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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 near Murderers Creek (Class A) No. 810

Last Review Date: 2002-12-03

citation for this record: **Personius, S.F., compiler, 2002, Fault number 810, unnamed faults near Murderers Creek, 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 01:58 PM.**

Synopsis	The east-trending, down-to-the-south Murderers Creek faults are parallel to and may structurally control the north flank of the Murderers Creek basin in central Oregon. No detailed information on Quaternary offset are available, but limited airphoto analysis suggests probable middle to late Quaternary displacement.
Name comments	These normal faults form the northern margin of the Murderers Creek basin in central Oregon. They were informally referred to as the Murders Creek zone or fault zone by Pezzopane (1993 #3544). **Fault ID:** These faults are included in fault number 18 of Pezzopane (1993 #3544).
County(s) and	

County(s) and State(s)	GRANT COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations are from 1:100,000-scale mapping of Weldon and others (2002 #5648), based on 1:500,000-scale mapping of Pezzopane (1993 #3544).
Geologic setting	The Murderers Creek faults are parallel to and may structurally control the north flank of the Murderers Creek basin (Brown and Thayer, 1966 #3577). This area is underlain by Miocene Columbia River Basalt Group rocks and Plio-Pleistocene Rattlesnake Formation sediments (Thayer and Brown, 1966 #3591).
Length (km)	11 km.
Average strike	N71°W
Sense of movement	Normal, Reverse *Comments:* These structures are depicted as normal faults on most maps (Brown and Thayer, 1966 #3577; Thayer and Brown, 1966 #3591; Newcomb, 1970 #3761), but their orientation may suggest reverse slip (Nakata and others, 1992 #3524).
Dip Direction	S; N
Paleoseismology studies	
Geomorphic expression	No information on geomorphic expression is available. Pezzopane (1993 #3544) and Nakata and others (1992 #3524) used airphoto analysis to include the Murderers Creek faults in a group of potentially active faults in central Oregon.
Age of faulted surficial deposits	Most maps show the Murderers Creek faults buried by Plio-Pleistocene Rattlesnake Formation along the northern margin of Murderers Creek maps (Brown and Thayer, 1966 #3577; Thayer and Brown, 1966 #3591).
Historic	

earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Most maps show the Murderers Creek faults buried by Plio-Pleistocene Rattlesnake Formation sediments (Brown and Thayer, 1966 #3577; Thayer and Brown, 1966 #3591), but Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others, 2002 #5648) show these faults as active in the middle and late Quaternary (<700–780 ka).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No published slip rates are available for the Murderers Creek faults, but the possible burial of the faults by Plio-Pleistocene sediments suggests low rates of slip.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#3577 Brown, E.C., and Thayer, T.P., 1966, Geologic map of the Canyon City quadrangle northeastern Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-447, 1 sheet, scale 1:250,000. #3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oregon: Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000. #3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: State of Oregon, Department of Geology and Mineral Industries Geological Map Series GMS-100, 1 sheet. #3524 Nakata, T., Weldon, R.J.I., Pezzopane, S., Rosenfeld, C., and Yeats, R.S., 1992, Preliminary aerial photo-interpretation of active faults in Oregon: Geological Society of America Abstracts with Programs, v. 24, no. 5, p. 72. #3761 Newcomb, R.C., 1970, Tectonic structure of the main part of the basalt of the Columbia River Group Washington, Oregon, and Idaho: U.S. Geological Survey Miscellaneous Geologic

	Investigations I-587, 1 sheet, scale 1:500,000. #3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Oregon: Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p. #3591 Thayer, T.P., and Brown, C.E., 1966, Geologic map of the Aldrich Mountain quadrangle Grant County, Oregon: U.S. Geological Survey Geologic quadrangle Map GQ-438, 3 p. pamphlet, 1 sheet, scale 1:62,500. #5648 Weldon, R.J., Fletcher, D.K., Weldon, E.M., Scharer, K.M., and McCrory, P.A., 2002, An update of Quaternary faults of central and eastern Oregon: U.S. Geological Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000.