



EXPLANATION

Proximal Hazard Zone
 Areas that could be affected by pyroclastic flows, pyroclastic surges, lava flows and ballistic projectiles in future eruptions (2). During any single eruption, some drainages may be affected by some or all phenomena, while others may be completely unaffected. Debris avalanches and lahars originate in this area, but depending upon their size may move far downstream beyond the flanks of the volcano.

Distal Hazard Zones
 Valleys heading on Mount Jefferson that are subject to lahars generated by pyroclastic flows, debris avalanches, heavy rain on loose debris, etc. Distal hazards are subdivided into three zones on the basis of a range of hypothetical lahar volumes (4). A special case exists for the valleys of Shitike and Minto creeks, which do not head directly on the volcano (see text).

Regional Hazard Zone
 Areas that could be affected by eruptions of monogenetic volcanoes. Hazards include near-vent tephra falls, ballistic projectiles, pyroclastic flows and lava flows that may travel as far as 10 to 15 kilometers (6 to 9 miles) from source.

NOTE: Although the map shows sharp boundaries for hazard zones, the degree of hazard does not change abruptly at these boundaries. Rather, the hazard decreases gradually as distance from the volcano increases (small volume events are more common than large volume events). In addition, for lahars, the hazard decreases rapidly as elevation above the valley floor increases. Areas immediately beyond outer hazard zones should not be regarded as hazard-free, because the boundaries can only be located approximately, especially in areas of low relief. Too many uncertainties exist about the source, size, and mobility of future events to locate the boundaries of zero-hazard zones precisely.
 Numerals in brackets refer to end notes in the report.

Detroit Lake is a reservoir and popular recreation site impounded behind Detroit Dam, a concrete structure, managed by the US Army Corps of Engineers for flood control. Water level in the lake varies greatly during the year, being highest (and close to capacity) from May through August. This map shows inundation zones assuming that lahars are completely contained within the reservoir. Lahars entering the lake have the potential to generate waves that could damage shore property and, in the case of large lahars entering the reservoir, waves that could overtop the dam. Inundation areas in the event that the dam is overtopped or breached are shown on plate 2, map A.

Lake Billy Chinook is a reservoir impounded behind Round Butte Dam, an earth-and-rock fill structure that is operated by Portland General Electric for hydropower generation. Immediately downstream of Round Butte Dam, on the Deschutes River, is Simnash Lake, a reservoir impounded behind Pelton Dam, also operated for hydropower. This map shows inundation zones assuming that lahars are completely contained within the reservoirs. Lahars entering Lake Billy Chinook have the potential to generate waves that could damage shore property and, in the case of large lahars entering the reservoir, waves that could overtop the dam. Inundation areas in the event that the dam is overtopped or breached are shown on plate 2, map B.

Base map compiled in digital form by Bruce J. Fisher from U.S. Geological Survey, North Santiam (1983) and Madras (1983) 1:100,000 scale maps. Data for hydrography, culture, transportation, and boundaries from U.S. Geological Survey (EROS Data Center) Digital Line Graph files. Digital Line Graph hydrography (topographic contour) created from U.S. Geological Survey base-line clear-film by Pacer Intec, Inc., Portland, OR. Contour interval 50 meters.

Universal Transverse Mercator projection, Zone 10
 1927 North American Datum

VOLCANO HAZARDS IN THE MOUNT JEFFERSON REGION, OREGON

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This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic Code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.