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.

South Grande Ronde Valley faults (Class A) No. 709

Last Review Date: 2016-05-02

citation for this record: **Personius, S.F., compiler, 2002, Fault number 709, South Grande Ronde Valley 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 02:03 PM.**

Synopsis	These faults form several northwest-trending fault blocks with escarpments up to m high on Miocene volcanic rocks in the southern part of the Grande Ronde Valle details of the geomorphic expression of these faults have been published, but they mapped in places juxtaposing Quaternary alluvial deposits against bedrock. The limited available data have been used to infer middle and late Quaternary movem on some faults, and Quaternary movement on other faults in this part of the Grand Ronde Valley.
Name comments	Numerous northwest-trending faults in the southern Grande Ronde Valley were originally mapped by Hampton and Brown (1964 #3491), and later summarized b Newcomb (1970 #3761), Walker (1979 #3576; 1991 #3646), and Barrash and oth (1980 #3570). Named faults include the High Valley, Catherine Creek, and Pyle Canyon faults of Hampton and Brown (1964 #3491). Faults in the southern Grand Ronde Valley have been included in numerous reconnaissance Quaternary fault

	investigations and compilations (Geomatrix Consultants Inc., 1989 #1310; Pezzo 1993 #3544; Simpson and others, 1993 #3596; Knudsen and others, 1994 #3594) **Fault ID:** These structures are part of fault number 13 of Pezzopane (1993 #3544
County(s) and State(s)	UNION 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 Ferns and others (2010 #7393).
Geologic setting	These faults form several northwest-trending fault blocks in Miocene volcanic ro the southern part of the Grande Ronde Valley (Hampton and Brown, 1964 #3491; Walker, 1979 #3576; Barrash and others, 1980 #3570; 1991 #3646).
Length (km)	23 km.
Average strike	N39°W
Sense of movement	Normal *Comments:* Although horizontal striations or other evidence of horizontal displac has been observed on faults in the region (Hampton and Brown, 1964 #3491; Geł and others, 1980 #3774), these faults are mapped as high-angle, presumably norm faults (Hampton and Brown, 1964 #3491; Walker, 1979 #3576; Geomatrix Consu Inc., 1989 #1310; 1991 #3646; Pezzopane, 1993 #3544; Simpson and others, 199 #3596; Knudsen and others, 1994 #3594).
Dip Direction	SW; NE
Paleoseismology studies	
Geomorphic expression	These faults form several northwest-trending fault blocks with escarpments up to m high on Miocene volcanic rocks in the southern part of the Grande Ronde Valle (Hampton and Brown, 1964 #3491; Walker, 1979 #3576; 1991 #3646). No details the geomorphic expression of these faults have been published, but Weldon and c (2002 #5648) observed lineaments across Quaternary units on 1:100,000-scale D of the area.

Age of faulted surficial deposits	These faults are mostly shown offsetting Miocene volcanic rocks on published geologic maps of the region, but in some places are shown juxtaposing Quaternar alluvial deposits against bedrock (Hampton and Brown, 1964 #3491; Newcomb, #3761; Walker, 1979 #3576; Barrash and others, 1980 #3570; 1991 #3646).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Pezzopane (1993 #3544) and Weldon and others (2002 #5648) show of these faults as active in the middle and late Quaternary (<700–780 ka) and oth active in the Quaternary (<1.6–1.8 Ma).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Hampton and Brown (1964 #3491) describe offsets of 90–460 m of Miocene volcanic rocks along the High Valley, Catherine Creek, and Pyle Canyo faults. These offsets suggest low rates of long-term slip.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#3570 Barrash, W., Bond, J.G., Kauffman, J.D., and Venkatakrishnan, R., 1980, Geology of the La Grande Area, Oregon: State of Oregon, Department of Geolog Mineral Industries Special Paper 6, 47 p., 5 pls., scale 1:24,000. #7393 Ferns, M.L., McConnell, V.S., Madin, I.P., and Johnson, J.A., 2010, Geolo the upper Grande Ronde River basin, Union County, Oregon: DOGAMI Bulletin 107, 65 p., 1:100,000 #3774 Gehrels, G.E., White, R.R., and David, G.A., 1980, The La Grande pull-ap basin, northeastern Oregon: Geological Society of America Abstracts with Progra v. 12, no. 3, p. 107. #1310 Geomatrix Consultants, Inc., 1989, Final report seismotectonic evaluation Mann Creek Dam site and Mason Dam site: Technical report to U.S. Department Interior, Bureau of Reclamation, Denver, Colorado, under Contract 6-CS-81-073 October 1989, 118 p., 2 pls. #3491 Hampton, E.R., and Brown, S.G., 1964, Geology and ground-water resour the Upper Grande Ronde River Basin Union County, Oregon: U.S. Geological Su Water-Supply Paper 1597, 99 p., 6 pls.

#3594 Knudsen, K.L., Wong, I.G., Bott, J.D.J., Weber, G.E., Silva, W.J., and Lett W.R., 1994, Seismotectonic evaluation, Agency Valley and Bully Creek Dams, V Project, east-central Oregon: Draft Report prepared for U.S. Department of the In Bureau of Reclamation, 171 p., 4 pls.

#3761 Newcomb, R.C., 1970, Tectonic structure of the main part of the basalt of 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 Or Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p.

#3596 Simpson, G.D., Hemphill-Haley, M.A., Wong, I.G., Bott, J.D.J., Silva, W.J Lettis, W.R., 1993, Seismotectonic evaluation, Burnt River Project Unity Dam, B Project Thief Valley Dam, northeastern Oregon: Final Report prepared for U.S. Department of the Interior, Bureau of Reclamation, 167 p., 2 pls.

#3576 Walker, G.W., 1979, Reconnaissance geologic map of the Oregon part of t Grangeville quadrangle, Baker, Union, Umatilla, and Wallowa Counties, Oregon: Geological Survey Miscellaneous Investigations Map I-1116, 1 sheet, scale 1:250

#3646 Walker, G.W., and MacLeod, N.S., 1991, Geologic map of Oregon: U.S. Geological Survey, Special Geologic Map, 2 sheets, scale 1:500,000.

#5648 Weldon, R.J., Fletcher, D.K., Weldon, E.M., Scharer, K.M., and McCrory, 2002, An update of Quaternary faults of central and eastern Oregon: U.S. Geolog Survey Open-File Report 02-301 (CD-ROM), 26 sheets, scale 1:100,000.