

# 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](#).

## New Empire fault zone (Class A) No. 1730

Last Review Date: 2002-04-10

### Compiled in cooperation with the Nevada Bureau of Mines and Geology

*citation for this record:* dePolo, C.M., compiler, 2002, Fault number 1730, New Empire fault zone, 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 02:24 PM.

#### Synopsis

The New Empire fault zone is a complex zone of short, normal dip-slip fault scarps that occur in the western piedmont of Prison Hill, bound the western side of uplifted alluvium within Eagle Valley, and occur in the northern piedmont of Eagle Valley. The southern and northern reaches of the fault zone have down-to-the-east displacement, whereas the central portion of the zone has down-to-the-west displacement. Fault scarps from 1.5 to 8.5 m high are common along the zone. The New Empire fault zone is, along parts, synthetic to the distributed Carson Range fault system that splays into and breaks up Eagle Valley. Along the central portion, the fault zone is largely antithetic to the Carson City fault and only lies about 2 km to the east. A large downdropped graben

	between these two faults controls the deposition of the youngest sediments of Eagle Valley in this area.
<b>Name comments</b>	First called the New Empire fault zone by dePolo (1996 #5869).
<b>County(s) and State(s)</b>	CARSON CITY COUNTY, NEVADA
<b>Physiographic province(s)</b>	BASIN AND RANGE CASCADE-SIERRA MOUNTAINS
<b>Reliability of location</b>	Good Compiled at 1:100,000 scale.  <i>Comments:</i> Fault traces taken from Bell and Trexler (1979 #3641).
<b>Geologic setting</b>	The New Empire fault zone is expressed as fault scarps and lineaments on late Pleistocene age alluvium, except where it bounds the west side of uplifted Tertiary sediments at Prison Hill. The southernmost end of the zone is made up of small, down-to-the-east scarps in latest Pleistocene alluvium (Trexler and Bell, 1979 #3641). The central part of the fault, which includes the Prison fault that bounds the west side of the hill that Carson City Prison is built on, has down-to-the-west displacement. This fault is about 2 km long and is expressed by a 2- to 4-m-high fault scarp that bounds an uplifted late Pleistocene surface (Trexler and Bell, 1979 #3641). The north-central part of the zone is a series of down-to-the-east fault scarps and lineaments in the vicinity of Highway 50 mapped by Rogers (1975 #5870) and Bell and Trexler (1979 #3641). A scarp height of 8.5 m was measured by dePolo (1996 #5869) near the largest offset along this part of the fault, where the fault offsets a surface that is assumed to be about Yarmouthian age (~180 ka) by Trexler and Bell (1979 #3641). The northern part of the New Empire is a series of northerly striking fault scarps and lineaments that extend up the piedmont flanking the Virginia Range. A small swarm of earthquakes in 1991 (maximum magnitude 4.6) may have occurred along this northern part of the zone (dePolo, 1996 #5869).
<b>Length (km)</b>	10 km.
<b>Average strike</b>	N16°E
<b>Sense of</b>	Normal

<b>movement</b>	<i>Comments:</i> Large-scale geomorphic expression of the fault indicates normal dip-slip movement. The downthrown side switches, however being down-to-the-east in the south and north, and down-to-the-west along the central part.
<b>Dip Direction</b>	Unknown
<b>Paleoseismology studies</b>	
<b>Geomorphic expression</b>	The geomorphic expression of the New Empire fault zone consists of fault scarps, usually singular, but with multiple, parallel scarps along the southern and north-central part, and vegetation lineaments. Along the central part of the zone, the fault scarp is back-facing and ponds Holocene alluvium (Bingler, 1977 #3639); the main drainage from Eagle Valley is appears to be generally deflected by the scarp, and the drainage is entrenched into alluvium in the footwall.
<b>Age of faulted surficial deposits</b>	The age of offset surfaces range from mid to late Pleistocene.
<b>Historic earthquake</b>	
<b>Most recent prehistoric deformation</b>	middle and late Quaternary (<750 ka) <i>Comments:</i> Offset surfaces are mid to late Pleistocene in age, but the abrupt nature of some of the fault scarps, and the apparent ponding of younger age alluvium along the central portion of the fault indicate that more recent activity likely occurred.
<b>Recurrence interval</b>	
<b>Slip-rate category</b>	Less than 0.2 mm/yr <i>Comments:</i> Low slip-rate category assigned based on estimated a 9.8±1 m offset from a scarp on a deposit estimated to be about 180 ka (dePolo, 1996 #5869).
<b>Date and Compiler(s)</b>	2002 Craig M. dePolo, Nevada Bureau of Mines and Geology
<b>References</b>	#3639 Bingler, E.C., 1977, New Empire geologic map: Nevada

Bureau of Mines and Geology Map 59, scale 1:24,000.

#5869 dePolo, C.M., 1996, Local Quaternary faults and associated potential earthquakes in the Reno-Carson City urban areas, Nevada: Technical report to U.S. Geological Survey, Reston, Virginia, under Contract 1434-95-G-2612, 50 p.

#5870 Rogers, D.K., 1975, Environmental geology of northern Carson City, Nevada: Reno, University of Nevada, unpublished M.S. thesis, 133 p.

#3641 Trexler, D.T., and Bell, J.W., 1979, Earthquake hazard maps of Carson City, New Empire, and South Lake Tahoe quadrangles: Technical report to U.S. Geological Survey, Reston, Virginia, under Contract 14-08-001-G-494.

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