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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.

Fitzgerald fault (Class A) No. 2065

Last Review Date: 2015-12-21

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

citation for this record: **Machette, M.N., and Jochems, A.P., compilers, 2015, Fault number 2065, Fitzgerald 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 intrabasin Quaternary fault forms west-facing scarps on the lower La Mesa (geomorphic) surface, southwest of Las Cruces, New Mexico. The location of the fault is inferred from these scarps and from a linear alignment of closed depressions. No detailed studies have been made of the fault or its scarp morphology.
Name comments	This fault was first mapped as an unnamed structure by Kottlowski (1960 #1010), but by 1965 De Hon (1965 #1018) had referred to it as the Fitzgerald Ranch fault (ranch name shown on 1943 version of the Afton 15-minute quadrangle, New Mexico). Its surface trace extends from just northeast of Phillips Hole (a

	Quaternary maar crater), north about 27 km to the latitude of San Tomas, New Mexico, according to mapping by Seager and others (1987 #627). The northern part of the fault splays into two subparallel strands.
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:* Kottlowski (1960 #1010) appears to have been the first to show the fault on a Quaternary geologic map, whereas Hoffer (1973 #1718) showed the fault with a more western location. Generalized trace of the entire fault is from 1:125,000-scale map in Seager and others (1987 #627). The location of the fault was digitized at 1:24,000 scale using photogrammetry to accurately map its trace from this map.
Geologic setting	This intrabasin fault deforms the lower La Mesa (geomorphic) surface. In addition, the position of the fault is inferred from a linear alignment of closed depressions on this rather planar surface. Hoffer (1973 #1718) inferred that the southern part of the fault controls the location of Hunts and Kilbourne Holes, which are possibly late Pleistocene in age (Seager and others, 1987 #627), as well as Gardner Cone, and thus mapped it further to the west. However, Seager and others (1987 #627) map the southern part of the fault further east and as extending nearly as far south as Phillips Hole.
Length (km)	27 km.
Average strike	N7°E
Sense of movement	Normal
Dip Direction	W *Comments:* The fault is shown as a high-angle structure on Seager and others' (1987 #627) cross sections (E and F). However, no specific dip values are shown on their small-scale map.

Paleoseismology studies	
Geomorphic expression	The trace of the fault is entirely on the lower La Mesa (geomorphic) surface. The trace is characterized by relatively small, west-facing scarps and by closed (trough) depressions. The fault may displace the lower La Mesa surface as much as 20 m at Fitzgerald Ranch, but topographic maps of the area (8-m contours) indicate that scarp heights of 6–15 m are more common. Much of the fault is covered by thick eolian deposits, which are common on La Mesa surfaces. No detailed studies have been made of fault scarp morphology.
Age of faulted surficial deposits	The surface deformation associated with the fault postdates formation of the lower La Mesa surface (constructional top of Camp Rice Formation), which is believed to have stabilized about 700–900 ka (Mack and others, 1993 #1020). As mapped by Seager and others (1987 #627), the fault does not cross the adjacent Afton basalt field.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Timing based on offset of the lower La Mesa surface (700–900 ka). However, evidence for younger (late Pleistocene) faulting may be obscured by eolian deposits.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category assigned based on 18-m-high scarps on the lower La Mesa surface (700–900 ka).
Date and Compiler(s)	2015 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1018 De Hon, R.A., 1965, Maare of La Mesa, *in* Fitzsimmons, J.P., and Lochman-Balk, C., eds., Guidebook of southwestern New Mexico II: New Mexico Geological Society, 16th Field Conference, October 15-17, 1965, Guidebook, p. 204-209.

	#1718 Hoffer, J.M., ed., 1973, The geology of south central Dona Ana County, New Mexico, *in* El Paso Geological Society, 7th Field Trip, April 7, 1973, Guidebook, p. 67. #1010 Kottlowski, F.E., 1960, Reconnaissance geologic map of Las Cruces thirty-minute quadrangle: New Mexico Bureau of Mines and Mineral Resources Geologic Map 14, 1 sheet, scale 1:126,720. #1020 Mack, G.H., Salyards, S.L., and James, W.C., 1993, Magnetostratigraphy of the Plio-Pleistocene Camp Rice and Palomas formations in the Rio Grande rift of southern New Mexico: American Journal of Science, v. 293, p. 49–77. #627 Seager, W.R., Hawley, J.W., Kottlowski, F.E., and Kelley, S.A., 1987, Geology of east half of Las Cruces and northeast El Paso 1° x 2° sheets, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 57, 3 sheets, scale 1:125,000.