

Streamflow

Western Oregon is blessed with an abundance of notable rivers, while Eastern Oregon's rivers are smaller and more widely spaced. Average flows are 6,000 cubic feet per second (cfs) or more in the three big rivers of Western Oregon; the Willamette, the Umpqua and the Rogue. In contrast, flows are only 3,000 to as little as a few hundred cfs in the largest rivers of Eastern Oregon: the Klamath, John Day, Umatilla, Grande Ronde, Malheur and Owyhee. Only the Deschutes River, which drains the eastern flank of the Cascades, rivals the large Western Oregon rivers in flow, though all are dwarfed by the Columbia.

Seasonal variation in streamflow influences water availability for human use, as well as ecological conditions in the rivers. Many large rivers have relatively low flow during the summer and fall. The greatest monthly flow is five to 10 times larger than the flow in the driest months. In many rivers a portion of river flow is stored in reservoirs during the winter and spring months to supply needs such as irrigated agriculture and drinking water during the dry months. The Deschutes River, fed by a number of large springs rather than exclusively by surface runoff, has the most even monthly flow of any large Oregon river.

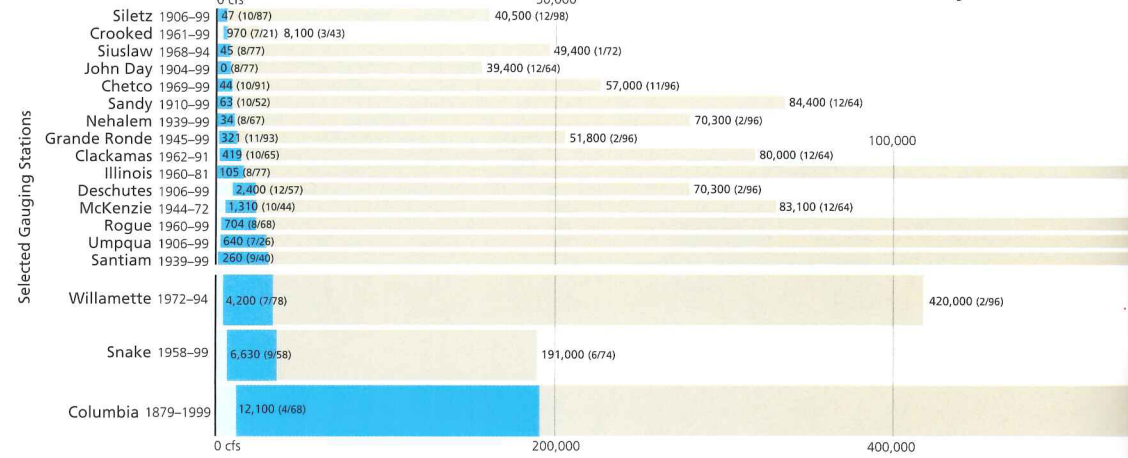
Some rivers have peak flows closely tied to rainfall, while others are controlled by snowmelt. In the Willamette and Rogue Rivers, the highest flows occur in the heavy rain months of December and January. In higher elevation river basins where colder temperatures prevail, winter precipitation is stored as snow, and the peak flows are shifted to spring (April on the Owyhee River, June on the Columbia River at The Dalles).

Oregon's largest recorded flood occurred in December 1964 on many rivers in Western and north-central Oregon (although the 1894 flood was larger on the Columbia River). The February 1996 flood in Western Oregon was potentially as big as the 1964 flood, but more flood control dams were in place in 1996. The historic peak flow records for the Willamette River (bottom of page) show the effectiveness of flood control dams after 1965.

During droughts, flow may drop to 3 percent or less of average. Rivers such as the Illinois, Chetco and Nehalem are drought-prone in that they have less ground water and surface storage capacity to buffer the effects of dry years. Historic low flows have been less severe, only 10 to 20 percent of average flows, in the McKenzie, Rogue, Grande Ronde, Willamette and Columbia Rivers.



Historic Flow of Major Rivers



Peak Flows, 1856-1998

