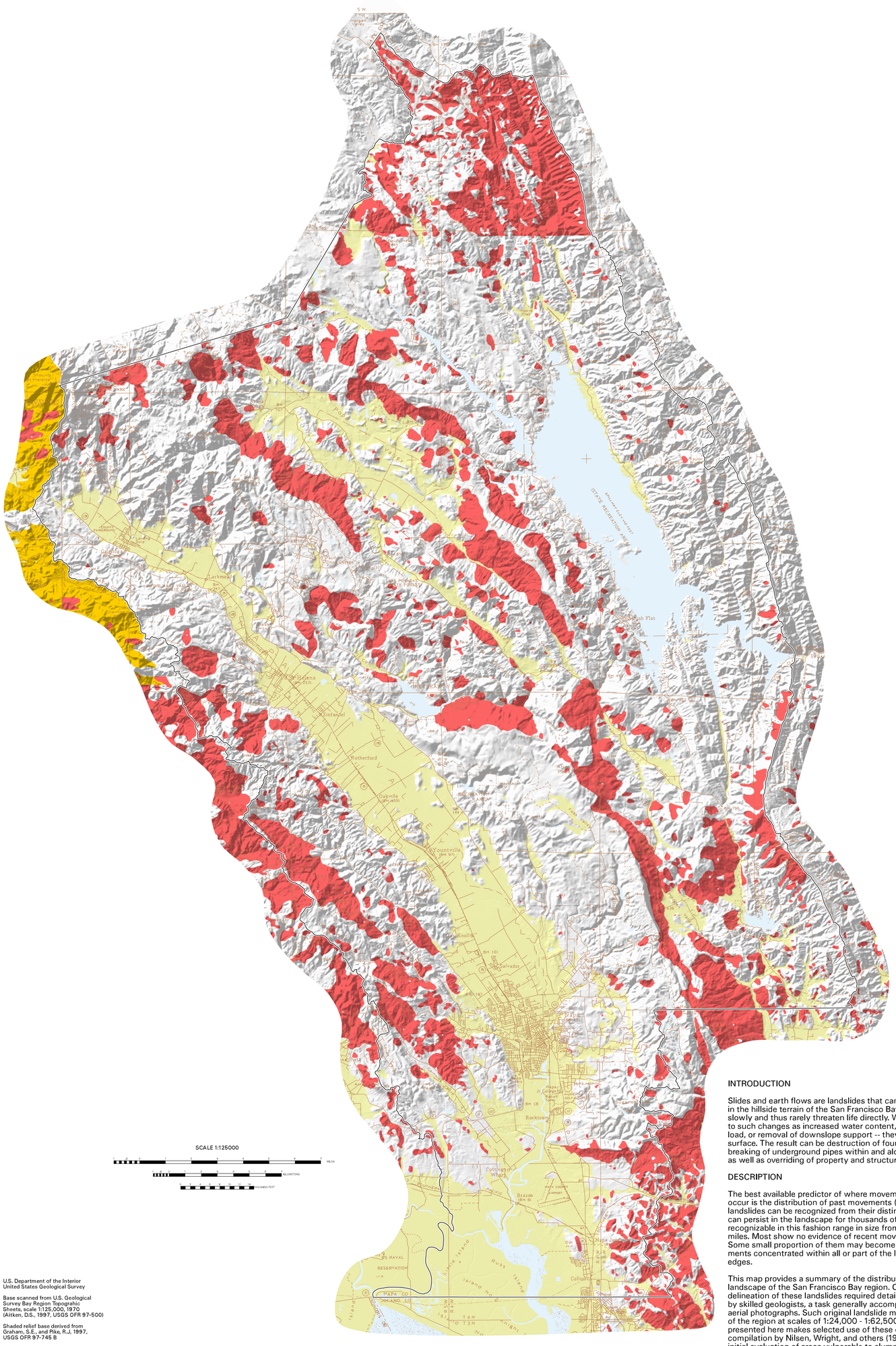

U.S. Department of the Interior
United States Geological Survey

Base scanned from U.S. Geological Survey Bay Region Topograhic Sheets, scale 1:125,000, 1970 (Aitken, D.S., 1997, USGS OFR 97-500)

Shaded relief base derived from Graham, S.E., and Pike, R.J, 1997, USGS OFR 97-745 B

Universal Tranverse Mercator projection, Zone 10

This map is a plot derived from data contained in the digital database Open-File Report 97-745, "San Francisco Bay Region Landslide Folio". A PostScript image of this map is included in the Open-File Report, but the Open-File Report does not contain a paper copy of this map. The Open-File Report consists of the digital data and a pamphlet explaining the database and indicating how to obtain the data from which this map was prepared as well as the PostScript image of the map.

APPROXIMATE MEAN DECLINATION, 1983

MAP LOCATION

This report 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.
This database, identified as "San Francisco Bay Region Landslide Folio," has been approved for release and publication by the Director of the USGS. Although this database has been subjected to rigorous review and is substantially complete, the USGS reserves the right to revise the data pursuant to further analysis and review.
Furthermore,it is released on condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

SUMMARY DISTRIBUTION OF SLIDES AND EARTH FLOWS IN NAPA COUNTY, CALIFORNIA

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INTRODUCTION

Slides and earth flows are landslides that can pose serious hazard to property in the hillside terrain of the San Francisco Bay region. They tend to move slowly and thus rarely threaten life directly. When they move -- in response to such changes as increased water content, earthquake shaking, addition of load, or removal of downslope support -- they deform and tilt the ground surface. The result can be destruction of foundations, offset of roads, and breaking of underground pipes within and along the margins of the landslide, as well as overriding of property and structures downslope.

DESCRIPTION

The best available predictor of where movement of slides and earth flows might occur is the distribution of past movements (Nilsen and Turner, 1975). These landslides can be recognized from their distinctive topographic shapes, which can persist in the landscape for thousands of years. Most of the landslides recognizable in this fashion range in size from a few acres to several square miles. Most show no evidence of recent movement and are not currently active. Some small proportion of them may become active in any one year, with movements concentrated within all or part of the landslide masses or around their edges.

This map provides a summary of the distribution of landslides evident in the landscape of the San Francisco Bay region. Original identification and map delineation of these landslides required detailed analysis of the topography by skilled geologists, a task generally accomplished through the study of aerial photographs. Such original landslide maps are now available for most of the region at scales of 1:24,000 - 1:62,500 (Pike, 1997). The summary map presented here makes selected use of these original maps and the 9-county compilation by Nilsen, Wright, and others (1979) to provide a basis for initial evaluation of areas vulnerable to slumps, translational slides, and earth flows in the region.

The summary map modifies and improves the compilation by Nilsen and Wright, which was prepared from sources available in the mid-1970's. The generalized landslide distribution shown on that map has here been improved in areas where the 1970's sources were notably deficient (Figure 1), has been extended to include Santa Cruz County, and includes the distribution of surficial deposits that define landscape not generally vulnerable to these kinds of landslides. The method of compilation and resolution of 1:125,000 (1 inch = 2 miles) limits use of the map to regional considerations. For more detailed information, see the maps listed by Pike (1997) or consult local officials or private consultants.

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MAP UNITS

Mostly Landslide - consists of mapped landslides, intervening areas typically narrower than 1500 feet, and narrow borders around landslides; defined by drawing envelopes around groups of mapped landslides.

Many Landslides - consists of mapped landslides and more extensive intervening areas than in 'Mostly Landslide'; defined by excluding areas free of mapped landslides; outer boundaries are quadrangle and County limits to the areas in which this unit was defined.

Few Landslides - contains few, if any, large mapped landslides, but locally contains scattered small landslides and questionably identified larger landslides; defined in most of the region by excluding groups of mapped landslides but defined directly in areas containing the 'Many Landslides' unit by drawing envelopes around areas free of mapped landslides.

Flat Land - areas of gentle slope at low elevation that have little or no potential for the formation of slumps, translational slides, or earth flows except along stream banks and terrace margins; defined by the distribution of surficial deposits (Wentworth, 1997).