

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](#).

Mineral Hot Springs fault (Class A) No. 2320

Last Review Date: 1998-07-10

Compiled in cooperation with the Colorado Geological Survey

citation for this record: Kirkham, R.M., compiler, 1998, Fault number 2320, Mineral Hot Springs 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 Mineral Hot Springs fault is a north-northwest-trending, down-to-the-east fault along the western margin of the San Luis Valley at the point where the valley abruptly narrows in width. Colman and others (1985 #1954) and Kirkham and Rogers (1981 #792) suggested the fault displaces Quaternary deposits based on the presence of a possible scarp along the fault trend. The Mineral Hot Springs fault may be related to a concealed fault on the east side of the buried, mid-valley horst block beneath San Luis Valley that was described by Tweto (1978 #1956; 1979 #2767). Burroughs (1981 #2661) and Brister and Gries (1994 #1178) interpreted the structure on the east side of the buried horst as a faulted fold.

Name comments	<p>The Mineral Hot Springs fault is a north-northwest-trending fault in the northern end of San Luis Valley. This structure name was assigned during this compilation.</p> <p>Fault ID: This fault is the same as the northern end of fault 184 in Kirkham and Rogers (1981 #792), fault 2 in Colman (1985 #1953), and fault number Q68 of Widman and others (1998 #3441).</p>
County(s) and State(s)	SAGUACHE COUNTY, COLORADO
Physiographic province(s)	SOUTHERN ROCKY MOUNTAINS
Reliability of location	<p>Good Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> This fault trace is from 1:125,000 scale of Colman and others (1985 #1954).</p>
Geologic setting	The Mineral Hot Springs fault is along the western margin of the Rio Grande rift at the northern end of San Luis Valley where the valley narrows abruptly as it approaches Poncha Pass. This high-angle, north-trending fault is downthrown to the east.
Length (km)	8 km.
Average strike	N23°W
Sense of movement	<p>Normal</p> <p><i>Comments:</i> Kirkham and Rogers (1981 #792) described this fault as a normal fault. Colman and others (1985 #1954) mapped the northern part as a normal fault, downthrown to the east. Unruh and others (1994 #2778) indicated normal movement on this fault based on gravity data.</p>
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	No information reported on the faults geomorphic expression. Kirkham and Rogers (1981 #792) suggested the fault displaces Quaternary deposits based on the presence of a possible scarp

	along the fault trend.
Age of faulted surficial deposits	Colman and others (1985 #1954) mapped the fault as having offset upper to middle Pleistocene Bull Lake deposits and upper Pleistocene Pinedale deposits. Kirkham and Rogers (1981 #792) reported this fault offsets Wisconsin age deposits. James McCalpin (1997, personal commun. to the compiler) suspects the scarp mapped by Colman and others (1985 #1954) and Kirkham and Rogers (1981 #792) is a non-tectonic erosional feature.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i>
Recurrence interval	
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)	1998 Robert M. Kirkham, Colorado Geological Survey
References	#1178 Brister, B.S., and Gries, R.R., 1994, Tertiary stratigraphy and tectonic development of the Alamosa basin (northern San Luis Basin), Rio Grande rift, south-central Colorado, <i>in</i> Keller, G.R., and Cather, S.M., eds., Basins of the Rio Grande rift—Structure, stratigraphy, and tectonic setting: Geological Society of America Special Paper 291, p. 39-58. #2661 Burroughs, R.L., 1981, A summary of the geology of the San Luis Basin, Colorado-New Mexico, with emphasis on the geothermal potential for the Monte Vista graben: Colorado Geological Survey Special Publication 17, 30 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. #1954 Colman, S.M., McCalpin, J.P., Ostenaar, D.A., and

Kirkham, R.M., 1985, Map showing upper Cenozoic rocks and deposits and Quaternary faults, Rio Grande Rift, south-central Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-1594, 2 sheets.

#792 Kirkham, R.M., and Rogers, W.P., 1981, Earthquake potential in Colorado: Colorado Geological Survey Bulletin 43, 171 p., 3 pls.

#1956 Tweto, O., 1978, Northern rift guide 1, Denver-Alamosa, Colorado, *in* Hawley, J.W., ed., Guidebook to Rio Grande rift in New Mexico and Colorado: New Mexico Bureau of Mines and Mineral Resources Circular 163, p. 13-27.

#2767 Tweto, O., 1979, The Rio Grande Rift system in Colorado, *in* Rio Grande Rift—Tectonics and magmatism: American Geophysical Union, p. 33-56.

#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.

#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.

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