



- EXPLANATION**
- Deformed ground--Incipient landslide features including scarps, flanks, and toes as well as damage to man-made structures observed in the field during January, February, and April 1989. Displacement from December 2, 1969, to June 2, 1989, less than 1 ft. Displacement determined by photogrammetric analysis of aerial photographs (plate 3).
 - Landslide--Well developed scarps, flanks, and toes as well as damage to man-made structures observed in the field during January, February, and April 1989. Displacement greater than 2 ft. Displacement determined by field measurement of lateral offsets in walls and curbs and by photogrammetric analysis of aerial photographs (plate 3).
- APPROXIMATE BOUNDARIES OF THE LANDSLIDE COMPLEX**
(generalized from Plate 1 of Baum and others, 1989)
- Scarp--hachures on down-dropped side, dashed where approximately located, fine dashed line where incipient or weakly developed, queried where uncertain
 - Flank--Arrows on moving ground, dashed where approximately located, queried where uncertain
 - Toe--Saw teeth on moving ground, dashed where approximately located, queried where uncertain.

Base by City and County of Honolulu,
Department of Public Works.

**KINEMATIC ELEMENTS OF THE ALANI-PATY AND HULU-WOOLSEY
LANDSLIDES IN MANOA VALLEY, HONOLULU, HAWAII**

By
Flex L. Baum and Mark E. Reid

1992

This map is preliminary and has not
been reviewed for conformity with
U.S. Geological Survey editorial standards.