NATURAL RESOURCES

Is U.S. Water Shortage a Myth?

A survey of top water experts reveals United States need never suffer from lack of water provided it is willing to pay the cost, Vincent Marteka reports.

➤ THE GROWING water shortage in some areas of the United States is now definitely a national problem, but it can be licked if the nation's water resources are handled properly.

Dwindling water supplies in Western states, a rapidly dropping water table in the Northern Plains, and a salty taste in freshwater wells near the Texas coast strongly show the problem has been creeping up on the U. S. for years and did not happen overnight.

New demands on water from mushrooming populations and expanding industries are now making cheap water a thing of the past.

Positive action through proper research and management of the national water resources must be substituted for the present indifference among U. S. citizens if the country is to avoid a full-scale water crisis in the future. But the public will have to dig deep into its pocket to be assured of plentiful pure water in the future.

This is the nearly unanimous opinion among top water experts surveyed by SCIENCE SERVICE to find out whether the United States really has or expects a water shortage. They included Sen. Robert S. Kerr (D.-Okla.), chairman of the Senate Select Committee on National Water Resources; Charles F. MacGowan, director of the Government's salt-water conversion program; and other experts from Government, private industry and educational institutions.

Americans have always taken for granted that the U. S. was blessed with a cheap, plentiful water supply. New demands for expanding industry and population, coupled with an unwarranted abuse of the waters and streams by pollution, has smashed this smug attitude.

Industry, homes and farms already using 300 billion gallons daily will double the figure by 1980 and triple it by the turn of the century if present trends continue. More water will also be needed in the future to irrigate Western lands and for recreational areas receiving a flood of citizens with newly found leisure time.

The National Park Service estimates that well over 400,000,000 annual visits will be made to the national parks by the year 2000 as compared to 63,000,000 in 1950.

Although the United States as a whole is well endowed with water, it is unevenly distributed because of local climates and land surface changes. On the average, more than 30 inches of rain fall on U. S. soil each year, but mountain barriers or local wet climates help give one area too much water while another has to scrimp for every drop.

Rain-drenched fertile valleys in the East contrast sharply with Western states where water frequently has to be pumped over irrigated lands.

About one-quarter of the total rainfall is available to man, occurring as streams, rivers and ground water seeping into the soil. The rest of the water either evaporates from lakes and streams or is returned to the atmosphere by plants.

Because of this uneven scattering of the nation's water supply and the widespread encroachment of man, "there are already substantial areas of water shortage in many of the river basins in the Western United States," Sen. Kerr emphatically stated. Water-poor areas are also cropping up in other areas throughout the country.

No Pat Solution

The water-supply problem does not have one pat solution, since many technical, legal, financial and other disturbing facets are involved. For example, a Texas coastal town may have plenty of water, but it may be too salty or polluted to use. Should this water be chemically treated, or should clean water be transported over hills and valleys from another area? If water is transported over great distances, the thirsty area may have to pay another town or city who legally "owns" the water.

Although these expensive alternatives boil down to "how much are you willing to pay to quench your thirst and industry's needs," another problem deals with conservation of water for aesthetic reasons. More of the nation's waterways must be set aside as natural areas for fish and wildlife in order that future generations may enjoy nature's unspoiled wonders. Yet how does one place a dollar sign on the feeling a fisherman gets when casting a flyline into a clear unpolluted mountain stream?

Although sound management of the nation's water resources is needed, more money must first be spent on water research.

"Water conservationists first have to know how water acts above and below the ground in order to manage the water supply properly, yet very little is being done about it," W. B. Langbein, water expert in the U. S. Geological Survey's water resources division, charged. "Industries spend about two percent of their income on research, whereas only two-tenths of one percent is set aside for water research." The Geological Survey is currently conducting small-scale research on the chemistry of water and the injection of surface water into natural underground reservoirs for storage.

De-salting the oceans and the less salty waters trapped in rocks under parts of the United States is expected to play a large role in the near future.

"Widespread use of de-salted waters for drinking water may come as soon as two years or as late as 20 years," Mr. MacGowan, director of the Department of Interior's

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HARNESSING NATURE'S ENERGY—The 726-foot-high Hoover Dam, spanning the Colorado River on Arizona-Nevada border, provides the Southwest with electricity, flood control, irrigation and drinking water.

U.S. Water Shortage

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office of saline water, predicted, "depending on when the upward spiral of water costs meets the downward costs of salt-water conversion." However, some coastal towns or cities may soon have no choice but to use salt-water conversion methods, he said.

The Federal Government is already operating a 1,000,000-gallon-a-day demonstration plant in Freeport, Texas, and others are being built.

Perhaps the major factor in water use and related economic growth lies in the control of water quality, Sen. Kerr noted. From the time water falls on the earth as precipitation until it reaches the ocean, he said, it will have been used by three, four or five cities. Each use changes its character and thus determines its fitness for reuse. By mechanical or chemical means it must be prepared for reuse, according to the quality demanded.

"With its abundant supply of good water, and its advanced technology and skills, the United States need never suffer for lack of water," he emphasized. "Although rapid advances of science continually stimulate new demands, new techniques of meeting them are also opened up."

Reflecting the recent water study which he headed, Sen. Kerr urged special effort in the following categories to meet future demands: regulating stream-flow through building reservoirs and watershed management, improving the quality of the streams by more adequate anti-pollution programs, and making better use of ground water storage and increasing the natural water yield through de-salting and other artificial means. Also recommended was an efficiency boost in water use such as in recirculation and improved sewage treatment methods.

Total estimated cost of the entire program up to 1980: $54 billion. It may be costly—but what is water worth?

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Questions

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