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Quaternary Fault and Fold Database of the United States

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Tuscarora fault zone (Class A) No. 1552

Last Review Date: 1999-01-08

citation for this record: **Adams, K., and Sawyer, T.L., compilers, 1999, Fault number 1552, Tuscarora 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 02:36 PM.**

Synopsis	This north-northeast-striking zone of piedmont faults crosses the eastern piedmont-slope of the Tuscarora Mountains, from near mouth of Dry Canyon northeast past the town of Tuscarora to east of Arthur Canyon, as a nearly continuous zone of closely spaced subparallel faults. The fault zone continues as two short faults on floor of Independence Valley to east of Cottonwood Peak. The piedmont faults are expressed as locally dense clusters of northwest- and southeast-facing scarps on Pleistocene to possibly as young as late Holocene alluvium, that bound a complex of horst and graben approximately 15 km long and 3.5 km wide. Reconnaissance photogeologic mapping of the fault zone and detailed geologic mapping of the fault region are the sources of data.
Name comments	Refers to faults mapped by Slemmons (1966, unpublished McDermitt 1:250,000-scale map), Coats (1987 #2861),

	Dohrenwend and Moring (1991 #284), and Henry and others (1998 #2845) along the western side of Independence Valley extending form near mouth of Dry Canyon, east of the town of Tuscarora, to valley floor east of Cottonwood Peak. Name from Layman (1984); dePolo (1998 #2845) referred to it as the Tuscarora fault swarm. **Fault ID:** Refers to fault zone MD16 (Tuscarora fault swarm) of dePolo (1998 #2845).
County(s) and State(s)	ELKO 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 geologic map of Henry and others (1998 #2845); these locations were checked against 1:250,000-scale photogeologic maps of Dohrenwend and Moring (1991 #284) and Slemmons (1966, unpublished McDermitt 1:250,000-scale map), and 1:250,000-scale geologic map of Coats (1987 #2861). Mapping by Dohrenwend and Morning (1991 #284) is from photogeologic analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to scale of the photographs. Mapping by Slemmons (1966, unpublished McDermitt 1:250,000-scale map) is from analysis of 1:60,000-scale AMS photography transferred to mylar overlaid onto a 1:250,000-scale topographic map using proportional dividers.
Geologic setting	This north-northeast-striking zone of piedmont faults crosses the eastern piedmont-slope of the Tuscarora Mountains, from near mouth of Dry Canyon northeast past the town of Tuscarora to east of Arthur Canyon, as a nearly continuous zone of closely spaced subparallel faults; these faults form a complex of horst and graben approximately 15 km long and 3.5 km wide. The fault zone continues as two short faults on floor of Independence Valley to east of Cottonwood Peak (Slemmons, 1966, unpublished McDermitt 1:250,000-scale map; Dohrenwend and Moring, 1991 #284; Ramelli and dePolo, 1993 #2855; Henry and others, 1998 #3018).

Length (km)	22 km.
Average strike	N23°E
Sense of movement	Normal *Comments:* (Slemmons, 1966, unpublished McDermitt 1:250,000-scale map; Dohrenwend and Moring, 1991 #284; Henry and others, 1998 #3018)
Dip Direction	SE; NW
Paleoseismology studies	
Geomorphic expression	The piedmont faults are expressed as locally dense groups of northwest- and southeast-facing scarps, each up to approximately 5 km long, on Pleistocene to possibly as young as late Holocene alluvium, that bound a complex of horst and graben approximately 15 km long and 3.5 km wide, from the vicinity of Six Mile Canyon southwest to near Boulder Creek (Ramelli and dePolo, 1993 #2855; Henry and others, 1998 #3018). Three topographic profiles across piedmont scarps suggest up to several meters of vertical displacement on individual fault traces (Henry and others, 1998 #3018). dePolo (1998 #2845) indicates that there are scarps on alluvium but no basal fault facets.
Age of faulted surficial deposits	late Holocene (?); early to middle Pleistocene; Pleistocene. Faults displace early to middle Pleistocene and undifferentiated Pleistocene piedmont-slope deposits (Dohrenwend and Moring, 1991 #284; Henry and others, 1998 #3018) and possibly deposits as young as late Holocene (Slemmons, 1966, unpublished McDermitt 1:250,000-scale map; Ramelli and dePolo, 1993 #2855).
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 suggested based on reconnaissance photogeologic mapping of Slemmons (1966, unpublished McDermitt 1:250,000-scale map) and field studies of Ramelli and dePolo (1993 #2855).

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 of scarps on alluvium and the absence of 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)	1999 Kenneth Adams, Piedmont Geosciences, Inc. Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#2861 Coats, R.R., 1987, Geology of Elko County, Nevada: Nevada Bureau of Mines and Geology Bulletin 101, 112 p., 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. #284 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the McDermitt 1° by 2° quadrangle, Nevada, Oregon, and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-2177, 1 sheet, scale 1:250,000. #3018 Henry, C.D., Boden, D.R., and Castor, S.B., 1998, Geologic map of the Tuscarora quadrangle, northern Nevada: Nevada Bureau of Mines and Geology, Open File Map 98-AA, scale 1:24,000. #2855 Ramelli, A.R., and dePolo, C.M., 1993, Examples of Holocene and latest Pleistocene faulting in northern and eastern Nevada: Geological Society of America Abstracts with Programs, v. 25, no. 5, p. 136.