

industries, but rather, to make available foreign technological developments to the U.S. desalting industry.

Although the principal thrust of our program has been and will continue to be the development of desalting to provide fresh water, some of our technology holds significant promise in other applications. The new legislation will enable us to pursue such opportunities as they arise.

OSW has participated in economic feasibility and cooperative desalting studies, both on a limited basis. The results of these activities encourage us to request expanded authority in this area, with specific provisions to make OSW a part of several long-range water resource planning studies. The new authority would expand and emphasize this area.

It is necessary that we have the opportunity to build prototype plants. These plants represent the culmination of the orderly scientific progression from the laboratory to integral elements of large municipal water supply systems. During the next year we will develop our recommendations concerning the design and construction of future prototype plants. It is imperative that we accomplish this now if we are to have the technology available when it is critically needed in the last quarter of this century.

During the period covered by the new legislation, the previously stated elements of the desalting program will provide the impetus for pursuing 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. We think that the most immediate need it will satisfy will be improvement of small community water supplies. Studies with state water agencies have indicated possibilities for improving water quality in small plants in the near future in brackish water areas and future possibilities for large-scale desalting use in the Northeast and Gulf Coast areas. Another opportunity is conjunctive use of desalting plants with natural water reservoir systems.

The second objective is the development of large-scale technology which will be required in the last quarter of this century to provide water in large quantities for our cities, industry and agriculture. The third major objective will be to continue our basic and applied research and development program to provide a base of knowledge upon which desalting can continue to build.

The final objective will be to improve Federal and state water supply planning through cooperative studies in addition to engineering and economic studies relating to desalting costs. In this way, we get preliminary feasibility information on how desalting may be able to supply supplemental or new water supplies, or to improve the quality of existing supplies. In such studies the Office of Saline Water's primary contribution is providing desalting technology and data to conform with the water resource planning agency's activities. Presently, OSW is cooperating with the Bureau of Reclamation in the Western U.S. Water Plan. The results of recent cooperation with the Pacific Southwest Interagency Committee (Water Resources Council), together with those of other prior cooperative studies, have shown that water supply augmentation by desalting could have major applications to meet long-range water needs in that region, both as to quantity and quality.

Any new technology, such as desalination, cannot be successfully developed unless it is based on a solid foundation of basic and applied research. The proposed five-year program is geared to develop further this new technology through innovation, invention, breakthrough, and new processes and phenomena. We will give particular emphasis to those processes which offer the highest probability of a real scientific breakthrough. We will also continue to search for materials that will enable us to reduce the capital investment required for desalting plants, since this one item accounts for approximately 40% of the cost of desalted water.

These studies will include development of a better understanding of the mechanism by which materials deteriorate, development of data essential to the design engineer through operation of the corrosion loops at the Materials Test Center, and development of new and/or improved materials. This work will involve new alloys based on iron and aluminum, studies of titanium and various high quality alloys, and stainless steels. In addition, essential data will be obtained on polymer coatings, cladding, and protective films.

Basic research will seek a thorough understanding of water, salt, and energy transport, the structure of water and membranes and the characteristics of aqueous solutions, a new electrostatic process and a new modified freezing