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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.

Beaver Basin faults, intrabasin faults (Class A) No. 2492b

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 2492b, Beaver Basin faults, intrabasin 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 02:54 PM.**

Synopsis	**General:** Well mapped and moderately well understood late Pleistocene to early Holocene faults form a complex zone of generally north-trending faulting and deformation associated with the formation of a large antiform in the central part of the Beaver Basin. Faults along the eastern margin of Beaver Basin are considered tectonic and related to basin-range uplift. The central basin faults appear to be related to development of a north-south trending horst and antiform. **Sections:** This fault has 2 sections. Differences in fault ages

	generally reflect the distribution of different ages of faulted deposits and not necessarily recency of movement. Sterr (1980 #4652) divided scarps in Beaver Basin into age groups on the basis of the scarp morphology associated with different-age surfaces, and defined three "independent fault systems"associated with unique recurrence intervals. However, Machette (1985 #4594) revised surface-age estimates, which provided the basis for determining fault histories, and concluded that older scarps may not be suitable for morphologic age analysis due to the effects of stream erosion, calcic soil development (Anderson and Bucknam, 1979 #518), and episodes of movement.
Name comments	**General:** **Section:** This section is informally referred to as the intrabasin faults for their location along the central axis of the Beaver Basin.,This section is informally referred to as the intrabasin faults for their location along the central axis of the Beaver Basin. **Fault ID:** Refers to fault number 9-3 in Hecker (1993 #642).
County(s) and State(s)	BEAVER COUNTY, UTAH
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Mapped by Anderson and Bucknam (1979 #518), Steven and Morris (1983 #4554), Machette and others (1984 #4651), Machette (1985 #4594), and Anderson and others (1990 #4565). Fault traces from 1:50,000-scale mapping of Steven and Morris (1983 #4554), Machette (1985 #4594), and Anderson and others (1990 #4565).
Geologic setting	Complex zone of generally north-trending faulting and deformation in the Beaver Basin. Faults along the eastern margin of Beaver Basin are considered tectonic. Central basin faults appear to be related to development of a north-south trending horst and antiform.
Length (km)	This section is 39 km of a total fault length of 39 km.
Average strike	N16°E

Sense of movement	Normal
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	More than a hundred closely spaced faults cut the limbs and dip toward the axis of a broad, low-amplitude antiform on the Last Chance Bench, a pediment estimated to be 500 ka in age (Machette, 1985 #4594). The axial trace of the antiform, which steps westward across several northeast-trending normal faults, is aligned with the Maple Flats horst to the north. The northeast-trending valley of Indian Creek is probably fault controlled, as suggested by a 30-100 m altitude difference between Last Chance Bench gravels on either side of the creek. Individual faults on Last Chance Bench have displacements ranging from 1 to 25 m (Anderson and Bucknam, 1979 #518). Faults at the north end of the antiform, north of Indian Creek, displace the Last Chance Bench gravels as much as 5 m.
Age of faulted surficial deposits	Middle to late(?) Pleistocene alluvial deposits (mainly gravels).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* On the south end of the antiform, west of Greenville, 0.5- to 3.0-m-high scarps are on 140-250 ka terraces. The 2.0 Ma Huckleberry Ridge ash bed has been rotated 10-15 degrees away from the Maple Flat horst, although its altitude records almost no structural relief across most of the Last Chance Bench antiform. Upper Pliocene lake beds are tilted as much as 20 degrees away from the axial trend of the horst-antiform structure. Faults antithetic to the west-bounding fault of the horst displace the 1.1 Ma basalt of Cunningham Hill at least 100 m, but do not displace on-trend Pleistocene deposits. Faults associated with the eastern margin of the horst and those that cut Tertiary to Quaternary deposits are suspected of being Quaternary in age.
Recurrence interval	

Slip-rate category	Less than 0.2 mm/yr *Comments:* A low geologic slip rate is indicated by the 0.5- to 3.0-m-high scarps on 140-250 ka terraces.
Date and Compiler(s)	1999 Bill D. Black, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey
References	#4565 Anderson, J.J., Rowley, R.D., Machette, M.N., Decatur, S.H., and Mehnert, H.H., 1990, Geologic map of the Nevershine Hollow area, eastern Black Mountains, southern Tushar Mountains, and northern Markagunt Plateau, Beaver and Iron Counties, Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1999, scale 1:50,000. #518 Anderson, R.E., and Bucknam, R.C., 1979, Map of fault scarps in unconsolidated sediments, Richfield 1° x 2° quadrangle, Utah: U.S. Geological Survey Open-File Report 79-1236, 15 p. pamphlet, 1 sheet, scale 1:250,000. #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. #4594 Machette, M.N., 1985, Late Cenozoic geology of the Beaver Basin, southwestern Utah: Brigham Young University Geology Studies, v. 32, pt.1, p. 19-37. #4651 Machette, M.N., Steven, T.A., Cunningham, C.G., and Anderson, J.J., 1984, Geologic map of the Beaver quadrangle, Beaver and Piute Counties, Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1520, scale 1:50,000. #4652 Sterr, H.M., 1980, The seismotectonic history and morphological evolution of late Quaternary fault scarps in southwestern Utah: Boulder, University of Colorado, unpublished Ph.D. dissertation, 286 p. #4554 Steven, T.A., and Morris, H.T., 1983, Geologic map of the Cove Fort quadrangle, west-central Utah: U.S. Geological Survey Miscellaneous Investigations Map I-1481, scale 1:50,000.

Questions or comments?