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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.

Juniper Mountain fault (Class A) No. 805

Last Review Date: 2016-03-21

citation for this record: **Personius, S.F., compiler, 2002, Fault number 805, Juniper Mountain 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 01:59 PM.**

Synopsis	The Juniper Mountain fault is a roughly east-west trending, down-to-the-north no fault located along the northern margin of Juniper Mountain. The fault juxtaposes Miocene Columbia River basalts against Miocene and Pliocene ash-flow tuffs and tuffaceous lacustrine rocks. The fault trace is marked by prominent fault scarps ac alluvial fans north of Juniper Mountain. Small scarps on late Pleistocene to possil Holocene deposits and larger scarps on older surficial deposits indicate recurrent Quaternary movement on the Juniper Mountain fault.
Name comments	Originally mapped by Brooks and others (1976 #3573), the fault was informally r the Juniper Mountain fault by Geomatrix Consultants, Inc. (1989 #1310) after nea Juniper Mountain. The fault has been the subject of numerous reconnaissance Quaternary fault investigations and compilations (Geomatrix Consultants Inc., 19 #1310; Pezzopane and Weldon, 1993 #149; Pezzopane, 1993 #3544; Simpson and others, 1993 #3596; Knudsen and others, 1994 #3594; Geomatrix Consultants Inc 1995 #3593; Madin and Mabey, 1996 #3575; Wood, 1999 #4042; Weldon and oth 2002 #5648).

	Fault ID: This structure is part of fault number 17 of Pezzopane (1993 #3544) ar fault number 65 of Geomatrix Consultants, Inc. (1995 #3593).
County(s) and State(s)	MALHEUR COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapS downloaded 06/02/2016) attributed to Swanson and others (1981 #3496) supplem with 1:100,000-scale mapping by Weldon and others (2002 #5648).
Geologic setting	The Juniper Mountain fault bounds the north flank of Juniper Mountain, a low rel highland consisting of Miocene to Pliocene volcanic and sedimentary rocks that unconformably overlie an allocthonous Devonian to Jurassic island arc basement terrane consisting of volcanic and sedimentary rocks (Brooks and others, 1976 #3 Walker and MacLeod, 1991 #3646). The Cenozoic tectonic pattern of the region i dominated by numerous northwest-trending normal faults (the Vale zone) that hav been attributed to deep seated dextral shear between east-west extension in the Ba and Range province to the south and more stable terranes to the north and west (Lawrence, 1976 #3506), driven by interactions of the Juan de Fuca and North American plates (Robyn and Hoover, 1982 #3781; Pezzopane and Weldon, 1993 Mann and Meyer, 1993 #3535). A more recent interpretation is that these faults ar simply northwest-trending normal faults that do not represent regional shearing (Knudsen and others, 1994 #3594; 1996 #3529).
Length (km)	17 km.
Average strike	N81°W
Sense of movement	Normal *Comments:* The fault is mapped as a high-angle, presumable normal fault by Broc and others (1976 #3573), Walker and MacLeod (1991 #3646), Geomatrix Consul Inc. (1989 #1310; 1995 #3593); Simpson and others (1993 #3596), Pezzopane (19 #3544), and Knudsen and others (1994 #3594).
Dip Direction	N *Comments:* Knudsen and others (1994 #3594) and Geomatrix Consultants, Inc. (1

	#3593) used an estimated dip of 70° and Wong and others (1999 #5654) used an estimated dip of 60° in their analyses of paleo-earthquake magnitudes on the Juni Mountain fault.
Paleoseismology studies	
Geomorphic expression	The Juniper Mountain fault is marked by short, discontinuous scarps and tonal an topographic lineaments along the northern flank of Juniper Mountain (Geomatrix Consultants Inc., 1989 #1310; Simpson and others, 1993 #3596; Knudsen and oth 1994 #3594). Scarps and lineaments are present on late Pleistocene and possibly Holocene deposits; scarps are larger on older deposits, suggesting recurrent Quate displacement (Knudsen and others, 1994 #3594).
Age of faulted surficial deposits	The Juniper Mountain fault offsets late Pleistocene to possibly Holocene fan depo north of Juniper Mountain (Simpson and others, 1993 #3596; Knudsen and others 1994 #3594).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Age estimates of offset are based on geomorphic similarity to better studied Cottonwood Mountain fault [806] to the south, and presence of fault scarp late Pleistocene to Holocene (?) fan deposits (Geomatrix Consultants Inc., 1989 # Simpson and others, 1993 #3596; Knudsen and others, 1994 #3594). Weldon and others (2002 #5648) also inferred latest Quaternary displacement along most of th Juniper Mountain fault.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* The low slip category is based on lack of a prominent range front alon north flank of Juniper Mountain. Geomatrix Consultants, Inc. (1995 #3593) used geomorphic expression to estimate preferred rates of 0.01–0.05 mm/yr on the Jun Mountain fault. Wong and others (1999 #5654) estimated a vertical displacement of 0.05 mm/yr for the Juniper Mountain fault.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
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