Jump to Navigation

Quaternary Fault and Fold Database of the United States

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Eastern Tuscarora Mountains fault zone (Class A) No. 1554

Last Review Date: 1999-01-08

citation for this record: **Adams, K., Sawyer, T.L., and Anderson, R.E., compilers, 1999, Fault number 1554, Eastern Tuscarora 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 02:35 PM.**

Synopsis	This discontinuous zone of north-northeast-striking right-stepping faults bounds the east front of the Tuscarora Mountains against a basin occupied by the Maggie Creek drainage. Its north part extends into bedrock highlands southwest of Taylor Canyon. Its south part extends obliquely across the Tuscarora Mountains almost to the west side of the range where, at its south termination, the range steps about 7 km to the east where its east margin is defined by the Marys Mountain fault [1607]. Along most of its length, the range-bounding faults are expressed by the prominent bedrock front of the Tuscarora Mountains and juxtapose Quaternary and Quaternary-Tertiary alluvium against Paleozoic bedrock. Discontinuous piedmont faults are expressed as east-facing scarps on undifferentiated Pleistocene piedmont-

	slope deposits and on Tertiary sediment. Reconnaissance photogeologic mapping and bedrock mapping of the faults are the sources of data.
Name comments	dePolo (1998 #2845) referred to this structure as the Eastern Tuscarora Mountains fault zone, the name used here. Refers to faults mapped by Slemmons (1966, unpublished McDermitt 1:250,000-scale map), Stewart and Carlson (1976 #3013), Coats (1987 #2861), and Dohrenwend and Moring (1991 #282; 1991 #284) along and near the southeastern edge of the Tuscarora Mountains west of Maggie Creek. It extends form near Carlin Creek southward to within about 0.5 km of Welches Creek. **Fault ID:** Refers to faults WI18A and WI18B (Eastern Tuscarora Mountains fault zone) of dePolo (1998 #2845).
County(s) and State(s)	EUREKA COUNTY, NEVADA ELKO COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations primarily based on 1:250,000-scale maps of Dohrenwend and Moring (1991 #282; 1991 #284) which were produced by 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. Locations of additional faults are based on 1:250,000-scale map of Slemmons (1966, unpublished McDermitt 1:250,000-scale map); mapping from analysis of 1:60,000-scale AMS photography transferred to mylar overlaid onto a 1:250,000-scale topographic map using proportional dividers. The northern part of the range front zone is based on 1:250,000-scale geologic map of Coats (1987 #2861).
Geologic setting	This discontinuous zone of north-northeast-striking right-stepping faults bounds the Paleozoic rocks forming the east front of the Tuscarora Mountains against Tertiary volcanic and sedimentary rocks forming the basin beneath the Maggie Creek drainage. In its north-most part, it has south-increasing displacement in volcanic rocks and finally passes into Tertiary sedimentary rocks in its hanging wall (Stewart and Carlson, 1978 #3413). It has a major

	(about 2.5-km-wide) right step at Beaver Creek where its displacement is probably greatest. It has a small (1-km-wide) right step near Jacks Creek and another along the east flank of Richmond Mountain. At the south end of the fault, the entire Tuscarora Mountains appear to step left about 7 km where the range margin is formed by the Marys Mountain fault [1607]. It is mapped by Dohrenwend and Moring (1991 #282; 1991 #284) as a major range-front fault, but near Richmond Summit it enters an area of Paleozoic bedrock and apparently looses displacement abruptly. In that area, the range margin is less precipitous than to the north.
Length (km)	52 km.
Average strike	N17°E
Sense of movement	Normal *Comments:* (Dohrenwend and Moring, 991 #282; 1991 #284)
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	Along most of its length, the range-bounding faults are expressed by prominent front of the Tuscarora Mountains and juxtapose Quaternary and Quaternary-Tertiary alluvium against Paleozoic bedrock (Coats, 1987 #2861; Dohrenwend and Moring, 1991 #284) despite the absence of geomorphic features typical of major range margins such as abrupt piedmont-hillslope transitions, steep bedrock slopes, faceted spurs, wineglass valleys, etc. The piedmont faults are expressed as east-facing scarps on undifferentiated Pleistocene piedmont-slope deposits and on Tertiary sediment (Dohrenwend and Moring, 1991 #282; 1991 #284). dePolo (1998 #2845) indicates that there are scarps on alluvium but no basal fault facets.
Age of faulted surficial deposits	Pleistocene; Quaternary-Tertiary. Faults juxtapose Quaternary-Tertiary alluvium against older bedrock (Coats, 1987 #2861; Dohrenwend and Moring, 991 #282; 1991 #284) and displace Pleistocene alluvium that Slemmons (1966, unpublished McDermitt 1:250,000-scale map) suggests may be as young as late Pleistocene.
Historic	

earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The timing of most recent event is not well constrained. The age assignment here is based on mapping of Dohrenwend and Moring (1991 #282; 1991 #284); however, Slemmons (1966, unpublished McDermitt 1:250,000-scale map) suggests a late Quaternary time based on reconnaissance photogeologic mapping.
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. R. Ernest Anderson, U.S. Geological Survey, Emeritus
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. #282 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Winnemucca 1° by 2° quadrangle, Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-2175, 1 sheet, scale 1:250,000. #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. #3013 Stewart, J.H., and Carlson, J.E., 1976, Geologic map of north-central Nevada: Nevada Bureau of Mines and Geology, Map 50, scale 1:250,000. #3413 Stewart, J.H., and Carlson, J.E., 1978, Geologic map of Nevada: U.S. Geological Survey, Special Geologic Map, 1, scale 1:500,000.