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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.

Faults north of Summer Lake (Class A) No. 833

Last Review Date: 2002-12-06

citation for this record: **Personius, S.F., compiler, 2002, Fault number 833, Faults north of Summer Lake, 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 03:15 PM.**

Synopsis	These northwest- and northeast-striking normal faults form a complex of promine escarpments on a volcanic highland of Pliocene and Miocene volcanic rocks that between the north end of the Chewaucan-Summer Lake basin or graben and the s end of the Fort Rock and Christmas Lake Valley basins in the Basin and Range of south-central Oregon. No fault scarps on Quaternary deposits have been describe Quaternary displacement is inferred, probably based on the prominent bedrock escarpments associated with these faults.
Name comments	This group of faults is located north the Chewaucan-Summer Lake basin or grabe some of these faults were originally mapped by Russell (1884 #5099), Donath (19 #3771), Walker (1963 #3565), Hampton (1964 #3790), Walker and others (1967 #3564), Walker and MacLeod (1991 #3646), and Simpson (1990 #3504); six of th faults, from east to west, the Christmas Lake Valley, Sheep Rock, Sagebrush Flat Juniper Canyon, Watson Draw, and Sheep Lick Draw faults, were named by Don (1962 #3771). This group of faults is included in but not described in Pezzopane (#3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; M

	and Mabey, 1996 #3575; Weldon and others, 2002 #5648).
County(s) and State(s)	LAKE COUNTY, OREGON
Physiographic province(s)	COLUMBIA PLATEAU BASIN AND RANGE
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 Walker and others (1967 #3564), and 1:48, scale mapping of Diggles and others (1990 #3589).
Geologic setting	These northwest- and northeast-striking normal faults form a complex of promine escarpments on a volcanic highland of Pliocene and Miocene volcanic rocks that between the north end of the Chewaucan-Summer Lake basin and the south end c Fort Rock and Christmas Lake Valley basins in the Basin and Range of south-cen Oregon (Walker, 1963 #3565; Walker and others, 1967 #3564; Walker and MacL 1991 #3646).
Length (km)	50 km.
Average strike	N10°W
Sense of movement	Normal *Comments:* These faults are mapped as normal or high-angle faults by Donath (19 #3771), Walker (1963 #3565), Walker and others (1967 #3564), Walker and Mac (1991 #3646), and Pezzopane (1993 #3544). Donath (1962 #3771) used a variety structural relations to infer that the faults developed as strike-slip faults and later became primarily dip slip.
Dip	>60° W; E *Comments:* Donath (1962 #3771) used map patterns to infer that fault dips were greater than 60° and most were near vertical.
Paleoseismology studies	
Geomorphic expression	These northwest- and northeast-striking normal faults form a complex of 100- to m-high escarpments (Dead Indian, Egli, Burma Rims) and fault-bound blocks on Pliocene and Miocene volcanic rocks (Walker, 1963 #3565; Walker and others, 19

	#3564; Simpson, 1990 #3504; Walker and MacLeod, 1991 #3646). No fault scarp Quaternary deposits have been described along these faults, but a lineament on airphotos extends several hundred meters northward onto the playa floor on the fa that forms the Burma Rim (I.P. Madin, pers. commun., 2001). Weldon and others (2002 #5648) observed lineaments across Quaternary deposits on 1:100,000-scale DEMs of the area.
Age of faulted surficial deposits	These northwest- and northeast-striking normal faults form a complex of promine escarpments on Pliocene and Miocene bedrock (Walker, 1963 #3565; Walker and others, 1967 #3564; Simpson, 1990 #3504; Walker and MacLeod, 1991 #3646), b fault scarps on Quaternary deposits have been described along their traces.
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldon and others 2002 #5648) infer Quaternary (<1.6–1.8 Ma) or middle or late Quaternary (<700-ka) displacement on these faults, probably based on the prominent bedrock escarpments associated with these faults. Madin and others (1996 #3479) infer Holocene displacement on the Sheep Rock fault, but do not discuss the basis for t age assignment.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No published slip data are available for the unnamed faults north of Summer Lake. The largest of these faults are marked by 300-m-high escarpments Pliocene and Miocene volcanic rocks; such slip data indicate low rates of long-te slip.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#3589 Diggles, M.F., Conrad, J.E., and Soreghan, G.A., 1990, Geologic map of th Diablo Mountain Wilderness Study Area, Lake County, Oregon: U.S. Geological Survey Miscellaneous Field Studies Map MF-2121, 1 sheet, scale 1:48,000. #3771 Donath, F.A., 1962, Analysis of Basin-Range structure, south-central Oreg Geological Society of America Bulletin, v. 73, p. 1-16. #3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oreg

Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000.

#3790 Hampton, E.R., 1964, Geologic factors that control the occurrence and availability of ground water in the Fork Rock Basin Lake County, Oregon: U.S. Geological Survey Professional Paper 383-B, 29 p., 2 pls., scale 1:62,500.

#3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: of Oregon, Department of Geology and Mineral Industries Geological Map Serie GMS-100, 1 sheet.

#3479 Madin, I.P., Ferns, M.F., Langridge, R., Jellinek, A.M., and Priebe, K., 199 Final report to Bonneville Power Administration U.S. Department of Energy Port General Electric Company—Geothermal resources of southeast Oregon: State of Oregon, Department of Geology and Mineral Industries Open-File Report OFR-0 4, 41 p., 6 pls.

#3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Or Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p.

#5099 Russell, I.C., 1884, A geological reconnaissance in southern Oregon: U.S. Geological Survey Fourth Annual Report, p. 431-464.

#3504 Simpson, G.D., 1990, Late Quaternary tectonic development of the northwestern part of the Summer Lake Basin, south-central Oregon: Humboldt St University, unpublished M.S. thesis, 121 p., 2 pls., scale 1:24,000.

#3565 Walker, G.W., 1963, Reconnaissance geologic map of the eastern half of th Klamath Falls (AMS) quadrangle, Lake and Klamath Counties, Oregon: U.S. Geological Survey Mineral Investigations Field Studies Map MF-260, 1 sheet, sc 1:250,000.

#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.

#3564 Walker, G.W., Peterson, N.V., and Greene, R.C., 1967, Reconnaissance ge map of the east half of the Crescent quadrangle Lake, Deschutes, and Crook Cou Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-493, 1 scale 1:250,000.

#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.