



EXPLANATION

**Qm** Holocene estuarine mud:  
Unconsolidated water-saturated mud.  
Consists of San Francisco Bay mud,  
(bay mud unit in table 1), artificial  
fill overlying bay mud, and  
estuarine mud at the mouths of  
coastal streams. 0-40 m thick.  
Overlies Quaternary alluvium.  
Locally overlies Franciscan Formation  
in San Francisco

**Qal** Quaternary alluvium:  
Unconsolidated to weakly consolidated  
silt, sand, and gravel. Consists of  
Holocene and Late Pleistocene  
alluvium (which together are equivalent  
to alluvium unit in table 1).  
Includes minor deposits of Holocene  
and Late Pleistocene beach and dune  
sand, and marine terrace deposits.  
0-50 m thick. Generally overlies  
bedrock in valleys and canyons of  
upland and coastal areas, and  
Quaternary and Tertiary deposits in  
the bay basin and Livermore Valley

**Qts** Quaternary and Tertiary sedimentary rocks:  
Weakly to moderately consolidated  
and indurated mudstone, sandstone,  
and conglomerate. Consists of the  
Santa Clara (see table 1) and Merced  
Formations along the southwestern  
margin of the bay basin, and the  
Trivisium and Livermore deposits of  
local usage along the northeastern  
margin of the bay basin. Stratigraphic  
thickness as much as 1,500 m  
but maximum depth to underlying bedrock  
variable due to erosion and tectonic  
deformation. Underlies younger  
sedimentary deposits to depths of 700 m in  
Colma Valley and the southern bay basin,  
and to shallower depths in Livermore  
Valley

**Tms** Tertiary and Mesozoic sedimentary rocks:  
Moderately to highly consolidated  
and indurated chert, shale, sand-  
stone, and conglomerate. Consists  
of all bedrock units except  
Franciscan Formation and plutonic  
rocks. Predominantly Mesozoic  
marine shale and sandstone (Great  
Valley sequence unit in table 1)  
northeast of the Hayward fault, and  
Tertiary marine sandstone, shale,  
chert, and minor amounts of volcanic  
rocks in the upland areas throughout  
the southern bay region. Underlies  
parts of younger sedimentary units

**Kg** Cretaceous granitic rocks:  
Consists of Monterey Quartz  
Diorite of local usage (granite  
unit in table 1) and Ben Lomond  
Quartz Diorite.  
Generally jointed and deeply  
weathered. Constitutes the base-  
ment complex southwest of  
San Andreas fault except for the  
small area northeast of the  
Pilarcitos fault

**KJf** Franciscan Formation:  
Mostly well-indurated sandstone and  
shale but includes subordinate  
amounts of gneiss, chert, lime-  
stone, conglomerate, and metamorphic  
rocks of blueschist facies (collectively  
the Franciscan Formation unit  
in table 1). Generally highly  
deformed and locally intensively  
sheared with hard blocks of various  
lithologies in a matrix of clay  
materials. Constitutes the basement  
complex northeast of the San Andreas  
fault and in the small area southwest  
of the fault between the Pilarcitos  
fault and the San Andreas fault

**R** Reservoir or lake

**Fault**

Data sources:  
Alluvial units: Unpublished map of Quaternary deposits  
1:125,000 by E. J. Helley, K. R. Lajoie,  
and D. B. Burke (written communication, 1974)  
Bedrock units: Unpublished compilation by E. E. Brabb  
(written communication, 1974)  
Generalized geologic units compiled and modified from above  
sources by K. R. Lajoie, 1974

Base from U.S. Geological Survey 1:125 000  
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SCALE 1:125 000  
10 MILES  
10 KILOMETRES  
CONTOUR INTERVAL 200 FEET  
DATUM IS MEAN SEA LEVEL

**SHEET 3: GENERALIZED GEOLOGIC MAP**  
Faults other than the San Andreas and the Hayward and its southern extension are omitted

**MAPS SHOWING MAXIMUM EARTHQUAKE INTENSITY  
PREDICTED IN THE SOUTHERN SAN FRANCISCO BAY REGION, CALIFORNIA,  
FOR LARGE EARTHQUAKES ON THE SAN ANDREAS AND HAYWARD FAULTS**

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