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.

Warner Valley faults, West Warner Valley section (Class A) No. 827b

Last Review Date: 2016-03-25

citation for this record: **Personius, S.F., Sawyer, T.L., and Haller, K.M., compilers, 2002, Fault number 827b, Warner Valley faults, West Warner Valley 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 03:15 PM.**

Synopsis	**General:** These north-trending normal faults form a large, complex graben syste confines Warner Valley, Coleman Valley, and the northeast part of Long Valley in Basin and Range province of southern Oregon and northern Nevada. The area is underlain by Pliocene and Miocene volcanic and volcaniclastic sedimentary rock fault scarps on Quaternary deposits have been described along the range boundin faults, but several lineaments appear to control the locations of young playas, and stream courses, and interrupt latest Pleistocene pluvial shorelines on the floor of Warner Valley, thus suggesting Quaternary movement. Broad deformation of late Pleistocene pluvial shorelines has also been documented throughout Warner Valle Faults juxtapose Quaternary alluvium or landslide deposits against Miocene to Pliocene volcanic rocks along the eastern and western margins of Coleman Valley **Sections:** This fault has 3 sections. The earthquake source zones delineated by

	Geomatrix Consultants, Inc. (1995 #3593), the West Warner Valley, the East War Valley north, and the East Warner Valley south faults, are retained herein as separ sections, the West Warner Valley, East Warner Valley, and Coleman Valley sectio respectively. The Coleman Valley section extends south into the northeast part of Valley in northern Nevada.
Name comments	**General:** These faults are named after Warner Valley, a large graben system in th Basin and Range Province of southern Oregon and northern Nevada; they were mapped by Walker and Repenning (1965 #3559), Bonham (1969 #2999), Walker MacLeod (1991 #3646), and Dohrenwend and Moring (1991 #281). Pezzopane (#3544) and Pezzopane and Weldon (1993 #149) included these faults in their Wa Valley Graben faults or Warner Valley fault zone. Geomatrix Consultants, Inc. (19 #3593) informally named individual faults the West Warner Valley, the East Warn Valley north, and the East Warner Valley south faults; dePolo (1998 #2845) inclu the western margin fault in Coleman Valley in Nevada in his Coleman Valley fau zone V1. In northern Nevada, the southern extension of these faults is informally known as the Northeast Long Valley fault (V3 of dePolo, 1998 #2845). Herein w retain the fault groupings of Geomatrix Consultants, Inc. (1995 #3593) as the informally named West Warner Valley, East Warner Valley, and Coleman Valley sections, respectively. **Section:** This section is the West Warner Valley fault of Geomatrix Consultants, I (1995 #3593). **Fault ID:** This section is part of fault number 46 of Pezzopane (1993 #3544), and number 61c of Geomatrix Consultants, Inc. (1995 #3593).
County(s) and State(s)	LAKE COUNTY, OREGON
Physiographic province(s)	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) from 1:100,000-scale mapping of Weldon and others (2 #5648) based on 1:250,000-scale mapping of Walker and Repenning (1965 #3559 1:500,000-scale mapping of Pezzopane (1993 #3544).
Geologic setting	These north-trending normal faults form a large, complex graben system that con the Warner Valley, Coleman Valley, and the northeast part of Long Valley in the E and Range province of southern Oregon and northern Nevada. The area is underla Pliocene and Miocene volcanic and volcaniclastic sedimentary rocks (Walker and

	Repenning, 1965 #3559; Bonham, 1969 #2999; Walker and MacLeod, 1991 #364
Length (km)	This section is 42 km of a total fault length of 133 km.
Average strike	N3°E (for section) versus N9°E (for whole fault)
Sense of movement	Normal, Right lateral *Comments:* This fault is mapped as a normal or high-angle fault by Walker and Repenning (1965 #3559), Walker and MacLeod (1991 #3646), and Pezzopane (19 #3544). Focal mechanism studies of the 1986 Adel earthquake swarm (Schaff, 19 #3505; Patton, 1985 #3515) suggest a small component of right-oblique motion o faults in this section (Pezzopane and Weldon, 1993 #149; Pezzopane, 1993 #3544 Schaff (1976 #3505) inferred that this earthquake swarm occurred on the West W Valley fault, although most of the earthquakes appear to be located in the footwal block. Craven (1991 #3951; 1999 #4043) used data on deformed pluvial shoreline a focal mechanism on earthquakes associated with the Adel swarm (Schaff, 1976 #3505) to infer compressional movement on faults along the western margin of W Valley.
Dip Direction	E *Comments:* No structural data on the dip of this fault have been published, but Geomatrix Consultants, Inc. (1995 #3593) used an estimated dip of 70° in their modeling of earthquake potential on faults in the Warner Valley.
Paleoseismology studies	
Geomorphic expression	The West Warner Valley fault is marked by prominent escarpments (South Warne Lynches Rims) in Miocene volcanic rocks (Walker and Repenning, 1965 #3559; Walker and MacLeod, 1991 #3646), from north of Plush to the southern end of W Valley. No young fault scarps have been recognized along the range bounding fau but tilted late Pleistocene pluvial shorelines are evidence of vertical deformation basin (Weide, 1974 #3503; Craven, 1988 #3519; Craven, 1991 #3951; Weldon an others, 1992 #3540; Pezzopane and Weldon, 1993 #149; Pezzopane, 1993 #3544) Weldon and others (2002 #5648) describe lineaments across Quaternary deposits 1:100,000-scale DEMs of the fault trace.
Age of faulted surficial deposits	No fault scarps have been recognized on Quaternary deposits along the West War Valley fault section, but Weide (1974 #3503) and Craven (1988 #3519; 1991 #39 documented broad deformation of late Pleistocene pluvial shorelines throughout Warner Valley.
Historic	

earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No fault scarps on Quaternary deposits have been described along the Warner Valley fault section, although Weide (1974 #3503) and Craven (1988 #35 1991 #3951) documented broad deformation of late Pleistocene pluvial shoreline throughout Warner Valley. Pezzopane (1993 #3544) and subsequent compilations (Geomatrix Consultants Inc., 1995 #3593; Madin and Mabey, 1996 #3575; Weldo others, 2002 #5648) infer Quaternary (<1.6–1.8 Ma) displacement along the West Warner Valley fault section.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Estimated slip rates of 0.08–0.2 mm/yr (S.K. Pezzopane, pers. comm 1994, in Geomatrix Consultants Inc., 1995 #3593), and 0.18–0.2 mm/yr (Craven, #3951) are long-term rates of offset of Miocene bedrock. Geomatrix Consultants, (1995 #3593) used estimated slip rates of 0.001–0.2 mm/yr in their analysis of earthquake hazards associated with the West Warner Valley fault.
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey Thomas L. Sawyer, Piedmont Geosciences, Inc. Kathleen M. Haller, U.S. Geological Survey
References	#2999 Bonham, H.F., 1969, Geology and mineral deposits of Washoe and Storey Counties, Nevada: Nevada Bureau of Mines and Geology Bulletin 70, 140 p., 1 p scale 1:250,000. #4043 Craven, G., 1999, Holocene deformation of shorelines in Warner Valley correlated with 1968 earthquake swarm epicenters and Miocene structural control Quaternary geology of the northern Quinn River and Alvord Valleys, southeastern Oregon: Friends of the Pleistocene field trip guide, September 24-26, 1999, Appe 11, p. 1-5. #3519 Craven, G.F., 1988, Tectonic deformation of late Pleistocene shorelines in Warner Valley, Lake County, Oregon: Geological Society of America Abstracts w Programs, v. 20, no. 3, p. 152. #3951 Craven, G.F., 1991, The tectonic development and late Quaternary deform of Warner Valley south of Hart Mountain, Oregon: Arcata, California, Humboldt University, unpublished M.S. thesis, 94 p., 10 pls.

#2845 dePolo, C.M., 1998, A reconnaissance technique for estimating the slip rat normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p.

#281 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic of young faults in the Vya 1° by 2° quadrangle, Nevada, Oregon, and California: Geological Survey Miscellaneous Field Studies Map MF-2174, 1 sheet, scale 1:250,000.

#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.

#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.

#3515 Patton, H.J., 1985, P-wave fault-plane and the generation of surface waves earthquakes in the western United States: Geophysical Research Letters, v. 12, nc 518-521.

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

#149 Pezzopane, S.K., and Weldon, R.J., II, 1993, Tectonic role of active faulting central Oregon: Tectonics, v. 12, p. 1140-1169.

#3505 Schaff, S.C., 1976, The 1968 Adel, Oregon, earthquake swarm: Reno, Nev University of Nevada, unpublished M.S. thesis, 63 p.

#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.

#3559 Walker, G.W., and Repenning, C.A., 1965, Reconnaissance geologic map Adel quadrangle, Lake, Harney, and Malheur Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations I-446, 1 sheet, scale 1:250,000.

#3503 Weide, D.L., 1974, Postglacial geomorphology and environments of the W Valley-Hart Mountain Area, Oregon: Los Angeles, California, University of Calif Ph. D dissertation, 293 p.

#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.

	#3540 Weldon, R.J., II, Pezzopane, S.K., Stimac, J.P., and McDowell, P.F., 1992, Guidebook to active faulting in south-central Oregon, *in* Geological Society of America, Cordilleran Meeting Fieldtrip #5, May 8-10, 1992, Guidebook.