

lease with the San Diego Gas and Electric Company at that time and thus found it necessary to seek an alternate location.

The vertical tube evaporator/multi-stage flash (VTE/MSF) Module authorized for fiscal year 1971 is to be constructed in cooperation with the Orange County Water District (OCWD) adjacent to the Orange County Sanitation Plant No. 1 in Fountain Valley, California. In accordance with the memo of understanding signed by OSW and the OCWD, the Office of Saline Water will design, construct and operate the VTE/MSF module on land leased at no cost to OSW from OCWD. OCWD will furnish intake, outfall, steam generator, and all the shop buildings. OCWD's participation is estimated to cost about \$3.2 million. A construction contract is scheduled to be awarded in June 1971, with completion scheduled in an 18-month period. OCWD is charged with providing water for an area of more than 200,000 acres with a population of over one million people.

Orange County is one of the fastest growing counties in the nation with a potential population increase in excess of 10% per year. This population is expected to reach 2,000,000 by 1980 and the total water requirement by that time is expected to be 500,000 acre feet annually.

The chief sources of water for the District are ground water basin and importations from the Colorado River through the Metropolitan Water District System. Discharge of the Santa Ana River, estimated at 85,000 acre feet annually is a part of the District water supply, but as much as 90% of this has been estimated to enter the ground water as recharge. Importation of the Colorado River waters through the MWD is a necessity to meet the water demands. However, the availability of imported supply varies from year to year, depending upon other major demands for the water in the state aqueduct development.

Preservation and utilization of the ground water aquifer estimated to have storage of as much as 500,000 acre feet is a very important part of the District's water management program. Since, historically, there have been periods of overdraft (which are expected to continue) when importations were insufficient to meet the balance of demands, it is necessary that the ground water storage reservoir be protected so it can sustain extensive overdraft during short periods without permanent damage to its reservoir utility through sea water intrusion. Water spreading projects in the Santa Ana River Basin are one means being employed to increase ground water storage.

Even more critical is the prevention of salt water intrusion from the ocean into the ground water basin. For this purpose, the Board of Directors of OCWD has authorized the Orange County Coastal Barrier Project which includes injection of fresh water into the aquifer and pumping salt water from the aquifer. A portion of the injection water in due course becomes a regular part of the ground water storage and eventually supplies the regular water wells in the area. Hence the quality of the injected water is important.

There are alternate sources of water for injection. One is the Colorado River Water from the MWD system and another is reclaimed sewage effluent from the sewage treatment plant located near the injection wells. Waste water reclamation is believed to have an economic advantage and, hence, the District has devoted approximately \$1,000,000 to study the treatment of secondary sewage effluent to make it suitable for injection. The average salinity of the reclaimed waste water is reported to be 1400 ppm, which makes it of marginal quality for injection into the barrier. Dilution with imported water does not offer a suitable solution since Colorado River water already averages 700 to 800 ppm-salinity and is costly to transport. For this reason the OCWD is vitally interested in the high quality product from a desalting plant to dilute and improve the quality of the water used in the injection barrier. It plans to construct a waste water reclamation plant and blend the high quality desalted water with the reclaimed waste water. I will keep the Committee fully informed as this project progresses.

Distillation Program

The construction of the VTE-X at San Diego is completed, and we are now obtaining operating data. The modifications to the Freeport Test Bed are scheduled to be completed in mid-April. Information collected from these two test projects will be used for the final design of the VTE/MSF Module. With the modification of the Clair Engle Plant at San Diego, we have obtained operating temperatures up to 350° F. This is nearly 100° above the operating temperatures of commercial plants.

The installation of a high temperature water jet compressor at Roswell has been completed and initial tests have been run. With the installation of the