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Quaternary Fault and Fold Database of the United States

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Eastern Pine Forest Range fault zone, southern section (Class A) No. 1495b

Last Review Date: 1998-07-19

citation for this record: **Sawyer, T.L., compiler, 1998, Fault number 1495b, Eastern Pine Forest Range fault zone, southern section, 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 02:50 PM.**

Synopsis	**General:** This relatively long, fault zone is comprised of range-bounding normal faults along the prominent east and northeast fronts of the Pine Forest Range, lesser faults east of Lone Mountain and along low hills at Denio Summit, and distributed piedmont faults throughout much of northernmost Black Rock Desert valley, north of Granite Creek. The fault zone has approximately 900 m of late Cenozoic vertical displacement and bounds the westward-tilted Pine Forest Range fault block. Reconnaissance photogeologic mapping of the fault zone and detailed and regional geologic mapping are the sources of data. **Sections:** This fault has 2 sections. Although not studied in detail, the geometry of the fault zone suggests two sections. Faults in the northern section [1495a] are widely distributed throughout the northernmost Black Rock Desert valley and includes a northwest-

	striking that fault bounds the north end of the Pine Forest Range at the front of Mahogany Mountain, and a discontinuous fault along the east side of low hills at Denio Summit and east of Lone Mountain. In contrast, faults in the southern section [1495b] mark the east front of Mahogany Mountain and bounds the prominent east front of the Pine Forest Range from Cherry Creek to Windy Point, southeast of Sentinel Peak.
Name comments	**General:** Refers to faults mapped by Willden (1964 #3002), Slemmons (1966, unpublished Vya 1:250,000-scale map), and Dohrenwend and Moring (1991 #281); includes the Eastern Pine Forest Range fault and Northern Pine Forest Range fault of dePolo (1998 #2845). The fault zone bounds the northeast and entire eastern fronts of the Pine Forest Range, continues northward east of Denio Summit and along the east front of Lone Mountain, and extends though northernmost Black Rock Desert valley to the Nevada/Oregon border. The faults may continue northward into Oregon, although they have not been mapped as such. **Section:** The southern section bounds the east front of the Pine Forest Range from Mahogany Mountain south to Windy Point, at the south end of Sentinel Peak spur ridge (The Mesa). Known as the Eastern Pine Forest Range fault of dePolo (1998 #2845). **Fault ID:** Refers to fault V11 and V12A of dePolo (1998 #2845).
County(s) and State(s)	HUMBOLDT COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* From about Short Creek to north end of section fault locations are based on 1:250,000-scale map of Dohrenwend and Moring (1991 #281) which is from analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic maps enlarged to scale of the photographs. From about Willow Spring to north of Dyke Hot Springs fault trace is from 1:48,000-scale geologic map of Smith (1973 #4472). From north of Dyke Hot Springs to Windy Peak at the south end of the Sentinel Peak spur ridge, the largely inferred fault trace is from unpublished maps used to compile the paper by

	Slemmons (1966, unpublished Vya 1? X 2? sheet); mapping by analysis of 1:60,000-scale AMS photography transferred to mylar overlaid onto either a 1:62,500- or 1:250,000-scale topographic maps using proportional dividers.
Geologic setting	This relatively long, fault zone is comprised of range-bounding normal faults along the prominent east and northeast fronts of the Pine Forest Range, lesser faults east of Lone Mountain and along low hills at Denio Summit, and distributed piedmont faults throughout much of northernmost Black Rock Desert valley, north of Granite Creek (Willden, 1964 #3002; Slemmons, 1966, unpublished Vya 1:250,000-scale map; Dohrenwend and Moring, 1991 #281). The fault zone has approximately 900 m of late Cenozoic vertical displacement (Willden, 1964 #3002) and bounds the westward-tilted Pine Forest Range fault block (Stewart, 1978 #2866).
Length (km)	This section is 38 km of a total fault length of 60 km.
Average strike	N1°E (for section) versus N5°E (for whole fault)
Sense of movement	Normal *Comments:* Reported to be normal faults (Slemmons, 1966, unpublished Vya 1? X 2? sheet; Dohrenwend and Moring, 1991 #281).
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	The section is primarily expressed by a single range-front fault that juxtaposes piedmont-slope deposits and bedrock along the east front of the Pine Forest Range. Faults in this section include a short piedmont fault at Short Creek (Dohrenwend and Moring, 1991 #281) and a largely inferred discontinuous piedmont fault extending from east of Sentinel Peak south to Windy Point along west side of the Black Rock Desert (Slemmons, 1966, unpublished Vya 1? X 2? sheet).
Age of faulted surficial deposits	Late(?) Pleistocene; Quaternary; Tertiary. Quaternary piedmont-slope deposits are faulted against Tertiary and older bedrock along the front of the Pine Forest Range (Dohrenwend , 1991 #281; Slemmons, 1966, unpublished Vya 1? X 2? sheet; Smith, 1973

	#4472); Dohrenwend and Moring (1991 #281) mapped a short scarp at Short Creek on possible late Pleistocene piedmont-slope deposits from analysis of small-scale aerial photography.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Although timing of most recent event is not well constrained, a Quaternary time is indicated by the reconnaissance photogeologic mapping of Dohrenwend and Moring (1991 #281) and Slemmons (1966, unpublished Vya 1? X 2? sheet) and geologic mapping of Smith (1973 #4472), although a late Quaternary time is suggested at one location near Short Creek (Dohrenwend and Moring, 1991 #281).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* This fault has significant late Cenozoic vertical displacement (Willden, 1964 #3002) and range-front relief comparable to the northwest-striking fault bounding the north end of the Pine Forest Range (northern section [1495a]), which is considered to be <0.2 mm/yr. dePolo (1998 #2845) assigned a reconnaissance vertical slip rate of 0.01 mm/yr. 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)	1998 Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#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. #281 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Vya 1° by 2° quadrangle, Nevada, Oregon, and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2174, 1 sheet, scale 1:250,000.

	#4472 Smith, J.G., 1973, Geologic map of the Duffer Peak quadrangle, Humboldt County, Nevada: U.S. Geological Survey Miscellaneous Investigations Map I-0606, 1 sheet, scale 1:48,000. #2866 Stewart, J.H., 1978, Basin-range structure in western North America—A review, *in* Smith, R.B., and Eaton, G.P., eds., Cenozoic tectonics and regional geophysics of the western cordillera: Geological Society of America Memoir 152, p. 1-31, scale 1:2,500,000. #3002 Willden, R., 1964, Geology and mineral deposits of Humboldt County, Nevada: Nevada Bureau of Mines and Geology Bulletin 59, 154 p., scale 1:250,000.