

ever, would grant additional authority to enable us to contract for a small amount of research with foreign organizations and individuals to make available their expertise to the U.S. desalting industry.

During the period covered by the new legislation, the desalting program will have four main objectives. First, where the desalting state of the art has been developed sufficiently, we intend to stimulate its application to existing water problems. In this regard, we would expect to furnish information and direction to agencies with loan and grant-in-aid authority to encourage consideration of desalting as an alternative in water resource programs under their jurisdiction. We feel that the most immediate need desalting will satisfy will be in improving the quality of small community water supply systems. The second major objective will be to continue our basic and applied research and development program to build a base knowledge upon which desalting can continue to build. The third will continue the development of technology for large-scale plants which will be required in the last quarter of this century to provide water in large quantities for our cities, industry, and agriculture. Finally, our program will strive to improve Federal and State water planning through cooperative studies in addition to engineering and economic studies relating to desalting costs.

We anticipate that during the 5 additional years of the full-scale program, we will undertake the cooperative construction of several types of prototype plants. A variety of prototypes is required because there is no single optimum process for the variety of feed waters, site characteristics, and product water quality with which we must contend. At this time distillation is most economical for sea water, while membrane processes are more economical for lower salinity brackish waters.

We will be reporting to you, Mr. Chairman, to the Congress, and to the President on our plans for constructing prototype plants. During this fiscal year, construction will begin on a distillation module of 3-million-gallon-per-day capacity to provide the technological base for plants of 200 million gallons per day. We would expect to expand this module to a prototype as the development of technology permits. We are also considering an 8-million-gallon-per-day single-purpose plant and a 30- to 50-million-gallon-per-day sea water conversion prototype plant.

In our reverse osmosis program we are considering three prototype plants. Two of these will be of 1- to 3-million-gallon-per-day capacity. One would be operated on high hardness ground brackish water and the second would convert surface brackish water contaminated by industrial effluents, agricultural run off, and sewage effluent which has undergone secondary treatment. The third plant, of 3- to 5-million-gallon-per-day capacity, will be designed to convert 95 percent—a very high percent, incidentally—of brackish feed to product water. The problem of brine disposal from all three plants will receive special attention.

In our applied research, the emphasis will be placed on the development of new membranes and ancillary equipment. In addition, we will continue our work on freezing, ion exchange, environmental problems, and the utilization of brackish and the utilization of geothermal waters. As many of you will recall, the desalting program had as one of its original objectives that of desalting sea water to provide