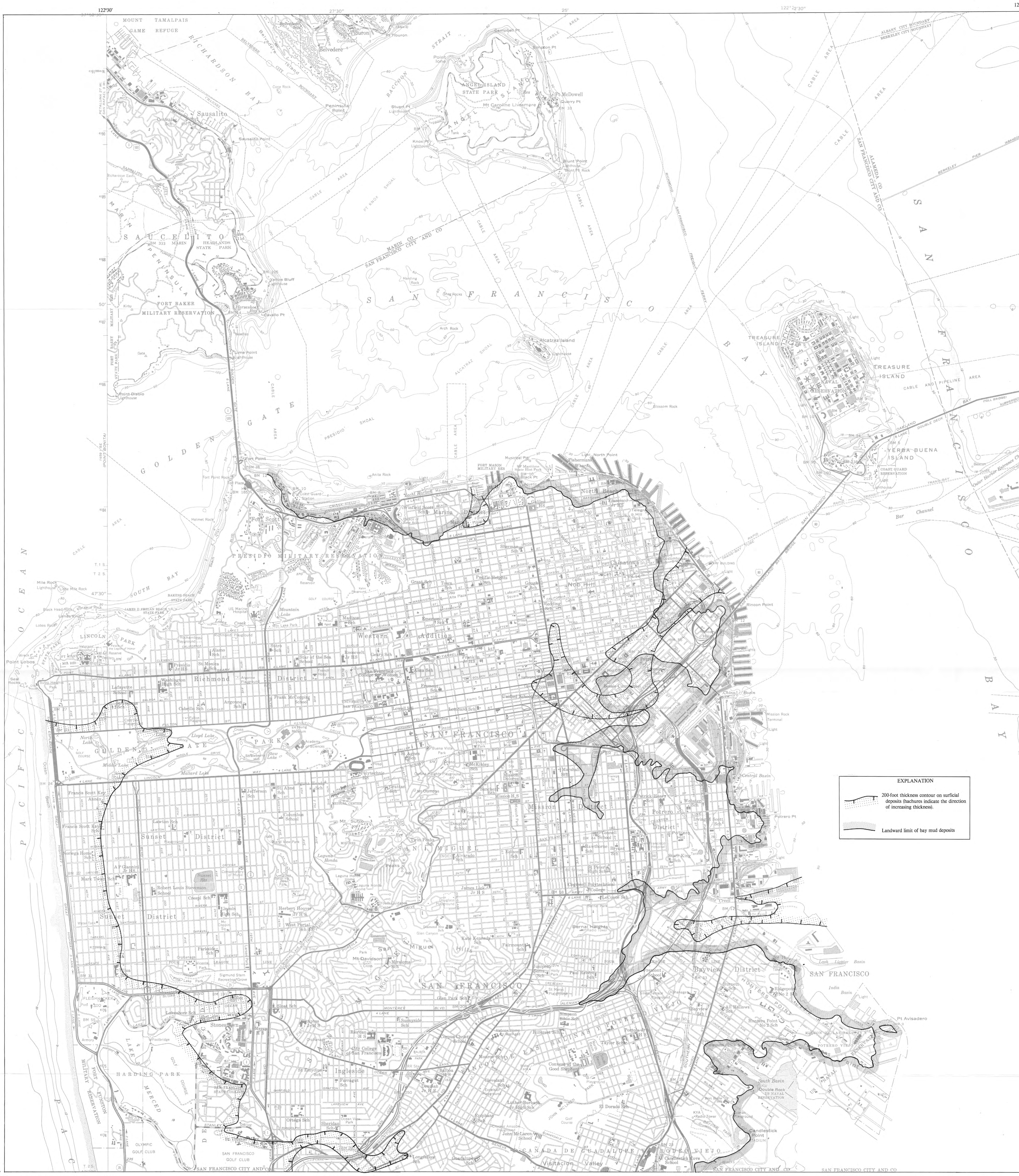

Base from U.S. Geological Survey Hunters Point, 1968; Oakland West, San Francisco North, San Francisco South, 1973

Compiled by W.B. Joyner, 1981

SCALE 1:24 000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 25 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

TRUE NORTH — MAGNETIC NORTH — 17°
APPROXIMATE MEAN DECLINATION, 1973

CALIF
AREA OF MAP

DISCUSSION

The accompanying map shows the 200-foot contour of the thickness of surficial deposits and the landward limit of bay mud deposits in the City and County of San Francisco. It was prepared as a part of the work of the Foundation Design Subcommittee of the Seismology Committee of the Structural Engineers Association of Northern California in connection with a new building code being written by an ad hoc committee of the Association. The new code will make use of the following ATC-3 soil profile types (Applied Technology Council, 1978):

"Soil Profile Type S_1: Rock of any characteristic, either shale-like or crystalline in nature (such material may be characterized by a shear wave velocity greater than 2500 feet per second); or stiff soil conditions where the soil depth is less than 200 feet and the soil types overlying rock are stable deposits of sands, gravels, or stiffer clays.

"Soil Profile Type S_2: Deep cohesionless or stiff clay soil conditions, including sites where the soil depth exceeds 200 feet and the soil types overlying rock are stable deposits of sands, gravels, or stiff clays.

"Soil Profile Type S_3: Soft-to-medium stiff clays and sands, characterized by 30 feet or more of soft- to medium-stiff clay with or without intervening layers of sand or other cohesionless soils.

The 200-foot thickness contour for the surficial deposits overlying bedrock was determined by taking the difference between topographic contours and contours of bedrock-surface elevation on maps by Schlocker (1974) and Bonilla (1964). In situ shear velocity measurements reported by Fumal (1978) confirm that the surficial deposits as defined by Schlocker (1974) and Bonilla (1964, 1971) are all characterized by values well below the 2500-foot-per-second value ascribed to rock in the ATC-3 criteria.

The essential characteristic for S_3 is the presence of "30 feet or more of soft to medium stiff clay with or without intervening layers of sand or other cohesionless soils." In San Francisco this characteristic means the presence of the bay mud deposits (Schlocker, 1974). Because the bay mud in San Francisco is nearly everywhere covered by artificial fill, the best guide to the distribution of bay mud is the historic landward boundary of the marshlands as shown on the oldest available U.S. Coast and Geodetic Survey maps. The boundary line of bay mud on the accompanying map was generally assumed to coincide with the landward boundary of the marshlands as shown on unpublished maps on a scale of 1:24,000 prepared by Nichols and Wright (1971) from U.S. Coast and Geodetic Survey topographic surveys dated 1851 and 1852. In some places, however, the bay mud below the surface extends landward from the historic marshland boundary (McDonald and others, 1978). An unpublished compilation of borehole data by Julius Schlocker and Brian Atwater at a scale of 1:24,000 was used to derive the final configuration of the mud line.

The line showing the landward limit of bay mud delimits areas where bay mud is present but does not imply that all sites within this limit are underlain by the 30 feet or more of soft to medium stiff clay that the ATC-3 criteria require. Additional information or further assumptions are required before sites within this limit can be classified specifically as S_1, S_2, or S_3.

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MAP SHOWING THE 200 - FOOT THICKNESS CONTOUR OF SURFICIAL DEPOSITS AND THE LANDWARD LIMIT OF BAY MUD DEPOSITS OF SAN FRANCISCO, CALIFORNIA

By

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1982

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