

# 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](#).

## unnamed faults northwest of Leadville (Class A) No. 2306

Last Review Date: 1997-06-26

## Compiled in cooperation with the Colorado Geological Survey

*citation for this record:* Widmann, B.L., compiler, 1997, Fault number 2306, unnamed faults northwest of Leadville, 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

These faults are between the Mosquito fault [2303] and the northern section of the Sawatch fault [2308], west and north of Leadville. Tweto (1974 #2766) described them as inferred concealed faults of the upper Arkansas Valley graben system. The upper Arkansas Valley graben is a major Neogene structure that is the northernmost topographically prominent feature of the Rio Grande rift. The graben developed along the axial crest of the Laramide age Sawatch anticline. Tweto (1974 #2766) stated that the faults are known to displace some of the older Pleistocene units. However, Quaternary movement on each of these faults has

	not been definitively demonstrated. Although lacking conclusive evidence, the most recent movement on these faults is herein considered to have occurred during the Quaternary (<1.6 Ma).
<b>Name comments</b>	This structure includes several generally northeast- to northwest-trending faults west and north of Leadville. The faults are part of the Arkansas Valley graben system. They are between the Sawatch fault [2308] and the Mosquito fault [2303].  <b>Fault ID:</b> Fault number Q54 of Widman and others (1998 #3441).
<b>County(s) and State(s)</b>	LAKE COUNTY, COLORADO EAGLE COUNTY, COLORADO
<b>Physiographic province(s)</b>	SOUTHERN ROCKY MOUNTAINS
<b>Reliability of location</b>	Poor Compiled at 1:250,000 scale.  <i>Comments:</i> The faults were mapped at a scale of 1:24,000 by Tweto (1974c), 1:125,000 by Tweto and Case (1972 #2769), and at a scale of 1:250,000 by Tweto and others (1978 #2770). Fault traces were interpreted by Tweto (1974 #2766) from subsurface data and nearby surface exposures and were considered approximate or conjectural. Tweto and Case (1972 #2769) mapped these as inferred faults in Cenozoic deposits. The traces used herein is from Tweto (1974 #2766).
<b>Geologic setting</b>	These faults were described as inferred concealed faults of the Arkansas Valley graben system (Tweto, 1974 #2766). The faults are in an area of complex faulting between the Mosquito fault [2303] and the northern section of the Sawatch fault [2308a]. They are part of the upper Arkansas Valley graben, a Neogene west-tilted structure that forms the northernmost topographically prominent expression of the Rio Grande rift. The graben developed along the axial crest of the Laramide age Sawatch anticline.
<b>Length (km)</b>	20 km.
<b>Average strike</b>	N4°E
<b>Sense of movement</b>	Normal

<b>Dip Direction</b>	NW; NE
<b>Paleoseismology studies</b>	
<b>Geomorphic expression</b>	Geomorphic indicators of youthful faulting have not been reported.
<b>Age of faulted surficial deposits</b>	Tweto (1974 #2766) stated "from subsurface data and from a few exposures south of [the] quadrangle faults are known to displace [the] bedrock surface, strata of the concealed upper Tertiary Dry Union Formation, and some of the older Pleistocene units such as pre-Bull Lake glacial drift (unit Qdpb) and Malta Gravel (unit Qm)." However, Quaternary movement on each of these faults has not been definitively demonstrated.
<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	undifferentiated Quaternary (<1.6 Ma)  <i>Comments:</i> Tweto (1974 #2766) suggested that rocks of the Miocene Dry Union Formation and perhaps pre-Bull Lake Quaternary deposits were offset by these faults, based on subsurface data and a few exposures south of the mapped area. Without more definitive evidence for Quaternary movement, the last paleoevent on these faults is herein considered to have occurred during the Quaternary, but may actually have occurred prior to the Quaternary.
<b>Recurrence interval</b>	
<b>Slip-rate category</b>	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.
<b>Date and Compiler(s)</b>	1997 Beth L. Widmann, Colorado Geological Survey
<b>References</b>	#2766 Tweto, O., 1974, Geologic map and section of the Holy Cross [15-minute] quadrangle, Eagle, Lake, Pitkin, and Summit Counties, Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-830.  #2769 Tweto, O., and Case, J.E., 1972, Gravity and magnetic

features as related to geology in the Leadville 30-minute quadrangle, Colorado: U.S. Geological Survey Professional Paper 726-C, 31 p.

#2770 Tweto, O., Moench, R.H., and Reed, J.C., 1978, Geologic map of the Leadville 1° x 2° quadrangle, northwestern Colorado: U.S. Geological Survey Miscellaneous Geologic Investigations I-999.

#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.

[Questions or comments?](#)

[Facebook](#) [Twitter](#) [Google](#) [Email](#)

[Hazards](#)

[Design](#) [Ground Motions](#) [Seismic Hazard Maps & Site-Specific Data](#) [Faults](#) [Scenarios](#)

[Earthquakes](#) [Hazards](#) [Data](#) [Education](#) [Monitoring](#) [Research](#)

[Home](#) [About Us](#) [Contacts](#) [Legal](#)