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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.

Cedar Lake and Antelope faults (Class A) No. 2129

Last Review Date: 2016-02-12

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 2129, Cedar Lake and Antelope 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 02:22 PM.**

Synopsis	These two faults are largely inferred; their existence is based primarily on physiographic evidence and similarity with the Engle Lake fault [2060] to the west. The faults form subtle scarps on Quaternary deposits and are associated with tectonically induced physiography, such as backtilted Quaternary surfaces and a playa lake. No specialized studies have been conducted along the fault.
Name comments	The Cedar Lake and Antelope faults were named by Mack and Seager (2013 #1262). Cedar Lake is an ephemeral lake (playa) located about 6 km north of Engle, New Mexico. The Cedar Lake

	fault extends from a point about 2 km northwest of Cedar Lake, south-southeast to 2 km east of the eastern margin of the Engle 7.5-minute quadrangle. Two short scarps are also observed northeast of the Cedar Lake fault. The Antelope fault extends from a point about 4 km north-northeast of Engle, south-southeast to 3 km east of the eastern margin of the Engle 7.5-minute quadrangle. The origin of the Antelope fault's name is unknown.
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:* Faults traces are shown on the 1:24,000-scale map of Mack and Seager (2013 #1262). These traces have been extended into the neighboring Shannon Canyon NW 7.5-minute quadrangle using photogrammetric methods.
Geologic setting	The south- to southeast-trending Cedar Lake and Antelope faults are down-to-the-east intrabasin faults that are similar to the Engle Lake fault [2060] to the west. The faults separate three asymmetric ridges that Mack and Seager (2013 #1262) interpreted as fault-tilted blocks. These faults are considered to be part of a larger system that includes the Jornada Draw [2056] and Engle Lake [2060] faults.
Length (km)	6 km.
Average strike	N35°W
Sense of movement	Normal *Comments:* Interpreted as normal faults from tilting of the local geomorphic surface and formation of cuesta-like ridges (Mack and Seager, 2013 #1262).
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	These faults tilt a geomorphic surface inferred to correlate to the Cuchillo surface (700–900 ka; Mack and others, 1993 #1020),

	which is underlain by gravel of the Palomas Formation. The southwestern dipping surfaces (slopes of 1°–3°?) are thought to be hanging-wall dip slopes related to movement on the two faults, as well as the Engle Lake fault [2060] to the southwest. The surficial expression of the scarps is subtle and they are probably less than 10 m high in most places. However, this amount may not include throw hidden by substantial deposition on the footslope of the scarps.
Age of faulted surficial deposits	The faults displace Pliocene to early Pleistocene basin-fill deposits of the Palomas Formation, and a geomorphic surface that is likely correlative to the 700–900 ka (Mack and others, 1993 #1020) constructional Cuchillo surface. There is no evidence that late Pleistocene and Holocene deposits are disturbed by the fault.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Mack and Seager (2013 #1262) indicated that the piedmont scarps are clearly younger than the Cuchillo surface (700–900 ka in Mack and others, 1993 #1020). Because deformation is only documented for the Cuchillo surface, the most recent faulting event is herein considered to be younger than 750 ka.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Mack and Seager (2013 #1262) do not report any amounts of Quaternary offset associated with the faults. However, their surficial expression is relatively minor (generally <10 m).
Date and Compiler(s)	2016 Michael N. Machette, U.S. Geological Survey, Retired Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#1262 Mack, G., and Seager, W.R., 1993, Geologic map of the Engle quadrangle, Sierra County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Geologic Map OF-GM 207, scale 1:24,000. #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.