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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.

Black Hills fault (Class A) No. 2085

Last Review Date: 2016-01-12

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2016, Fault number 2085, Black Hills 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 02:22 PM.**

Synopsis	This down-to-the-west normal fault bounds uplifted Tertiary volcanic rocks of the Black Hills. It may be a southward splay of the Derry fault [2086]. The fault forms minor scarps on Pliocene to early Quaternary basin-fill deposits, but does not appear to offset late Quaternary alluvium.
Name comments	Originally named the West Rincon Hills fault by Seager and Hawley (1973 #996) for its location along the west margin of the Rincon Hills. However, recent detailed mapping by Seager and Mack (1998 #1258) and Seager (2010 #1260) uses the name Black Hills because the fault is along the west margin of the Black Hills as shown on the most recent 1:24,000-scale

	topographic map. The Black Hills fault extends from its intersection with the eastern (pre-Quaternary) section of the Derry fault [2086] south to about 2 km beyond Thurman Arroyo (Hatch 7.5-minute quadrangle). From here, Seager and others (1982 #626) and Seager (2010 #1260) show the fault as concealed but projecting southeast to join an unnamed fold [2089] that trends southeast and south through the Rincon 7.5-minute quadrangle (Seager and Hawley, 1973 #996).
County(s) and State(s)	DOÑA ANA COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault trace from 1:24,000-scale mapping by Seager (2010 #1260) and Seager and Mack (1998 #1259) combined with accurate placement using photogrammetric methods.
Geologic setting	This down-to-the-west, south-trending normal fault bounds uplifted Tertiary volcanic rocks of the Black Hills. It may be a southward splay of the Derry fault [2086] and appears to join an unnamed syncline [2089] of Quaternary age that trends southeast and south through the Rincon 7.5-minute quadrangle (Seager and Hawley, 1973 #996). The fault is one of several subparallel structures that bound the western margin of the Rincon and Black Hills
Length (km)	8 km.
Average strike	N20°W
Sense of movement	Normal
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	The fault forms subdued and small (<5 m high) scarps on surfaces formed by sediment of the Camp Rice Formation and larger scarps where sediment of the Camp Rice Formation is downdropped against Tertiary bedrock, thus indicating recurrent movement in the Pliocene to Pleistocene. No studies of scarp

	morphology or detailed mapping have been conducted to determine stratigraphic offset of Quaternary deposits.
Age of faulted surficial deposits	Sediment of the Camp Rice Formation (Pliocene to early Quaternary) is deformed along the trace of the fault. However, younger (late Quaternary) piedmont-slope deposits (Qvo) are not offset, limiting the youngest movement to early or middle (?) Quaternary time.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing based on deformation of Camp Rice Formation sediment (Pliocene to early Quaternary). Late Quaternary piedmont-slope deposits do not appear to be faulted.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Assigned slip-rate category is based on relatively small height of scarps on surfaces that could be as old as early Quaternary (1.6 Ma) and the lack of deformation of late Quaternary deposits.
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1260 Seager, W.R., 2010, Geologic map of the Hatch quadrangle, Doña Ana County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 213, scale 1:24,000. #996 Seager, W.R., and Hawley, J.W., 1973, Geology of Rincon quadrangle, Doña Ana County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 101, 42 p., 2 pls., scale 1:24,000. #1258 Seager, W.R., and Mack, G.H., 1998, Geology of McLeod Tank quadrangle, Sierra and Doña Ana Counties, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic

	Map 77, 2 sheets, scale 1:24,000. #626 Seager, W.R., Clemons, R.E., Hawley, J.W., and Kelley, R.E., 1982, Geology of northwest part of Las Cruces 1° x 2° sheet, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 53, 3 sheets, scale 1:125,000.