Jump to Navigation

# 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.**

## Foothills fault (Class A) No. 2098

**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 2098, Foothills 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 02:21 PM.**

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| **Synopsis** | This northwest-trending normal fault places basin-fill sediment of the Camp Rice Formation (Upper Santa Fe Group) against Tertiary basin-fill sediment. It forms subdued and small (<5 m high) scarps on surfaces formed by the Camp Rice Formation and larger scarps where sediment of the Camp Rice Formation is downdropped against older rocks. The youngest movement on the fault may have been in middle Pleistocene time based on truncation of youngest Camp Rice Formation strata. |
| **Name comments** | First mapped by Seager and others (1982 #626), the fault was later named by Seager (2010 #1260) for exposures in the Hatch 7.5-minute quadrangle. The Foothills fault extends from its |

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| | intersection with the Derry fault [2086] south to a point about 3 km northeast of Salem (McLeod Tank 7.5-minute quadrangle) where it is concealed beneath young alluvium. Seager and Mack (2003 #7347) consider the Foothills fault to be a basinward splay of the Derry fault [2086]. |
| **County(s) and State(s)** | DOÑA ANA COUNTY, NEW MEXICO |
| **Physiographic province(s)** | BASIN AND RANGE |
| **Reliability of location** | Good<br>Compiled at 1:24,000 scale.<br><br>*Comments:* Location of fault is from 1:24,000-scale mapping by Seager and Mack (1998 #1258) and Seager (2010 #1260) combined with accurate placement using photogrammetric methods. |
| **Geologic setting** | This northwest-trending down-to-the-west normal fault places basin-fill sediment of the Camp Rice Formation (Upper Santa Fe Group) against Tertiary basin-fill sediment (primarily Miocene, middle and lower parts of the Santa Fe Group). The fault forms the western margin of the Salem bench (Seager, 2010 #1260) and truncates youngest Camp Rice Formation strata (Seager and Mack, 2003 #7347). |
| **Length (km)** | 6 km. |
| **Average strike** | N17°W |
| **Sense of movement** | Normal |
| **Dip Direction** | W<br><br>*Comments:* Shown as relatively high-angle fault (50–60°) at depth on cross sections of Seager and Mack (1998 #1258) and Seager (2010 #1260). |
| **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 |

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| | downdropped against older rocks. No studies of scarp morphology or detailed mapping to determine stratigraphic offset of Quaternary deposits have been conducted. |
| **Age of faulted surficial deposits** | Sediment of the Camp Rice Formation (Pliocene to early or middle (?) Quaternary) is deformed along the trace of the fault, which truncates youngest Camp Rice strata (Seager and Mack, 2003#7347). However, younger (late Quaternary) piedmont-slope deposits (Qvo) are not offset, limiting the youngest movement to middle Pleistocene time. |
| **Historic earthquake** | |
| **Most recent prehistoric deformation** | middle and late Quaternary (<750 ka)<br><br>*Comments:* Timing based on deformation of Camp Rice Formation sediment. Late Quaternary piedmont-slope deposits do not appear to be offset but youngest Camp Rice Formation strata (700–900 ka; Mack and others, 1993 #1020) are truncated by the fault. This observation suggests that activity on the fault continued at least into the middle Pleistocene. |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* The slip rate is less than 0.2 mm/yr based on relatively small height of scarps on surfaces that could be as old as early Quaternary and the lack of deformation of late Quaternary deposits. |
| **Date and Compiler(s)** | 2016<br>Michael N. Machette, U.S. Geological Survey, Retired<br>Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources |
| **References** | #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.<br><br>#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. |

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| | #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.<br><br>#7347 Seager, W.R., and Mack, G.H., 2003, Geology of the Caballo Mountains, New Mexico: New Mexico Bureau of Geology and Mineral Resources Memoir 49, 136 p.<br><br>#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. |