

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](#).

Los Osos fault zone, Newsom Ridge section (Class A) No. 79d

Last Review Date: 2016-12-01

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Synopsis

General: Detailed mapping of surficial deposits and paleoseismic trenching investigations (PG&E, 1988 #7833; Lettis and Hall, 1994 #7842) and mapping (Nitchman, 1988 #7846) provide evidence for late Quaternary and locally, Holocene activity along the Los Osos fault zone. These studies confirmed many of the bedrock fault traces mapped by Hall and others (1979 #7840) and identified additional traces within the zone. The central portion of the fault zone meets the criteria of “sufficiently active and well-defined” to warrant zoning under the Alquist-Priolo Special Studies Zone Act (Bryant and Hart, 2007 #7836; Treiman, 1989 #7847).

Sections: This fault has 4 sections. PG&E (1988 #7833) and Lettis and Hall (1994 #7842) define segments along the fault zone based on differences in physical (*i.e.*, spatial coincidence with

	<p>distinct topographic elements of the San Luis/Pismo structural block (Lettis and others, 1994), en echelon separation of fault traces, intersection with known or inferred branching or crossing structures, and geomorphic character as a range-front fault or intra-range fault) and behavioral (<i>i.e.</i>, recency of activity and late Quaternary slip rate). From west to east, these segments are referred to as the Estero Bay, Irish Hills, Lopez Reservoir, and Newsom Ridge segments. Although paleoseismic studies conducted on the two central sections of the fault provide sufficient data to define at least one seismogenic segment boundary, additional data on timing and recency of activity are needed on the two end sections to verify these as seismogenic segments. Segments defined by Lettis and Hall (1989 #7842) are herein described as sections.</p>
<p>Name comments</p>	<p>General: Initially mapped by Hall and others (1979 #7840); southwest part of fault as mapped by PG&E (1988 #7833) and Lettis and Hall (1994 #7842) coincides with the Edna fault as mapped by Hall (1973 #7838) and Hall and others (1979 #7840).</p> <p>Section: Defined as Newsom Ridge segment by PG&E (1988 #7833); extends into Newsom Ridge sub-block of the San Luis/Pismo structural block (Lettis and others, 1994 #7843) between Arroyo Grande Creek and the West Huasna fault zone.</p> <p>Fault ID: Refers to number 285 (Los Osos fault zone) of Jennings (1994 #2878).</p>
<p>County(s) and State(s)</p>	<p>SAN LUIS OBISPO COUNTY, CALIFORNIA</p>
<p>Physiographic province(s)</p>	<p>PACIFIC BORDER</p>
<p>Reliability of location</p>	<p>Good Compiled at 1:48,000 scale.</p> <p><i>Comments:</i> Location of fault from Qt_ft_ver_3-0_Final_WGS84_polyline.shp (Bryant, W.A., written communication to K.Haller, August 15, 2017) based primarily on bedrock relations mapped at 1:48,000 scale by Hall (1973 #7838) and Hall and Corbató (1967), and mapping by Lettis and Hall (1994) at unspecified scale.</p>
<p>Geologic setting</p>	<p>Southwest-dipping reverse fault bounding northern margin of the San Luis Range; fault has a complex history of strike-slip and</p>

	dip-slip displacement (Hall, 1981 #7839; Lettis and Hall, 1994 #7842). Hall (1981 #7839) interprets the southwestern part of the fault to have experienced late Cenozoic dextral strike-slip and to be part of a larger system of late Cenozoic NW-trending strike-slip faults that are responsible for creating the late Tertiary Santa Maria, Pismo, and Huasna pull-apart depositional basins. An alternative tectonic model (Namson and Davis, 1990 #7845) interprets the presence of an active detachment fault beneath the San Luis Range and does not identify nor discuss implications of an active fault along the northeastern margin of the range.
Length (km)	This section is 14 km of a total fault length of km.
Average strike	
Sense of movement	Reverse
Dip	
Paleoseismology studies	
Geomorphic expression	Intra-range fault; trace of the fault is poorly expressed by small, subtle, side-hill benches, tonal lineaments, and linear stream segments that are discontinuously distributed along this section (Lettis and Hall, 1994 #7842).
Age of faulted surficial deposits	Franciscan complex on NE is juxtaposed with serpentinite and Tertiary Monterey and Lospe formations on the SW along a generally linear, discontinuous zone of faulting.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> The recency of activity of this section is unknown. The poor geomorphic expression and intra-range character of the fault trace suggests that the segment either is not active or has experienced very low rates of activity during the late Quaternary (Lettis and Hall, 1994 #7842).
Recurrence interval	
Slip-rate	Less than 0.2 mm/yr

category	<i>Comments:</i> Unknown, probably <0.1 mm/yr.
Date and Compiler(s)	2016 Kathryn L. Hanson, AMEC Environment & Infrastructure (AMEC E&I) William A. Bryant, California Geological Survey
References	<p>#7836 Bryant, W.A., and Hart, E.W., 2007, Fault-rupture hazard zones in California: California Geological Survey Special Publication 42, 42 p., ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf.</p> <p>#7838 Hall, C.A., Jr., 1973, Geology of the Arroyo Grande quadrangle, California: California Division of Mines and Geology Map Sheet 24, scale 1:48,000, 8 p.</p> <p>#7839 Hall, C.A., Jr., 1981, Map of geology along the Little Pine fault, parts of the Sisquoc, Foxen Canyon, Zaca Lake, Bold Mountain, Los Olivos, and Figueroa Mountain quadrangles, Santa Barbara County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1285, scale 1:24,000.</p> <p>#8116 Hall, C.A. Jr., and Corbató, C.E., 1967, Geologic map of the Nipomo quadrangle, California: Geological Society of America Bulletin, v. 78, no. 5, p. 559–582, Plate 1, scale 1:48,000.</p> <p>#7840 Hall, C.A., Jr., Ernst, W.G., Prior, S.W., and Wiese, J.W., 1979, Geologic map of the San Luis Obispo-San Simeon region, California: U.S. Geological Survey Miscellaneous Investigations Series I-1097, 3 sheets, scale 1:48,000.</p> <p>#2878 Jennings, C.W., 1994, Fault activity map of California and adjacent areas, with locations of recent volcanic eruptions: California Division of Mines and Geology Geologic Data Map 6, 92 p., 2 pls., scale 1:750,000.</p> <p>#7842 Lettis, W.R., and Hall, N.T., 1994, Los Osos fault zone, San Luis Obispo County, California, <i>in</i> Alterman, I.B., McMullen, R.B., Cluff, L.S., and Slemmons, D.B., eds., Seismotectonics of the central California Coast Ranges: Boulder, Colorado, Geological Society of America Special Paper 292, p. 73–102.</p>

#7845 Namson, J.S., and Davis, T.L., 1990, Late Cenozoic fold and thrust belt of the southern Coast Ranges and Santa Maria Basin, California: American Association of Petroleum Geologists Bulletin, v. 74, p. 467–492.

#7846 Nitchman, S.P., 1988, Tectonic geomorphology and neotectonics of the San Luis Range, San Luis Obispo County, California: University of Nevada at Reno, unpublished Master's thesis, 120 p.

#7833 Pacific Gas and Electric (PG&E), 1988, Final report of the Diablo Canyon Long Term Seismic Program for the Diablo Canyon Power Plant: U.S. Nuclear Regulatory Commission Docket Nos. 50-275 and 50-323.

#7847 Treiman, J.A., 1989, Los Osos Fault Zone, San Luis Obispo County, California: California Department of Conservation, Division of Mines and Geology Fault Evaluation Report FER-200, 11 p., 1 plate.

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