UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

GEOLOGIC MAP OF THE COASTAL ZONE OF THE LONG BEACH-SANTA ANA AREA, CALIFORNIA, SHOWING LOCATION OF WATER WELLS

Geology largely by J. F. Poland, W. W. Paulsen, and R. C. Newcomb, in 1940-43, under the direction of A. M. Piper; locally near San Pedro and Wilmington, after W. P. Woodring and others

Scale 1:31,680

1 0 5 Miles

APPROXIMATE MEAN DECLINATION 1948

EXPLANATION

Qal — Alluvial and coastal deposits
Sand, gravel, and silt in stream channels and beneath flood plains; silt, clay, sand, and gravel along and near coast. Coarser elements highly permeable to water.

UNCONFORMITY

Qpu — Terrace cover
Reddish-brown sand, nonfossiliferous and probably largely continental.

Palos Verdes sand
Sand and some pebble gravel; fossiliferous and marine; moderately permeable but largely above water table; crops out only locally at edges of mesas

Unnamed deposits
Silt, sand, and gravel; moderately to slightly permeable to water; inferred to crop out only locally at edges of mesas

LOCAL UNCONFORMITY

Qsp — San Pedro formation
Sand, gravel, silt, and clay; includes Timms Point silt and Lomita marl members at base. Thick beds of sand and gravel yield water copiously to many wells

UNCONFORMITY

Tu — Consolidated rocks, undivided
Include Pico and Repetto formations. Shale, siltstone, and sandstone; water-bearing properties described in text

U
Fault
U, upthrown side; D, downthrown side

Trace of probable fault

Trace of concealed fault
Where covered by deposits of Recent age

Anticline
Showing trace of axial plane; dashed where approximately located; dotted where concealed

Strike and dip of beds

Nonflowing well

Intermittent flowing well

Abandoned well
Numbers indicate location as explained in text

Recent
Upper Pleistocene
Lower Pleistocene
Pliocene and upper Miocene
QUATERNARY
TERTIARY

Base from U.S. Geological Survey maps of the following: 1923-51; San Pedro, 1951; Long Beach, 1925-49; Los Alamitos, 1953-60; Seal Beach, 1949; Newport Beach, 1946; and Laguna Beach, 1948; quadrangles

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T. 6 S.
T. 7 S.