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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.

East Gem Valley fault (Class A) No. 623

Last Review Date: 2010-11-09

Compiled in cooperation with the Idaho Geological Survey

citation for this record: **Haller, K.M., and Lewis, R.S., compilers, 2010, Fault number 623, East Gem Valley fault, 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 03:03 PM.**

Synopsis	Fault is poorly understood, no known detailed study has been conducted at time of compilation.
Name comments	Earliest use of name is Witkind (1975 #320). Fault extends from 10 km east of Bancroft, Idaho, southeastward to about 1 km west of the mouth of Egbert Canyon. **Fault ID:** Refers to fault number 32 ("East Gem Valley fault") of Witkind (1975 #320).
County(s) and State(s)	CARIBOU COUNTY, IDAHO

Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Location of southern part of trace from Armstrong (1969 #5320), northern 2 km from Oriel (1968 #5319). Subsequent depictions of this fault (Mabey and Oriel, 1970 #5321; Oriel and Platt, 1980 #4396) that cite Armstrong (1969 #5320) as the source of geologic mapping do not include the northern 7.5 km shown here. They terminate the fault 1 km north of U.S. Highway 30N at the mouth of Upper Valley. This northern extension of the fault is shown as a series of closed depressions (Armstrong, 1969 #5320), possibly representing grabens. Fault location further constrained by satellite imagery and topography at scale of 1:100,000. Reference satellite imagery is ESRI_Imagery_World_2D with a minimum viewing distance of 1 km.
Geologic setting	Range-front normal fault that bounds the west side of the Soda Springs Hills and the northernmost part of the Bear River Range. Gravity data indicates that topographic relief between the crest of the ranges and the bottom of Tertiary fill is 650-1,000 m (Armstrong, 1969 #5320).
Length (km)	22 km.
Average strike	N14°W
Sense of movement	Normal *Comments:* Witkind (1975 #320)
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	The geomorphic expression of this fault is not well documented, but scarps on young basalt are indicated by Armstrong (1969 #5320). Localized grabens also may exist. The topographic escarpment east of the fault rises 200-650 m above the valley floor.
Age of faulted	

surficial deposits	Latest Quaternary basalts (Armstrong, 1969 #5320).
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Armstrong (1969 #5320) reports that the faulted basalts are younger that 27 ka. However, Witkind (1975 #320) indicates the fault is late Cenozoic, but does not document why his age assignment is so different from pre-existing published data. Fault shown on map of Breckenridge and others (2003 #5878) in similar fashion as in this compilation.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* A low slip rate is indicated by the low (650-1,000 m) post Tertiary topographic relief.
Date and Compiler(s)	2010 Kathleen M. Haller, U.S. Geological Survey Reed S. Lewis, Idaho Geological Survey
References	#5320 Armstrong, F.C., 1969, Geologic map of the Soda Springs quadrangle, southeastern Idaho: U.S. Geological Survey Miscellaneous Geologic Investigations I-557, 2 sheets, scale 1:48,000. #5878 Breckenridge, R.M., Lewis, R.S., Adema, G.W., and Weisz, D.W., 2003, Miocene and younger faults in Idaho: Idaho Geological Survey Map 8, 1 sheet, scale 1:1,000,000. #5321 Mabey, D.R., and Oriel, S.S., 1970, Gravity and magnetic anomalies in the Soda Springs region, southeastern Idaho: U.S. Geological Survey Professional Paper 646-E, 15 p., 1 pl., scale 1:125,000. #5319 Oriel, S.S., 1968, Preliminary geologic map of Bancroft quadrangle, Caribou and Bannock Counties, Idaho: U.S. Geological Survey Open-File Report 68-204, 1 sheet, scale 1:48,000. #4396 Oriel, S.S., and Platt, L.B., 1980, Geologic map of the

	Preston 1° x 2° quadrangle, southeastern Idaho and western Wyoming: U.S. Geological Survey Miscellaneous Investigations Map I-1127, 1 sheet, scale 1:250,000. #320 Witkind, I.J., 1975, Preliminary map showing known and suspected active faults in Idaho: U.S. Geological Survey Open-File Report 75-278, 71 p. pamphlet, 1 sheet, scale 1:500,000.