

Figure 1. Index map of San Francisco Bay region, showing numbered sites, sources of 1982 debris-flow duration data, and box to locate northwest quarter of the Oakland East quadrangle



Figure 6. Shaded relief base map for the northwest quarter of the Oakland East 7.5' quadrangle, from U.S.G.S. digital line graph (DLG) data, showing post-storm (1982) debris-flow scar inventory (red dots)

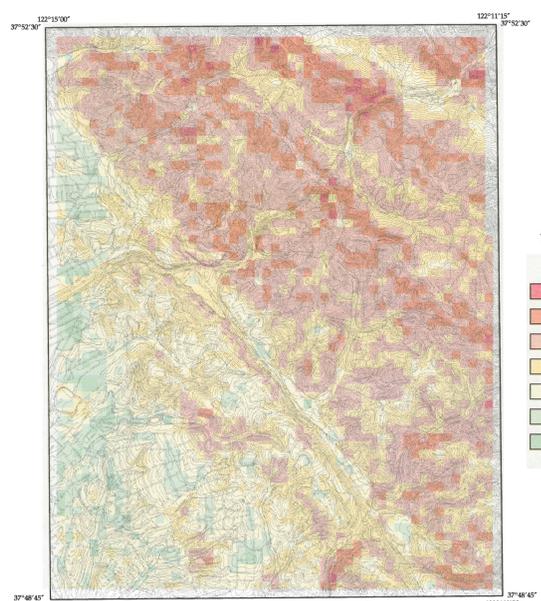


Figure 7. Slope map, showing slope in 100-meter cells, northwest quarter of the Oakland East 7.5' quadrangle, derived from U.S.G.S. digital line graph of contours

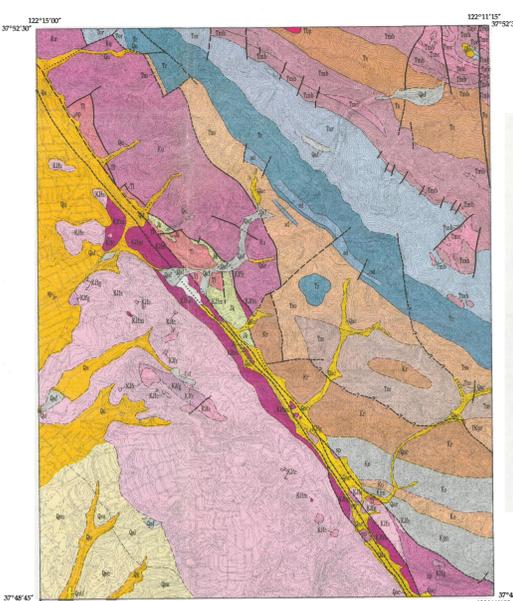


Figure 8. Geologic map units in the northwest quarter of the Oakland East 7.5' quadrangle, from Radbruch, 1969

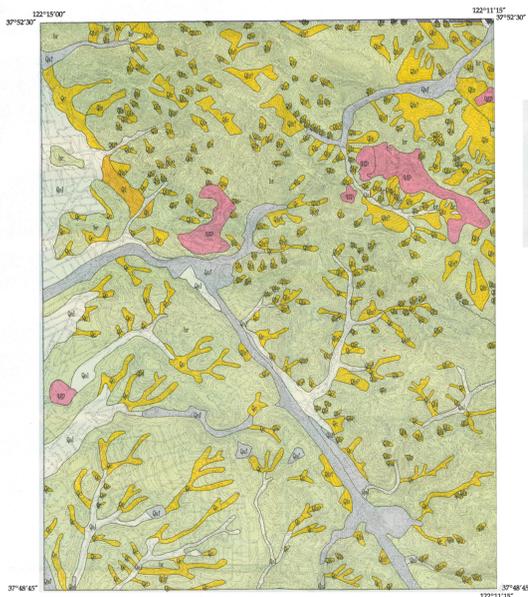
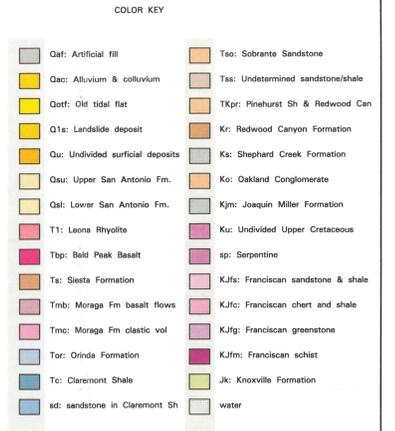


Figure 9. Landslide inventory map of the northwest quarter of the Oakland East quad. from Nilsen, 1975

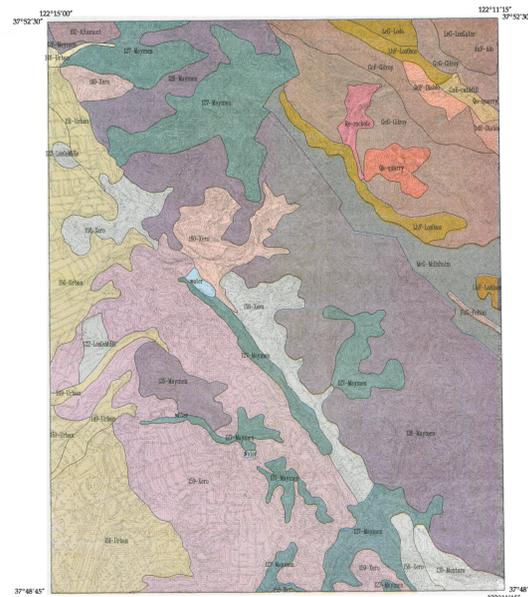


Figure 10. Soils map of the northwest quarter of the Oakland East quadrangle, from Welch (1977; 1981)

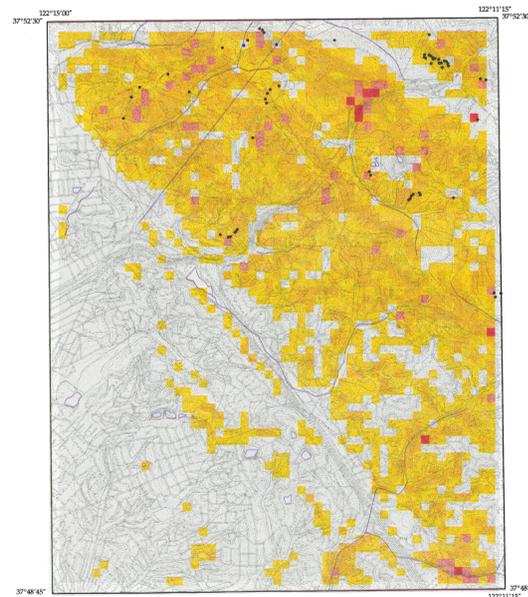
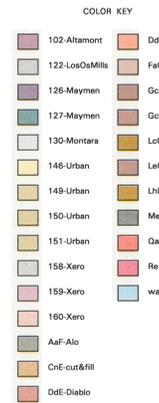


Figure 11. Hour 32 probabilities in the northwest quarter of the Oakland East 7.5' quadrangle, showing post-storm (1982) inventory of debris-flow scars (black dots)

Predicted conditional probability (from hazard function) of initiating a soil slip-debris flow in a cell in the hour indicated.

Percent	Number of Cells
>12%	9 Cells, none with scar
8.0 - 12.0%	57 Cells, 5 with scars
2.0 - 8.0%	702 Cells, 12 with scars
0.2 - 2.0%	1,018 Cells, 14 with scars
<0.2%	1,741 Cells, 4 with scars

Hour 32

Figure 12. Kolmogorov-Smirnov test

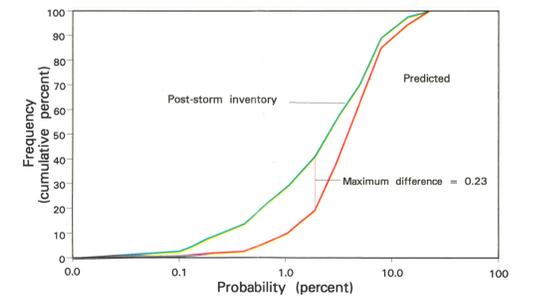


Figure 12. Cumulative curves comparing frequency of expected failures at hour 32 with inventory of post-storm failures: red curve, frequency of expected failures at hour 32 (the hour of maximum probability); green curve, frequency of cells having one or more post-storm scars (from inventory mapping). The Kolmogorov-Smirnov test for goodness of fit measures the deviation of the observed cumulative distribution of a sample from the hypothesized cumulative distribution of a population. It tests for type 1 error; i.e., if the null hypothesis (H₀) states that the population distribution is the same as the sample distribution, the type 1 error is the probability that H₀ will be rejected when H₀ is correct. For a sample size of 35 cells, a maximum deviation of .23 indicates that rejecting H₀ would be correct only at a level of probability of 0.01. (Although the hazard function probability can be calculated in all the cells that have data, its application to cells with average slopes less than 14 degrees may be less appropriate than to steeper cells. Areas having slopes less than 14 degrees were excluded from the regression data set by the procedure used to estimate the number of censored cells.) Soil slips in cells with low DEM-derived average slopes may be attributed to short steep slopes, too short to be captured by the resolution of the DEM. During the 1982 storm soil slips did not occur on slopes less than 14 degrees (Wiczorek and others, 1988).

Open-File Report 94-699 consists of two map sheets and an explanatory text, with additional illustrations, describing the derivation of the probability model and its application in the NW 1/4 of the Oakland East quadrangle. This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or 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.

SOURCE MAPS FOR SPATIAL VARIABLES, NW 1/4 OAKLAND EAST 7.5' QUADRANGLE WITH PROBABILITY MAP FOR HOUR 32, 1982 STORM

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