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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.**

## Rock Creek fault (Class B) No. 2338

**Last Review Date: 2001-04-10**

## Compiled in cooperation with the Colorado Geological Survey

***citation for this record:*** **Widmann, B.L., compiler, 2001, Fault number 2338, Rock 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 03:00 PM.**

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| **Synopsis** | The Rock Creek fault is located in the High Plains region, just east of the Rocky Mountain Front Range and north of the Rocky Flats Plant. The fault is downthrown to the southeast and may become listric at depth (Risk Engineering, Inc., 1994 #6877). Although there is no direct evidence of displaced late Cenozoic deposits, the close proximity of the Rock Creek fault to the analogous Quaternary Walnut Creek fault [2339] to the south suggests both structures may have been active during the same time period (Risk Engineering, Inc., 1994, #6877). Therefore, the Rock Creek fault is herein considered to be a suspected (Class B) Quaternary fault. |

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| **Name comments** | The Rock Creek fault is coincident with Rock Creek from State Highway 128 northeastward for about 4 km. The fault is north of the Rocky Flats Plant. |
| **County(s) and State(s)** | BOULDER COUNTY, COLORADO |
| **Physiographic province(s)** | GREAT PLAINS |
| **Reliability of location** | Good<br>Compiled at 1:250,000 scale.<br><br>*Comments:* This fault was mapped at a scale of 1:24,000 by Risk Engineering, Inc. (1994 #6788). |
| **Geologic setting** | The Rock Creek fault is located in the High Plains region just east of the Front Range of the Rocky Mountains. The fault is downthrown to the southeast and may become listric at depth (Risk Engineering, Inc., 1994 #6877). |
| **Length (km)** | 3 km. |
| **Average strike** | N60°E |
| **Sense of movement** | Reverse<br><br>*Comments:* Risk Engineering, Inc. (1994 #6788) considered the Rock Creek fault to be analogous to the Walnut Creek reverse fault [2339] to the south. |
| **Dip** | 75°-90° NW<br><br>*Comments:* Risk Engineering, Inc. (1994 #6788) considered the Rock Creek fault to be analogous to the steeply-dipping Walnut Creek fault [2339] to the south. |
| **Paleoseismology studies** | |
| **Geomorphic expression** | The Rock Creek Fault is marked by a strong tonal lineament (Risk Engineering, Inc., 1994 #6788). |
| **Age of faulted surficial deposits** | The basal contact of the Upper Cretaceous Laramie Formation was interpreted to be offset 120 m down to the east (Risk Engineering, Inc., 1994 #6788). Quaternary alluvium does not |

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| | appear to be displaced by the fault. |
| **Historic earthquake** | |
| **Most recent prehistoric deformation** | undifferentiated Quaternary (<1.6 Ma)<br><br>*Comments:* Although there is no direct evidence to indicate Quaternary movement, the proximity, similar trend, and probable analogous tectonic role of the Rock Creek fault and the Quaternary Walnut Creek fault [2339] to the south suggests that slip probably occurred on both the structures during the same time period (Risk Engineering, Inc., 1994 #6788). Therefore, the Rock Creek fault is herein considered a suspected (Class B) Quaternary fault. |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* Risk Engineering, Inc. (1994 #6788) calculated a probable slip rate of 0.01 mm/yr for the analogous Quaternary Walnut Creek fault [2339]. However, the cumulative slip across the Rock Creek fault appears to be two to four times greater than that of the Walnut Creek fault, indicating a slip rate of 0.02 to 0.04 for the Rock Creek fault (Risk Engineering, Inc., 1994 #6788). Widmann and others (1998 #3441) placed this fault within the <0.2 mm/yr slip-rate category. |
| **Date and Compiler(s)** | 2001<br>Beth L. Widmann, Colorado Geological Survey |
| **References** | #6877 Risk Engineering, Inc., 1994, Seismic hazard analysis for Rocky Flats Plant: Unpublished report prepared for EG&G Rocky Flats, Inc., Golden, Colorado.<br><br>#3441 Widmann, B.L., Kirkham, R.M., and Rogers, W.P., 1998, Preliminary Quaternary fault and fold map and database of Colorado: Colorado Geological Survey Open-File Report 98-8, 331 p., 1 pl., scale 1:500,000. |

Questions or comments?

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