Wentworth, Carl (U. S. Geological Survey, Menlo Park, CA), R.T. Hanson, Mark Newhouse (U.S. Geological Survey, San Diego, CA), R.C Jachens, E.A Mankinen, Geoffrey Phelps, J.C. Tinsley III, C.F. Williams (U.S. Geological Survey, Menlo Park, CA), Mark Newhouse (U.S. Geological Survey, San Diego, CA), R.A. Williams (U.S. Geological Survey, Golden, CO), D.W. Andersen, E.P. Metzger (California State University, San Jose)

STRATIGRAPHY AND HYDROGEOLOGY OF THE SANTA CLARA VALLEY, SAN FRANCISCO BAY REGION, CALIFORNIA: A PROGRESS REPORT

Five new partially cored wells 800-1000 feet deep provide a basis for modern analysis of stratigraphy and hydrogeology in the Santa Clara Valley southeast of San Francisco Bay.

The presence of unconformities in the Quaternary alluvial section expected from oscillating sea level and associated climate variation is confirmed by well-developed soils in the cores and the mapped subsurface contact between Holocene and Pleistocene alluvium. One well is close enough to the Bay to encounter Bay margin sediments associated with high sea stands, and a new 10-km-long, high-resolution seismic reflection profile should permit correlation from the Bay margin into the Valley. Details of geothermal gradients in the wells and new hydrologic data together with geophysical logs from the new and several older wells aid correlation of these boundaries across the basin. The cored sections contain abundant immature, locally derived gravel, indicating continuing uplift of the adjacent mountains; compositional variations in clay, sand, and gravel may aid correlation.

The well sections lie almost entirely within the normally polarized Bruhnes paleomagnetic epoch (0-780 ka), and contain several geomagnetic excursions. One, the 29-ka Mono Lake, is supported by radiocarbon dating; another, at 1000 feet in at least two wells, is considered the 565-ka Big Lost excursion. No useful fossils have yet been recovered from the cores.

The stratigraphic base of the alluvial section is uncertain. A practical base to the active aquifer system is defined within the alluvial section at 650-700 feet by perturbations in geothermal gradients and hydrologic data (stable isotopes, ages, flow data). Bedrock below the alluvial section is encountered in three wells, and its surface is expressed as a prominent seismic reflection and estimated from inversion of gravity. Subsurface equivalents of the deformed Plio-Quaternary gravels exposed around the Valley margin have not been recognized, but may be distinguishable only by age.