

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](#).

Goodpasture fault (Class A) No. 2329

Last Review Date: 1997-10-03

Compiled in cooperation with the Colorado Geological Survey

citation for this record: Widmann, B.L., compiler, 1997, Fault number 2329, Goodpasture fault, 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 03:00 PM.

Synopsis

The Goodpasture fault forms a fairly prominent escarpment and vegetation lineation (Kirkham, 1977b). Scott and others (1978 #2735) mapped the Verdos and Slocum Alluviums as abutting the fault. Kirkham and Rogers (1981 #792) classified this fault as a Quaternary fault based on the mapping of Scott and others (1978 #2735). Colman (1985 #1953) listed the most recent fault movement as during middle to early Pleistocene time. More recent investigation by Unruh and others (1994 #2778) discounted late Quaternary activity based on field and air photo interpretation, but did not entirely rule out Colman's (1985 #1953) early to middle Quaternary movement on the fault.

Name comments	<p>he Goodpasture fault is a northwest-trending fault east of Hogback Mountain in the Wet Mountains between the North St. Charles River and the Spring Branch of the St. Charles River. The fault is south of the town of Goodpasture and was named by Unruh and others (1994 #2778).</p> <p>Fault ID: Fault 127 in Kirkham and Rogers (1981 #792), fault 140 in Witkind (1976 #2792), and fault number Q79 of Widman and others (1998 #3441).</p>
County(s) and State(s)	PUEBLO COUNTY, COLORADO
Physiographic province(s)	GREAT PLAINS
Reliability of location	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> The fault was mapped at a scale of 1:24,000 by Scott and Taylor (1973 #2736) and 1:250,000 by Scott and others (1978 #2735). The trace used herein is from Scott and others (1978 #2735).</p>
Geologic setting	The Goodpasture fault is a high-angle normal fault that is down to the northeast. Neogene and younger normal movement is opposite to reverse Precambrian movement (Scott and Taylor, 1973 #2736). The fault may be associated with other faults that bound the east flank of the Wet Mountains.
Length (km)	5 km.
Average strike	N32°W
Sense of movement	<p>Normal</p> <p><i>Comments:</i> Scott and Taylor (1973 #2736) and Witkind (1976 #2792) indicated normal movement on this fault.</p>
Dip Direction	NE
Paleoseismology studies	
Geomorphic expression	A fairly prominent escarpment and vegetation lineation defines the fault trace (Kirkham, 1977b). The fault is marked by an east-facing scarp about 2 m high on Cretaceous bedrock that is

	<p>overlain by a <2 m thick layer of colluvium. Geomorphic features on Quaternary deposits indicative of youthful faulting were not observed in aerial reconnaissance by Unruh and others (1994 #2778).</p>
<p>Age of faulted surficial deposits</p>	<p>Scott and Taylor (1973 #2736) mapped the Verdos and Slocum alluviums as abutting and concealing the fault. Scott and others (1978 #2735) mapped the same gravels as abutting the Goodpasture fault. The Slocum Alluvium (the younger of the two) is considered to be Sangamon or Illinoian in age (ending about 130 ka). Unruh and others (1994 #2778) concluded that the fault has not moved during the late Quaternary. The fault trace lies almost entirely within Cretaceous bedrock with only two small areas of Quaternary deposits offset by the fault.</p>
<p>Historic earthquake</p>	
<p>Most recent prehistoric deformation</p>	<p>undifferentiated Quaternary (<1.6 Ma)</p> <p><i>Comments:</i> Scott and Taylor (1973 #2736) mapped the Slocum and Verdos Alluvium as concealing and abutting the fault. They indicated west-side-down movement on the fault based on truncation of these deposits against the fault. Witkind (1976 #2792) and Kirkham and Rogers (1981 #792) listed this fault as a Quaternary fault. Colman (1985 #1953) indicated the most recent activity on the fault occurred during the middle to early Pleistocene. Unruh and others (1994 #2778) discounted late Quaternary movement on the fault suggesting that the gravels previously mapped as Slocum and Verdos Alluvium by Scott and Taylor (1973 #2736) represented instead the Stroup loam soil. Field mapping by Unruh and others (1994 #2778) revealed no west-side-down late Quaternary movement on the fault, and geomorphic indicators of late Pleistocene faulting were not observed in aerial reconnaissance. Although Unruh and others (1994 #2778) have shown that there is little evidence for late Pleistocene movement, early Pleistocene movement cannot be ruled out since they were unable to examine exposures cited by Scott and Taylor (1973 #2736) as indicating youthful faulting. Without further study the most recent paleoevent on this fault is considered to have occurred during the Quaternary (<1.6Ma).</p>
<p>Recurrence interval</p>	

Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> Widmann and others (1998 #3441) placed this fault in the <0.2 mm/yr slip-rate category.
Date and Compiler(s)	1997 Beth L. Widmann, Colorado Geological Survey
References	<p>#1953 Colman, S.M., 1985, Map showing tectonic features of late Cenozoic origin in Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-1566, 1 sheet, scale 1:1,000,000.</p> <p>#792 Kirkham, R.M., and Rogers, W.P., 1981, Earthquake potential in Colorado: Colorado Geological Survey Bulletin 43, 171 p., 3 pls.</p> <p>#2736 Scott, G.R., and Taylor, R.B., 1973, Reconnaissance geologic map of the Belulah quadrangle, Pueblo County, Colorado: U.S. Geological Survey Miscellaneous Field Studies Map MF-551.</p> <p>#2735 Scott, G.R., Taylor, R.B., Epis, R.C., and Wobus, R.A., 1978, Geologic map of the Pueblo 1° x 2° quadrangle, south-central Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-1022.</p> <p>#2778 Unruh, J.R., Wong, I.G., Hitchcock, C.S., Bott, J.D.J., Silva, W.J., and Lettis, W.R., 1994, Seismotectonic evaluation, Pueblo Dam, Fryingpan-Arkansas Project, south-central Colorado: U.S. Bureau of Reclamation, 134 p.</p> <p>#3441 Widmann, B.L., Kirkham, R.M., and Rogers, W.P., 1998, Preliminary Quaternary fault and fold map and database of Colorado: Colorado Geological Survey Open-File Report 98-8, 331 p., 1 pl., scale 1:500,000.</p> <p>#2792 Witkind, I.J., 1976, Preliminary map showing known and suspected active faults in Colorado: U.S. Geological Survey Open-File Report 76-154.</p>

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