Pyroclastic flow, surge, and blast hazards

- Extent of 26 ka pumiceous pyroclastic-flow deposits forming surface mantle over global marine

Outcrops and localities where 26 ka pumiceous pyroclastic-flow deposits are present:

- Extent of welded tuff of Quaternary age

Major river valleys and terrestrial areas that would be inundated by dense, ground-hugging pyroclastic flows erupted from Emmons caldera.

Approximate extent of severe hazard zone for large, caldera-forming eruption

Approximate extent of hazard zone for moderate to large eruptions from stratocones within the Emmons Lake volcanic center based on H/L = 0.15

Approximate extent of hazard zone for areas that could be affected by directed blast. This hazard zone boundary represents a worst-case condition for the Emmons Lake volcanic center.

Debris-avalanche hazards at Pavlof Volcano

- Extent of debris-avalanche hazard zone for large flank collapse at Pavlof Volcano for H/L = 0.2. This represents a worst-case event.

- If a flank collapse occurs at Pavlof volcano, a debris avalanche will form and descend after the flank has failed. A run-out feature, and not both features during the same event.

Ash Fallout Hazards

- Areas likely to receive ash fallout from the largest historical eruptions of Pavlof Volcano.

- Areas that could receive ash fallout during moderate sustained eruptions.

- Areas that could receive ash fallout during large sustained eruptions.

Debris-avalanche hazards at Pavlof Volcano

- Extent of debris-avalanche hazard zone for large flank collapse at Pavlof Volcano for H/L = 0.2. This represents a worst-case event.

- If a flank collapse occurs at Pavlof volcano, a debris avalanche will form and descend after the flank has failed. A run-out feature, and not both features during the same event.

Plinian eruption

- Tephra fall, ash fall during eruption.

Strombolian eruptions

- Tephra fall, ash fall during eruption.

Lahar, lahar runout, and flood hazards

- Areas likely to be inundated by lahars, lahar runout, and floods during eruptions of Pavlof Sister volcano.

- Areas likely to be inundated by lahars, lahar runout, and floods during eruptions of Little Pavlof and vents inside the Emmons Lake caldera complex.

- Areas likely to be inundated by lahars, lahar runout, and floods during eruptions of Mt. Hague volcano.

Major volcanoes of the Emmons Lake volcanic center. View is to the southwest. Photograph by C.F. Waythomas, August 2005.

NOTE ABOUT VOLCANO HAZARD-ZONE BOUNDARIES

The preliminary hazard-zonation map indicates generalized hazardous areas associated with future eruptions of the Emmons Lake volcanic center. Also indicated are areas at risk from various volcanic-related events such as debris avalanche and lahar that may not be related to an actual eruption. Pyroclastic eruptions are likely to initiate lahars and floods and will probably result in variable amounts of ashfall. Debris avalanches are uncommon at this volcanic center and are unlikely to be significant hazards. A large flank collapse from Pavlof Volcano could enter the Pacific Ocean, but it is unlikely to initiate a tsunami.

The hazard-zone boundaries do not indicate a major change in the degree of hazard, but are generalized approximations based on known deposits and eruptive characteristics of similar volcanoes. The degree of hazard generally decreases in a downvalley direction and as height above the valley floor increases.

Debris-avalanche hazards at Pavlof Sister, Little Pavlof, Hague and Mt. Emmons Volcanoes

- Extent of debris-avalanche hazard zone for large flank collapse at Pavlof Sister volcano for H/L = 0.2

- Extent of debris-avalanche hazard zone for large flank collapse at Little Pavlof volcano for H/L = 0.2

- Extent of debris-avalanche hazard zone for large flank collapse at Hague volcano for H/L = 0.2

- Extent of debris-avalanche hazard zone for large flank collapse at Mt. Emmons volcano for H/L = 0.2

Vents within the Emmons Lake volcanic center most likely to erupt in the near future are Pavlof volcano, the most historically active volcano in Alaska, Mt. Hague, and Cone G. The fresh-appearing morphology and active hydrothermal system on Mt. Hague indicates that the volcano has been active somewhat recently, although it had no known eruptions in about the past 500 years. Cone G has produced at least five lava flows (c) of Holocene age. Photograph by C.F. Waythomas, August 2001. View is to the northeast.

Young lava flows erupted from Cone A merging in Emmons Lake. During the past 5,000,000 years, eruptions within the Emmons Lake calderas have been primarily effusive, lava-producing events. The lavas are basaltic to basaltic andesite in composition and move relatively slowly when they are emplaced and are generally not hazardous. However, some explosive activity may occur during cone construction. The western basin of Emmons Lake, with the crest of the ridge in the upper right is the western rim of the Emmons caldera complex.