

The plant could be built to a capacity of 5,100 megawatts or larger, and could be integrated with baseload steamplants of the electric utility systems in the area to provide sources of low cost pumping energy. The nuclear powerplants associated with the dual-purpose desalting facilities would be another potential source of off-peak energy. Although the Mohave pumped storage would produce no net energy, the facility would make substantial contributions to a development fund through the sale of peaking capacity if an appropriate source of pumping energy were available.

Other favorable pump storage sites in Arizona identified by the Bureau include the Buckskin Mesa site on the Bill Williams arm of Lake Havasu, the White Tanks Mountain site adjacent to the Granite Reef aqueduct in central Arizona, the Montezuma site southwest of Phoenix, Arizona, and the Horse Mesa pump storage site adjacent to the Salt River Canyon some 40 miles east of Phoenix.

As additional large, efficient thermal electric powerplants are added to the power systems of the Pacific Southwest, the need for additional efficient, quick-starting peaking capacity to meet hourly and daily peak loads will become critical. Pumped storage plants such as the Mohave plan would provide an attractive source of peaking power. If such installations were integrated with the Lower Colorado River Basin Development Fund, the surplus revenues from power sales would improve the financial feasibility of augmentation proposals.

Impact of weather modification

Recent scientific and technical advances in the field of weather modification have shown that practical applications of this knowledge to increase streamflows in a significant scale may be imminent. The Department of the Interior's current atmospheric water resources program includes projects aimed at developing the capability to increase the yield of water from the atmosphere in specific localities and regions.

Operational capability to increase streamflow will first be achieved in areas where significant amounts of data and experience have been accumulated from experiments now in progress. Initial effects of the program may become evident in the Colorado Basin by the early 1970's.

If weather modification proves to be successful in increasing precipitation in the basin, the effect will be to postpone, but not replace, the need for augmentation measures. Before any construction need be initiated on desalting works, it is expected that the results of weather modification will be apparent. To the extent that construction of desalting units is delayed, technological advances in desalting techniques may be expected to improve the financial feasibility of the plan.

Impact of water salvage measures

The plan proposed for the Central Arizona Project includes water salvage measures along the lower Colorado River consisting of ground-water recovery in the Yuma area and phreatophyte clearing along the lower reaches of the River. It is anticipated that these undertakings will yield 320,000 acre-feet of water annually for use. The benefit of this salvage is incorporated in the hydrologic assumptions underlying the studies in this report.

Accomplishment of the above measures, along with the recently completed Senator Wash reservoir and channel alignment work presently under way, will substantially exhaust the opportunities for increasing the yield of the river by salvage along the main stem. There might remain some possibility of decreasing the evaporation losses in the major reservoirs, and the Bureau is conducting studies of evaporation suppression at the present time. However, no practical method of suppressing evaporation on large reservoirs has yet been developed.

In the course of detailed augmentation studies, the results of water salvage activities will, of course, be taken into account. The timing of initiation of augmentation can be adjusted as necessary to accommodate the actual future conditions; but it does not appear that water salvage activities will have appreciable influence on the feasibility of the desalting project.

CONCLUSIONS

Based on the analysis presented herein it is concluded that there is reasonable expectation that detailed studies will establish the feasibility of augmenting the Colorado River by the amount of 2 to 2.5 million acre-feet annually by desalting of sea water. The validity of this conclusion rests principally on three future developments; (1) the realization, at least in part, of projected tech-