

MEMORANDUM ON DEEPER SOURCES OF WATER  
 to supplement  
 Progress report on water supply for  
 the Point Mugu Naval Base, Ventura County, California  
 By John F. Mann, geologist

In the event the present shallow water supply of either the Point Mugu Naval Base or of the Port Hueneme Naval Base becomes contaminated by invading ocean water, an alternative source of supply will have to be found. One possible source, development of water from deeper aquifers capped by one or more impermeable layers, was discussed briefly in the body of the progress report (pp. 34-35), and it was indicated that further investigation was being made. This memorandum summarizes in brief the conclusions of the Geological Survey concerning possibilities for development of deeper aquifers.

The test hole for the first new well at the Point Mugu Naval Base should be drilled through the entire water-bearing sequence to hard bedrock of Miocene age, which probably will be reached at a depth between 900 and 1,200 feet. (See progress report, page 37.) The probability of encountering in this test hole a thick aquifer beneath an extensive impermeable cap does not seem strong, in light of the evidence available for the upper 600 feet; nevertheless, the expenditure required to determine the character of the deeper deposits is justified, because the cost of drilling to bedrock, below the depth otherwise necessitated by the test hole, would be small.

An investigation of the deeper water-bearing zones by the Geological Survey using electric logs and formation logs of scattered oil wells and test holes reveals that an aquifer with the necessary characteristics does occur to the north. The best information concerning this aquifer has been

obtained from electric logs and a core hole in the Oxnard oil field (about 2 miles east of Oxnard), where it is almost 300 feet thick and between 1,000 and 1,500 feet below land surface. It is predominantly sand, with little gravel, and with irregular interbeds of clay. The same sandy zone was penetrated by a well 2 miles northwest of Oxnard, and by another well near the southwest end of the Camarillo Hills. The aquifer seems to be fairly persistent, and probably extends westward beneath the Port Hueneme Base, where its thickness may be somewhat less than 300 feet. The northeast corner of the Port Hueneme Base would seem to be one of the most favorable places on Navy property for developing a source of deeper water. Accordingly, it is suggested that if the currently developed water supplies at either the Point Mugu Base or the Port Hueneme Base become contaminated, a test hole be drilled by the rotary method in the northeastern part of the Port Hueneme Naval Base. This test hole should be drilled to a depth of about 2,000 feet, followed by the running of an electric log to determine the exact locations of aquifers and thicknesses of capping beds. If the results of the test hole should be favorable and decision reached to complete a well, a string of casing should be seated in the impermeable capping deposits to prevent effectively contamination of the aquifer by shallower waters. Any aquifers which might be encountered are expected to be chiefly sand; therefore, the well should be of gravel-pack construction.

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