation on 1:60,000-scale aerial photos. Additional traces were mapped by Dohrenwend and others (1991 #286; 1992 #2480), both at 1:250,000 scale. Those maps were made by analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to the scale of the photographs.
Geologic setting	This is a mid-valley Quaternary fault zone in the basin beneath southern Huntington Valley as mapped by Barnhard (1985 #428) and Dohrenwend and others (1991 #286). Inasmuch as most scarps are downthrown on their western side, the zone may be the basinward extension of faults that make up the Ruby Mountains fault system of dePolo (1998 #2845). The Southern Huntington Valley fault zone has a strike similar to the Ruby Mountains range front. At its southern end it is antithetic to the east-dipping Diamond Mountains fault zone [1212] to the west. dePolo (1998

	#2845) provided a general description of the Ruby Mountains fault system.
Length (km)	30 km.
Average strike	N12°E
Sense of movement	Normal *Comments:* As shown on geologic maps (Barnhard, 1985 #428).
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	Barnhard (1985 #428) noted that most of the scarps face west, but one faces east. He also noted that some scarps are characterized by steep slopes superimposed on older less steep scarps, and that alluvium that fills channels cut across the older scarp is offset. This indicates at least two episodes of Quaternary movement. Seven scarp profiles were measured across the more recent scarps and they range from 1.1-2.0 m in height.
Age of faulted surficial deposits	Quaternary basin-fill sediment is downfaulted to the west along the fault zone's length (Barnhard, 1985 #428). Quaternary fluvial sediment in streams that drain the scarp also are offset (Barnhard, 1985 #428). Dohrenwend and others (1991 #286) noted that the sediment cut by the faults is as young as Holocene.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Based on scarp profiles, Barnhard (1985 #428) interpreted the most recent faulting to be "about the same age or slightly older than the Lake Bonneville shorelines," thus Holocene or latest Pleistocene (<15 ka). Dohrenwend and others (1991 #286) interpreted the fault to be Holocene based on their interpretations of the age of offset sediments.
Recurrence interval	 *Comments:* Interpreted by Barnhard and Thenhaus (1983 #2408) and Barnhard (1985 #428) to have at least two episodes of

	Quaternary fault movement, the youngest of which is similar to the 14.5 ka age of the Bonneville shorelines. No age was estimated for the older scarp, so no recurrence time can be estimated.
Slip-rate category	Less than 0.2 mm/yr *Comments:* On the basis of surface offset estimated from a profile by Willoughby (1998 #2658) along a late Pleistocene moraine crest of estimated age at Seitz Canyon, dePolo (1998 #2845) estimated a preferred vertical slip rate of 0.28 mm/yr for his Ruby Mountains fault system, of which the Southern Huntington Valley fault is a part. The Southern Huntington Valley fault zone is roughly equivalent to the southern of his five faults (EK5E) and is an intra-basin structure lacking range-front definition. Based on the reconnaissance photogeologic investigation of Dohrenwend and others (1991 #286) the three southern faults of dePolo's system have contrasting late Quaternary histories. Because of potential lateral differences in fault histories, the contrast in general geomorphic expression, and the fact that the Ruby Mountains fault system as defined by dePolo (1998 #2845) consists of five separate discontinuous and echelon faults, the 0.28 mm/yr slip rate is assumed to not apply to the Southern Huntington Valley fault zone as compiled herein. In contrast, 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 of a lesser magnitude. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	2000 Peter C. Rowley, U.S. Geological Survey, Retired R. Ernest Anderson, U.S. Geological Survey, Emeritus
References	#428 Barnhard, T.P., 1985, Map of fault scarps formed in unconsolidated sediments, Elko 1° x 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-1791, 1 sheet, scale 1:250,000. #2408 Barnhard, T.P., and Thenhaus, P.C., 1983, Distribution and relative age of late Quaternary fault scarps in alluvium in the Elko 1° by 2° quadrangle, Nevada: Geological Society of America Abstracts with Programs, v. 15, no. 5, p. 317. #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.

#286 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Elko 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2179, 1 sheet, scale 1:250,000.

#2480 Dohrenwend, J.C., Schell, B.A., and Moring, B.C., 1992, Reconnaissance photogeologic map of young faults in the Ely 1° by 2° quadrangle, Nevada and Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2181, 1 sheet, scale 1:250,000.

#2658 Willoughby, C.H., 1998, Character, timing and rate late Quaternary normal faulting on the northwestern side of the Ruby Mountains/East Humboldt Range, northeastern Nevada: Reno, University of Nevada, unpublished M.S. thesis, 52 p.