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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.

unnamed faults on the Cuchillo Plain (Class A) No. 2134

Last Review Date: 2016-02-15

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

citation for this record: **Jochems, A.P., and Machette, M.N., compilers, 2016, Fault number 2134, unnamed faults on the Cuchillo Plain, 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 02:21 PM.**

Synopsis	This unnamed group of north-trending faults forms the western margin of the Palomas Basin and part of the southeastern margin of the Sierra Cuchillo. They extend across the head of the Cuchillo surface and the most continuous trace joins the Palomas Creek fault zone [2103]. The faults are primarily down-to-the-east. No detailed study has been made of the age of Quaternary deposits within and adjacent to the fault zone.
Name comments	These unnamed faults form the western margin of the Palomas Basin and part of the southeastern margin of the Sierra Cuchillo.

	Machette (1987 #960) and Jochems (2015 #7356) showed them as discontinuous fault scarps west of the Palomas Creek fault zone [2103], which in turn is west of Truth or Consequences, New Mexico. The unnamed faults extend across the head of the Cuchillo surface from Palomas Creek on the north to King Arroyo on the south, where the most continuous trace likely joins the Palomas Creek fault zone [2103].
County(s) and State(s)	SIERRA COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Mapped at 1:24,000 scale using 1:24,000-scale map of Jochems (2015 #7356) and unpublished mapping by Jochems and Koning. Previously compiled from unpublished 1:24,000-scale mapping by Machette used to compile figure 1 in Machette (1987 #960).
Geologic setting	These faults form the western structural margin of the Palomas Basin and the southeastern margin of the Sierra Cuchillo. The faults are predominately down-to-the-east; at least one (the westernmost fault) has significant structural throw where it places upper Palomas Formation (early Pleistocene) gravels against middle Santa Fe Group deposits inferred to be middle Miocene in age (Jochems, 2015 #7356). The faults may reflect bending at the western margin of an east-tilted half graben (Palomas Basin).
Length (km)	16 km.
Average strike	N8°W
Sense of movement	Normal
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	Machette (1987 #960) and Jochems (2015 #7356) show these down-to-the-east faults has having rather discontinuous scarps west of the Palomas Creek fault zone [2103]. The scarps, which were recognized from aerial photo interpretation and field

	reconnaissance, are primarily east-facing on the east- to south-east sloping Cuchillo surface. No one has characterized the scarps in terms of their height or morphology; however, most scarps recognized from aerial photographs and in the field are 1–3 m high.
Age of faulted surficial deposits	The faults cut dissected basin-fill sediment (the Palomas Formation) and the Palomas gravel (upper part of the Palomas Formation), which forms the constructional Cuchillo surface. This surface was considered to be middle Pleistocene (400–500 ka) by Lozinsky (1986 #1073) and Machette (1987 #960), but more recent studies by Mack and others (1993 #1020) suggested that this surface may be as old as 700–900 ka, thereby providing an older (early Pleistocene) maximum limit on the deformation. Detailed mapping of Quaternary deposits in drainages on the Cuchillo surface have demonstrated that the faults do not deform Holocene (<12 ka) deposits (Jochems and Koning, 2015 #7357).
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* Timing based on presence of recognizable scarps on the Cuchillo surface, which could be as young early Pleistocene (700–900 ka) or slightly older.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Low slip-rate category is assigned based on small size of scarps and slip rates determined for similar intrabasin faults in the region.
Date and Compiler(s)	2016 Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources Michael N. Machette, U.S. Geological Survey, Retired
References	#7356 Jochems, A.P., 2015, Geologic map of the Williamsburg NW 7.5-minute quadrangle, Sierra County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map 251, scale 1:24,000.

	#7357 Jochems, A.P., and Koning, D.J., 2015, Holocene stratigraphy and a preliminary geomorphic history for the Palomas Basin, south-central New Mexico: New Mexico Geology, v. 37, p. 77–88. #1073 Lozinsky, R.R., 1986, Geology and late Cenozoic history of the Elephant Butte area, Sierra County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Circular 187, 40 p., 2 pls. #960 Machette, M.N., 1987, Preliminary assessment of Quaternary faulting near Truth or Consequences, New Mexico: U.S. Geological Survey Open-File Report 87-652, 40 p. #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.