

# 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](#).

## Mantua area faults (Class A) No. 2373

Last Review Date: 1999-10-01

## Compiled in cooperation with the Utah Geological Survey

*citation for this record:* Black, B.D., and Hecker, S., compilers, 1999, Fault number 2373, Mantua area faults, 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 02:58 PM.

<b>Synopsis</b>	Poorly understood Quaternary(?) faults in the southern Wellsville Mountains.
<b>Name comments</b>	<b>Fault ID:</b> Refers to fault number 11-10of Hecker (1993 #642).
<b>County(s) and State(s)</b>	BOX ELDER COUNTY, UTAH CACHE COUNTY, UTAH
<b>Physiographic province(s)</b>	BASIN AND RANGE MIDDLE ROCKY MOUNTAINS
<b>Reliability of</b>	Good

<b>location</b>	<p>Compiled at 1:50,000 scale.</p> <p><i>Comments:</i> Mapped or discussed by Gilbert (1928 #2954), Crittenden and Sorensen (1985 #4506), Sullivan and others (1988 #4508), Personius (1990 #1232), Dover (1995 #4507), and Solomon (1999 #4395). Fault traces from 1:50,000-scale mapping of Solomon (1999 #4395).</p>
<b>Geologic setting</b>	<p>Generally northwest-trending normal faults in small intermontane basins in the southern Wellsville Mountains. Gilbert (1928 #2954) and Dover (1995 #4507) suggest that the faults are longitudinal faults aligned along the axis of the Dry Lake trough, forming a graben occupied by Mantua Valley. Solomon (1999 #4395) indicates the faults may be related to the West Cache fault zone [2521].</p>
<b>Length (km)</b>	21 km.
<b>Average strike</b>	N10°W
<b>Sense of movement</b>	Normal
<b>Dip Direction</b>	W
<b>Paleoseismology studies</b>	
<b>Geomorphic expression</b>	<p>The presence of faults is mostly inferred from range-front linearity, faceted spurs, disrupted drainage, valley asymmetry, and the thick wedge of alluvial-fan deposits, the latter of which indicates significant uplift along the faults during the Quaternary, probably continuing into the late Pleistocene. Personius (1990 #1232) mapped Quaternary displacement in Holocene to middle Pleistocene alluvium and colluvium along the western boundary fault near the head of Wellsville Canyon, but Solomon (1999 #4395) found no evidence of displacement in post-Bonneville alluvial fans at the mouths of several canyons along the range front and thus doubts Holocene activity. Karst features are present locally in the area, but karst processes are probably of secondary importance in basin development.</p>
<b>Age of faulted surficial deposits</b>	Middle and late Quaternary (?).

<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	middle and late Quaternary (<750 ka) <i>Comments:</i> Based on range-front morphology and basin closure.
<b>Recurrence interval</b>	
<b>Slip-rate category</b>	Less than 0.2 mm/yr <i>Comments:</i> Poor geomorphic expression and lack of post-Bonneville displacement indicates a low slip rate.
<b>Date and Compiler(s)</b>	1999 Bill D. Black, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey
<b>References</b>	#4506 Crittenden, M.D., Jr., and Sorensen, M.L., 1985, Geologic map of the Mantua quadrangle and part of the Willard quadrangle, Box Elder, Weber, and Cache Counties, Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1605, scale 1:24,000.  #4507 Dover, J.H., 1995, Geologic map of the Logan 30' x 60' quadrangle, Cache and Rich Counties, Utah, and Uinta County, Wyoming: U.S. Geological Survey Miscellaneous Investigations Map I-2210, scale 1:100,000.  #2954 Gilbert, G.K., 1928, Studies of Basin-Range structure: U.S. Geological Survey Professional Paper 153.  #642 Hecker, S., 1993, Quaternary tectonics of Utah with emphasis on earthquake-hazard characterization: Utah Geological Survey Bulletin 127, 157 p., 6 pls., scale 1:500,000.  #1232 Personius, S.F., 1990, Surficial geologic map of the Brigham City segment and adjacent parts of the Weber and Colliston segments, Wasatch fault zone, Box Elder and Weber Counties, Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1979, 1 sheet, scale 1:24,000.  #4395 Solomon, B.J., 1999, Surficial geologic map of the West Cache fault zone and nearby faults, Box Elder and Cache Counties, Utah: Utah Geological Survey Map 172, 20 p. pamphlet, 2 sheets, scale 1:50,000.

#4508 Sullivan, J.T., Nelson, A.R., LaForge, R.C., Wood, C.K., and Hansen, R.A., 1988, Central Utah regional seismotectonic study for USBR dams in the Wasatch Mountains: Bureau of Reclamation Seismotectonic Report 88-5, 269 p.

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