

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](#).

Hite fault system, Agency section (Class A) No. 845d

Last Review Date: 2003-10-03

citation for this record: Personius, S.F., and Lidke, D.J., compilers, 2003, Fault number 845d, Hite fault system, Agency section, 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 03:16 PM.

Synopsis

General: The Hite fault system is a complex zone of faulting that parallels the northeast-trending western flank of the Blue Mountains uplift in northeastern Oregon and southeastern Washington; the fault system may overlie the suture zone between accreted terranes in the Blue Mountains and the stable craton. Sense of slip on structures included in this zone has been described as normal, left-lateral, and right-lateral strike slip, but recent work is most consistent with a left-lateral oblique (dip to the west or northwest) sense of slip. Most structures in the Hite fault system are found exclusively in rocks of the Miocene Columbia River Basalt Group, so determination of Quaternary activity is difficult.

Sections: This fault has 4 sections. The Hite fault system was originally divided into four sections in this compilation; from northeast to southwest, these were the Hite section, the Kooskooskie section, the Thorn Hollow section, and the Agency section. The Hite section and the Kooskooskie section were combined by DOGAMI in the ORActiveFaults compilation.

	(http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/Map8)
Name comments	<p>General: The Hite fault system is a complex zone of faulting that parallels the northeast-trending western flank of the Blue Mountains uplift. The Hite fault was named after U.S. Soil Conservation Service scientist Thomas Hite (Kuehn, 1995 #3478). Faults included in the system herein include the Hite, Thorn Hollow, and Kooskooskie faults (Kienle and others, 1979 #3728); most faults have been mapped by Swanson and others (1981 #3496).</p> <p>Section: This section consists of a northeast-striking fault zone that parallels the Agency syncline south of Pendleton. The fault zone was mapped by Swanson and others (1981 #3496).</p> <p>Fault ID: Some of these structures are included in fault number 76 of Geomatrix Consultants, Inc. (1995 #3593).</p>
County(s) and State(s)	UMATILLA COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	<p>Good Compiled at 1:24,000 scale.</p> <p><i>Comments:</i> Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/Map8 downloaded 06/02/2016) attributed to 1:24,000-scale mapping by Ferns and McC (2006 #7806).</p>
Geologic setting	The Hite fault system is a complex zone of faulting that parallels the northeast-trending western flank of the Blue Mountains uplift in northeastern Oregon and southeastern Washington; the fault system may overlie the suture zone between accreted terranes of the Blue Mountains and the stable craton (Reidel and others, 1994 #3539). Sense of movement on structures included in this zone has been described as normal, left-lateral, and lateral strike slip (Newcomb, 1970 #3761; Kienle and others, 1979 #3728; Tolan and Reidel, 1989 #3765). Most structures in the Hite fault system are found exclusively in rocks of the Miocene Columbia River Basalt Group (Walker, 1973 #3756; Swanson and others, 1981 #3496; Walker and MacLeod, 1991 #3646; Schuster and others, 1991 #3760), so determination of Quaternary activity is difficult.
Length (km)	This section is 28 km of a total fault length of 140 km.
Average strike	N6°E (for section) versus N20°E (for whole fault)
Sense of movement	Left lateral, Normal

	<i>Comments:</i> Sense of slip on faults in the Agency section have been mapped as no left-lateral, and right-lateral strike slip (Swanson and others, 1981 #3496; Tolan and Reidel, 1989 #3765; Walker and MacLeod, 1991 #3646). However, recent detailed work on faults in the Hite section indicate left-lateral oblique (down-to-the-north) slip (Kuehn, 1995 #3478); this sense of slip probably characterizes the entire Hite system (Reidel and others, 1994 #3539).
Dip Direction	NW
Paleoseismology studies	
Geomorphic expression	
Age of faulted surficial deposits	Faults in the Agency section offset Miocene Columbia River Basalt Group rocks (Swanson and others, 1981 #3496; Walker and MacLeod, 1991 #3646), but no of Quaternary surficial deposits have been described.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) <i>Comments:</i> Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others #5648) infer Quaternary (<1.6–1.8 Ma) displacement on this part of the Hite fault system.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> No detailed fault slip data on the Agency section have been documented but based on data from other sections of the Hite fault system, low rates of slip are probable.
Date and Compiler(s)	2003 Stephen F. Personius, U.S. Geological Survey David J. Lidke, U.S. Geological Survey
References	#3598 Busacca, A.J., 1991, Loess deposits and soils of the Palouse and vicinity, in Morrison, R.B., ed., Quaternary nonglacial geology; conterminous U.S.: Boulder, Colorado, Geological Society of America, The Geology of North America, v. K-2 216-228. #7806 Ferns, M.L., and McConnell, V.S., 2006, Preliminary geologic map of the

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