U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

OPEN-FILE REPORT
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# POTENTIAL VOLCANIC HAZARDS FROM FUTURE ACTIVITY OF MOUNT BAKER, WASHINGTON

by
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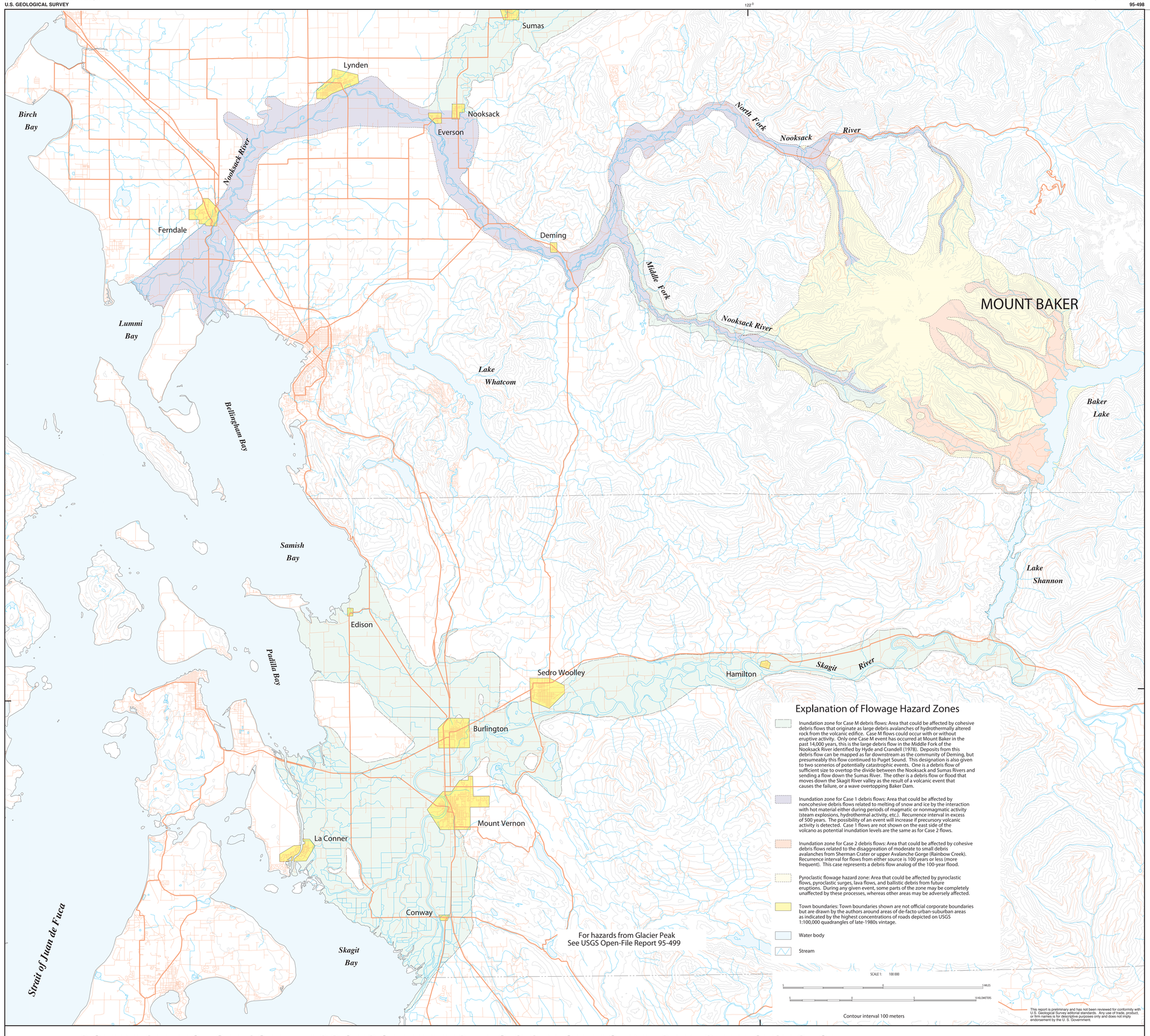
**1995**




## Explanation of Flowage Hazard Zones

Inundation zone for Case M debris flows: Area that could be affected by cohesive debris flows that originate as large debris avalanches of hydrothermally altered rock from the volcanic edifice. Case M flows could occur with or without eruptive activity. Only one Case M event has occurred at Mount Baker in the past 14,000 years, this is the large debris flow in the Middle Fork of the Nooksack River identified by Hyde and Crandell (1978). Deposits from this debris flow can be mapped as far downstream as the community of Deming, but presumeably this flow continued to Puget Sound. This designation is also given to two scenerios of potentially catastrophic events. One is a debris flow of sufficient size to overtop the divide between the Nooksack and Sumas Rivers and sending a flow down the Sumas River. The other is a debris flow or flood that moves down the Skagit River valley as the result of a volcanic event that causes the failure, or a wave overtopping Baker Dam.

Inundation zone for Case 1 debris flows: Area that could be affected by noncohesive debris flows related to melting of snow and ice by the interaction with hot material either during periods of magmatic or nonmagmatic activity (steam explosions, hydrothermal activity, etc.). Recurrence interval in excess of 500 years. The possibility of an event will increase if precursory volcanic activity is detected. Case 1 flows are not shown on the east side of the volcano as potential inundation levels are the same as for Case 2 flows.

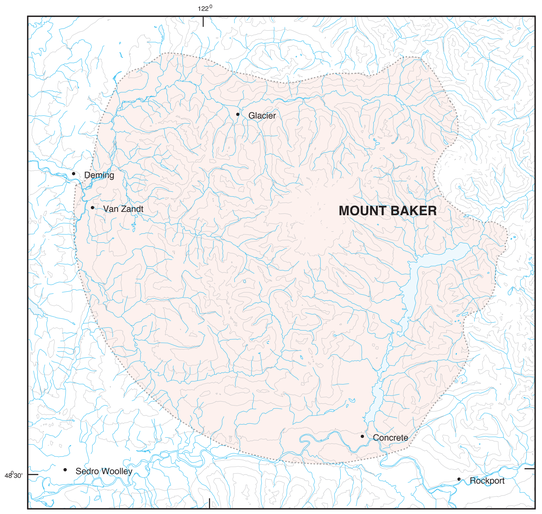
Inundation zone for Case 2 debris flows: Area that could be affected by cohesive debris flows related to the disaggreation of moderate to small debris avalanches from Sherman Crater or upper Avalanche Gorge (Rainbow Creek). Recurrence interval for flows from either source is 100 years or less (more frequent). This case represents a debris flow analog of the 100-year flood.

Pyroclastic flowage hazard zone: Area that could be affected by pyroclastic flows, pyroclastic surges, lava flows, and ballistic debris from future eruptions. During any given event, some parts of the zone may be completely unaffected by these processes, whereas other areas may be adversely affected.

Town boundaries: Town boundaries shown are not official corporate boundaries but are drawn by the authors around areas of de-facto urban-suburban areas as indicated by the highest concentrations of roads depicted on USGS 1:100,000 quadrangles of late-1980s vintage.

Water body

Stream

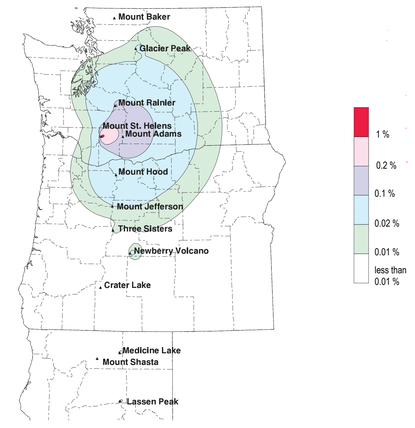



**Lateral Blast Hazard Zone.** Area that could be affected by a lateral blast similar in size to the May 18, 1980 lateral blast event at Mount St. Helens. During any given lateral blast the entire area around the volcano (360 degrees) would not be affected, but rather a sector most likely between 90 and 180 degrees.

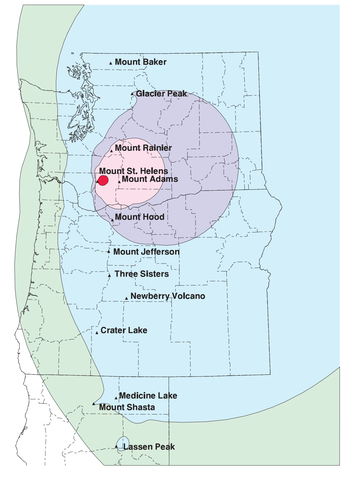
SCALE 1: 250 000
5 0 5 10 15 MILES
5 0 5 10 15 20 KILOMETERS

Contour interval 400 meters

## Total Cascades Tephra Hazards




Annual probability of the deposition of 10 centimeters (4 inches) or more of tephra from any of the major Cascade volcanoes.




Annual probability of the deposition of 1 centimeter (0.4 inch) or more of tephra from any of the major Cascade volcanoes.

100 0 100 200 300 400 500 MILES
100 0 100 200 300 400 500 KILOMETERS