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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.

Enoch graben faults (Class A) No. 2528

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 2528, Enoch graben 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 02:53 PM.**

Synopsis	Poorly understood middle Pleistocene(?) to Holocene faults that extend into the town of Enoch in the Parowan Valley.
Name comments	**Fault ID:** Refers to fault number 10-18 in Hecker (1993 #642).
County(s) and State(s)	IRON COUNTY, UTAH
Physiographic province(s)	BASIN AND RANGE
Reliability of	Good

location	Compiled at 1:125,000 scale. *Comments:* Mapped or discussed by Anderson (1980 #4566) and Anderson and Christenson (1989 #828). Fault traces from 1:250,000-scale mapping of Anderson and Christenson (1989 #828).
Geologic setting	Generally northeast-trending normal faults in southwestern Parowan Valley southwest of the Red Hills fault [2532]. Parowan Valley is in an area underlain by related extrusive Tertiary volcanic rocks once continuous from near Pioche, Nevada, to Marysvale in Piute County. Some volcanic cover has been eroded to expose pre-existing topography of Paleozoic and Mesozoic sedimentary rocks, though in Escalante Desert (to the west) igneous rocks have been lowered by faulting and are covered by alluvium and lake deposits.
Length (km)	17 km.
Average strike	N23°E
Sense of movement	Normal
Dip Direction	NW; SE
Paleoseismology studies	
Geomorphic expression	Scarps on unconsolidated alluvial deposits. The eastern (5-7-m-high) scarp has been trenched in numerous places by local residents to stimulate spring flow. Anderson (1980 #4566) found that a soil layer (humic clay paleosol) in one exposure separates faulted coarse-grained alluvium below from well bedded sandy clay above. The sandy clay shows no evidence of thinning at the scarp and thus may have extended across it, but was not evident in their shallow (1.5-m-deep) test pit on the downthrown side of the fault.
Age of faulted surficial deposits	Middle Pleistocene(?) to Holocene alluvium near Enoch. Five km north of Enoch, faults with as much as 50 m or more of throw displace a series of Quaternary basalt flows, one of which as a K-Ar age of 1.3 Ma.
Historic earthquake	

Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* The relation of faulting to the soil, which yielded a 14C age of 9,500 yr B.P., is uncertain, although subjacent strata are faulted. The morphology of the scarp suggests an age significantly greater than the Bonneville shoreline (14.5 ka), but these scarp may degrade more rapidly than Bonneville shorelines (scarps) because the fault scarp is formed on finer grained deposits. The fault on the west side of the graben, west of Enoch, crosses alluvial deposits of estimated middle to late Pleistocene age. Anderson and Christenson (1989 #828) believe surface faulting probably occurred during latest Pleistocene time, but do not preclude the possibility of Holocene activity. Some of the faults in basalt likely had movement as recently as indicated by the scarp on alluvium near Enoch, but all of the faulted have been collectively assigned a late Pleistocene time by Hecker (1993 #642)
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr
Date and Compiler(s)	1999 Bill D. Black, Utah Geological Survey Suzanne Hecker, U.S. Geological Survey
References	#4566 Anderson, R.E., 1980, The status of seismotectonic studies of southwestern Utah, *in* Andriese, P.D., ed., Earthquake hazards along the Wasatch and Sierra-Nevada frontal fault zones: U.S. Geological Survey Open-File Report 80-801, p. 519-547. #828 Anderson, R.E., and Christenson, G.E., 1989, Quaternary faults, folds, and selected volcanic features in the Cedar City 1° x 2° quadrangle, Utah: Utah Geological and Mineral Survey Miscellaneous Publication 89-6, 29 p., 1 pl., 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.