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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.**

## Beaverton fault zone (Class A) No. 715

**Last Review Date: 2002-12-10**

***citation for this record:*** **Personius, S.F., compiler, 2002, Fault number 715, Beaverton 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 02:03 PM.**

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| **Synopsis** | The east-west-striking Beaverton fault zone forms the southern margin of the mai of the Tualatin basin, an isolated extension of the Willamette lowland forearc bas northwestern Oregon. The Beaverton fault zone is not shown on most published geologic maps of the area, but is marked by a linear aeromagnetic anomaly and h been mapped in the subsurface where it offsets Miocene Columbia River Basalt ( rocks and overlying Pliocene to Pleistocene sediments. The late Neogene Tualati basin may be a pull-apart basin, with subsidence driven by dextral shear on the ne Gales Creek fault zone. The fault trace is buried by a thick sequence of sediment deposited by the 12.7–13.3 ka Missoula floods, but offsets middle Pleistocene an possibly younger sediments in the subsurface. |
| **Name comments** | The Beaverton fault zone was named after its location near Beaverton in northwe Oregon by Yeats and others (1991 #3953; 1996 #4291) based on subsurface mapp of Hammond and others (1974 #4050), Madin (1990 #4067), and Popowski (199 #4677). |
| **County(s) and** | |

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| **County(s) and State(s)** | WASHINGTON COUNTY, OREGON |
| **Physiographic province(s)** | PACIFIC BORDER |
| **Reliability of location** | Good<br>Compiled at 1:100,000 scale.<br><br>*Comments:* Location of fault from ORActiveFaults (http://www.oregongeology.org/arcgis/rest/services/Public/ORActiveFaults/MapS downloaded 06/02/2016) attributed to Madin (2004 #7779). |
| **Geologic setting** | The east-west-striking Beaverton fault zone forms the southern margin of the mai of the Tualatin basin, an isolated extension of the Willamette lowland forearc bas northwestern Oregon (Yeats and others, 1996 #4291; Popowski, 1996 #4677; Wil 1997 #5065; 1998 #5058). The Beaverton fault zone is not shown on most publis geologic maps of the area (Warren and others, 1945 #4076; Hart and Newcomb, 1 #4063; Schlicker and others, 1967 #4068; Walker and MacLeod, 1991 #3646; Ga and Caldwell, 1998 #4066), but is marked by a linear aeromagnetic anomaly (Bla and others, 1995 #4021; 2000 #4333) and has been mapped in the subsurface, wh offsets Miocene Columbia River Basalt Group rocks (Hammond and others, 1974 #4050; Madin, 1990 #4067; Yeats and Popowski, 1992 #4016; Yeats and others, 1 #4291; Popowski, 1996 #4677; Wilson, 1997 #5065; 1998 #5058). Popowski (19 #4677) suggests that the late Neogene Tualatin basin is a pull-apart basin, with subsidence driven by dextral shear on the Gales Creek fault zone. |
| **Length (km)** | 15 km. |
| **Average strike** | N86°E |
| **Sense of movement** | Unspecified<br><br>*Comments:* Seismic and well data clearly indicate down-to-the-north displacemer across the Beaverton fault zone, but the subsurface data are not detailed enough t determine fault dip direction (Madin, 1990 #4067; Yeats and others, 1996 #4291; Popowski, 1996 #4677; Wilson, 1997 #5065; 1998 #5058). |
| **Dip Direction** | Unknown |
| **Paleoseismology studies** | |
| **Geomorphic expression** | The central part of the Beaverton fault zone is mapped along the northern base of Cooper Mountain, an anticlinal ridge held up by resistant Columbia River Basalt Group rocks in the south-central part of the Tualatin basin, but the rest of the faul has no apparent geomorphic expression. No fault scarps on Quaternary deposits h |

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| | been described anywhere along the fault zone, but a thick sequence of sediment deposited by the Missoula floods (Willamette Silt) covers all of the fault trace. |
| **Age of faulted surficial deposits** | Several hundred meters of vertical separation of Miocene Columbia River Basalt Group rocks are apparent across the Beaverton fault zone (Hammond and others, #4050; Madin, 1990 #4067; Yeats and Popowski, 1992 #4016; Yeats and others, 1 #4291; Popowski, 1996 #4677; Wilson, 1997 #5065; 1998 #5058). The fault also truncates post-basalt fluvial and lacustrine sediments in the subsurface (Yeats and others, 1996 #4291; Popowski, 1996 #4677; Wilson, 1997 #5065; 1998 #5058). T younger sediments are mapped as the Hillsboro Formation, the upper part of whic at least middle Pleistocene in age (Wilson, 1997 #5065; 1998 #5058). These sedi post-date the 0.78 Ma age of the Brunhes/Matuyama paleomagnetic boundary, in places are interbedded with and overlain by Boring Lava flows dated at 0.26–0.9 and have yielded a piece of wood radiocarbon dated at older than 43.7 ka from ne top of the formation (Wilson, 1997 #5065; 1998 #5058). No evidence of offset of sediments deposited by the 12.7–15.3 ka Missoula floods (Willamette Silt) has be described. |
| **Historic earthquake** | |
| **Most recent prehistoric deformation** | middle and late Quaternary (<750 ka)<br><br>*Comments:* No recent active fault compilations include the Beaverton fault zone a Quaternary fault. Pezzopane (1993 #3544), Madin and Mabey (1996 #3575), and Wong and others (1999 #4073; 2000 #5137) do not include this fault zone in thei compilations. Unruh and others (1994 #3597) mapped this fault zone as most-rec active in the Tertiary, and Geomatrix Consultants (1995 #3593) found no evidenc late Quaternary displacement and concluded that the Beaverton fault zone is not a Recent subsurface work by Popowski (1996 #4677) and Wilson (1997 #5065; 19 #5058) indicate that Pleistocene sediments of the Hillsboro Formation are offset b Beaverton fault zone. Madin and others (2001 #5051) inferred late Quaternary of on the Beaverton fault. Age information from Wilson (1997 #5065; 1998 #5058) support a middle Pleistocene or younger age for these offset deposits, so a late an middle Quaternary age (<750 ka) is assigned herein. |
| **Recurrence interval** | |
| **Slip-rate category** | Less than 0.2 mm/yr<br><br>*Comments:* No detailed slip rate data have been published. Well and geophysical indicate vertical separation of as much as 360 m of Miocene Columbia River Bas Group rocks across the Beaverton fault zone (Hammond and others, 1974 #4050; Madin, 1990 #4067; Yeats and Popowski, 1992 #4016; Yeats and others, 1996 #4 |

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| | Popowski, 1996 #4677). Such data suggest low rates of long-term slip. |
| **Date and Compiler(s)** | 2002<br>Stephen F. Personius, U.S. Geological Survey |
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