WASHINGTON.—

Proposed $400,000 research program for desalting saline waters being considered by Congress

HOW MUCH MONEY should the nation spend in seeking an answer to the age-old problem of converting saline water to potable water? Buried down in the Interior Department's $555.1 million budget request is a request of the secretary for $400,000 for its saline water research program. Congress is considering this item at present. It is not yet known how this project will fare at the hands of a Congress pledged to reducing the budget. Preliminary indications are that a 50% cut may be made by the House.

The saline water program was made possible by the past Congress, which authorized a program which is being handled by the Interior Department. The law provided that this office would be authorized to expend $2 million over a five-year period on studies for the conversion of sea water to potable water and for studies on the demineralization of brackish water, primarily for agricultural and industrial purposes.

Congress, however, granted only $125,000 to set up the office. The program got under way faster than was originally expected, and, early this year, the Interior Department requested the balance of $275,000 to start more research projects before July 1. Congress cut this to $50,000. The program for the first year, ending June 30, will have cost $175,000.

Research Program Flexible

The water in all the world's oceans, if spaced evenly over the earth, would cover it to a depth of two miles. All the water in the atmosphere would add only one additional inch, or 0.001%. However, all earthly life and activity are dependent on this atmospheric water.

The tremendous volume of water that would be available if contained salt could be removed has long challenged scientists. Research of all types has been devoted to this project and yet, to date, no method has been developed which can produce potable water from sea water in large quantities at a cost low enough to ensure its use by agriculture, industry, and municipalities.

As its first project, the Office of Saline Water Research set out to find out what methods had been studied and what new methods might exist. The results were compiled in a compendium issued last fall entitled "Demineralization of Saline Waters." The report outlines and discusses processes and phenomena and energy sources.

Included in the physical processes and phenomena are vaporization, crystallization, sublimation, diffusion, ultrasonics, osmosis, and immiscible liquids. The chemical category includes ion exchange, hydration, and precipitation. Electrical processes include electro-ion migration, streaming potential, electrostatic and electromagnetic effects, and ultrahigh frequency currents.

The potential energy sources include combustion of conventional and nonconventional fuels, falling water, utilization of waste heat, nuclear fission, solar energy, several types of marine energy, wind power, chemical energy, atmospheric heat, and geothermal energy.

One of the most promising processes presently in sight is an electrical ion exchange method. The value of such a process is that the energy requirements vary directly with the salt content. Vaporization methods, on the other hand, require approximately the same energy to purify water regardless of salt content.

This is an important consideration in dealing with the saline waters available in the prairie states. Here the salt content is only 0.1 to 0.2 that of sea water. Elimination or even reduction of the salt content of these waters would make great amounts of water available for irrigation and other agricultural uses. It is for this reason that much of the initial work of the Office of Saline Water Research is being directed to studies on brackish water.

Spokesmen for the saline water research program emphasize that the solution to this problem will not be easy and probably will not come early. Some experts consider this to be one of the toughest processing problems ever presented to chemists and chemical engineers. They consider their principal function to be one of coordinating and correlating the multiple efforts being carried out by government, industry, research organizations, and academic institutions. Only a limited amount of research can be sponsored with funds available to this agency. These funds will be used to supplement existing work or in new fields which have not yet been started.

Water Needs Are Great

The need for water for agricultural, industrial, and municipal purposes is growing daily. In agriculture the problem is accentuated by the fact that the nation's population is increasing while the amount of land available for crop production is relatively fixed. More specifically, the U. S. population increased from 105.7 million to 150.7 million between 1920 and 1950. It is now increasing at the rate of 2 million persons each year and should exceed 200 million by 1975. Crop lands, however, have remained at a level slightly in excess of 400 million acres since 1920.

While mechanization, new strains, new hybrids, and soil management and soil fertility studies have been major factors in helping the U. S. farmer to meet ever increasing food and fiber needs, it appears likely that even greater production will be needed in the future.

Development of new land for crops or increased production from existing land through irrigation may be the answer. Although only 0.6% of the world's land is irrigated, this irrigated portion supports 25% of the world's population. In the 17 Western states there are known to be 17 million acres of fertile, irrigable land not now irrigated. This land would produce as much as 35 to 50 million acres of unirrigated land. Recent investigations by the U. S. Bureau of Reclamation indicated that the "potentially irrigable" category may be closer to 50 million acres than the 17 million acre figure currently in use.

Scientists studying demineralization processes hope that they will be able to supply the answer to the problem of purifying saline waters and thus open such acreage to irrigation.