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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.

Bristol Creek fault (Class A) No. 624

Last Review Date: 2003-06-13

Compiled in cooperation with the Idaho Geological Survey

citation for this record: **Personius, S.F., and Neier, R.S., compilers, 2003, Fault number 624, Bristol Creek 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	The Bristol Creek fault is a northwest-striking, northeast-dipping(?) normal fault that displaces Miocene Columbia River Basalts along most of its length. The fault is part of the western Idaho fault belt. The fault is marked by a northeast-facing scarp as much as 12 m high in an erosion surface cut across Columbia River Basalts, and also is marked by aligned springs and seeps, and a few subdued topographic linears. The age of the erosion surface is poorly known, but is estimated to have formed at least 500 ka, based on its height of 280-360 m above nearby drainages and comparison to better dated terrace sequences along the Payette River. Given the poor constraints on the age of the offset erosion surface, the fault is herein assigned a Quaternary age.

Name comments	Part of the Bristol Creek fault was originally mapped by Fitzgerald (1982 #5886); the fault was mapped in more detail and informally named after nearby Bristol Creek by Gilbert and others (1983 #5887).
County(s) and State(s)	GEM COUNTY, IDAHO
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Good Compiled at 1:250,000 scale. *Comments:* Fault locations are from 1:250,000-scale mapping of Gilbert and others (1983 #5887); the fault is also mapped by Knudsen and others (1996 #5889), but the fault name is mislabeled on their plate 2.
Geologic setting	The Bristol Creek fault is a northwest-striking, northeast-dipping(?) normal fault that displaces Miocene Columbia River Basalts along most of its length (Fitzgerald, 1982 #5886; Gilbert and others, 1983 #5887; Knudsen and others, 1996 #5889). The fault is part of the western Idaho fault belt of Hamilton (1963 #6040), a system of north-striking normal faults formed along the western margin of the Idaho batholith.
Length (km)	7 km.
Average strike	N21°W
Sense of movement	Normal *Comments:* The Bristol Creek fault is mapped as a normal fault by Fitzgerald (1982 #5886), Gilbert and others (1983 #5887), and Knudsen and others (1996 #5889).
Dip Direction	E *Comments:* Fitzgerald (1982 #5886) maps part of the Bristol Creek fault as down-to-the-southwest, but in a more detailed study, Gilbert and others (1983 #5887) infer down-to-the-northeast displacement, based on apparent offset of a Quaternary erosion surface.

Paleoseismology studies	
Geomorphic expression	The Bristol Creek fault is marked by a northeast-facing scarp as much as 12 m high on an erosion surface cut across Columbia River Basalts; the fault is also marked by aligned springs and seeps, and a few subdued topographic linears (Gilbert and others, 1983 #5887).
Age of faulted surficial deposits	The Bristol Creek fault cuts Miocene Columbia River Basalts (Gilbert and others, 1983 #5887). An estimated 1-2 m of locally-derived basalt gravel mixed with finer material mantles the erosion surface. The age of the erosion surface is poorly known, but Gilbert and others (1983 #5887) estimate a minimum age of 500 ka, based on its height of 280-360 m above nearby drainages and comparison to better dated terrace sequences along the Payette River.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* The Bristol Creek fault is marked by scarps on an undated erosion surface that Gilbert and others (1983 #5887) estimate was formed at least 500 ka. The fault is mapped as a lesser Quaternary (<1.6 Ma) structure by Breckenridge and others (2003 #5878). Given the poor constraints on the age of the erosion surface, the fault is herein assigned a Quaternary age.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No slip rates have been described, but Gilbert and others (1983 #5887) describe a 12-m-high scarp on an undated erosion surface that they estimate was formed at least 500 ka. Such data indicates very low rates of long-term slip.
Date and Compiler(s)	2003 Stephen F. Personius, U.S. Geological Survey Ricky S. Neier, University of Idaho
References	#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.

#5886 Fitzgerald, J.E., 1982, Geology and basalt stratigraphy of the Weiser Embayment, west-central Idaho, *in* Bonnichsen, B., and Breckenridge, R.M., eds., Cenozoic geology of Idaho: Idaho Bureau of Mines and Geology Bulletin 26, p. 103-128.

#5887 Gilbert, J.D., Piety, L., and LaForge, R., 1983, Seismotectonic study for Black Canyon Dam, Boise project, Idaho: U.S. Bureau of Reclamation Seismotectonic Report 83-7, 73 p., 8 pl.

#6040 Hamilton, W., 1963, Metamorphism in the Riggins region, western Idaho: U.S. Geological Survey Professional Paper 436, 95 p.

#5889 Knudsen, K.L., Wong, I., Sawyer, T.L., Bott, J., Silva, W., and Lettis, W.R., 1996, Seismotectonic evaluation, Cascade Dam, Boise project, west-central Idaho: Final Report prepared for U.S. Department of the Interior, Bureau of Reclamation, 198 p., 3 pls.