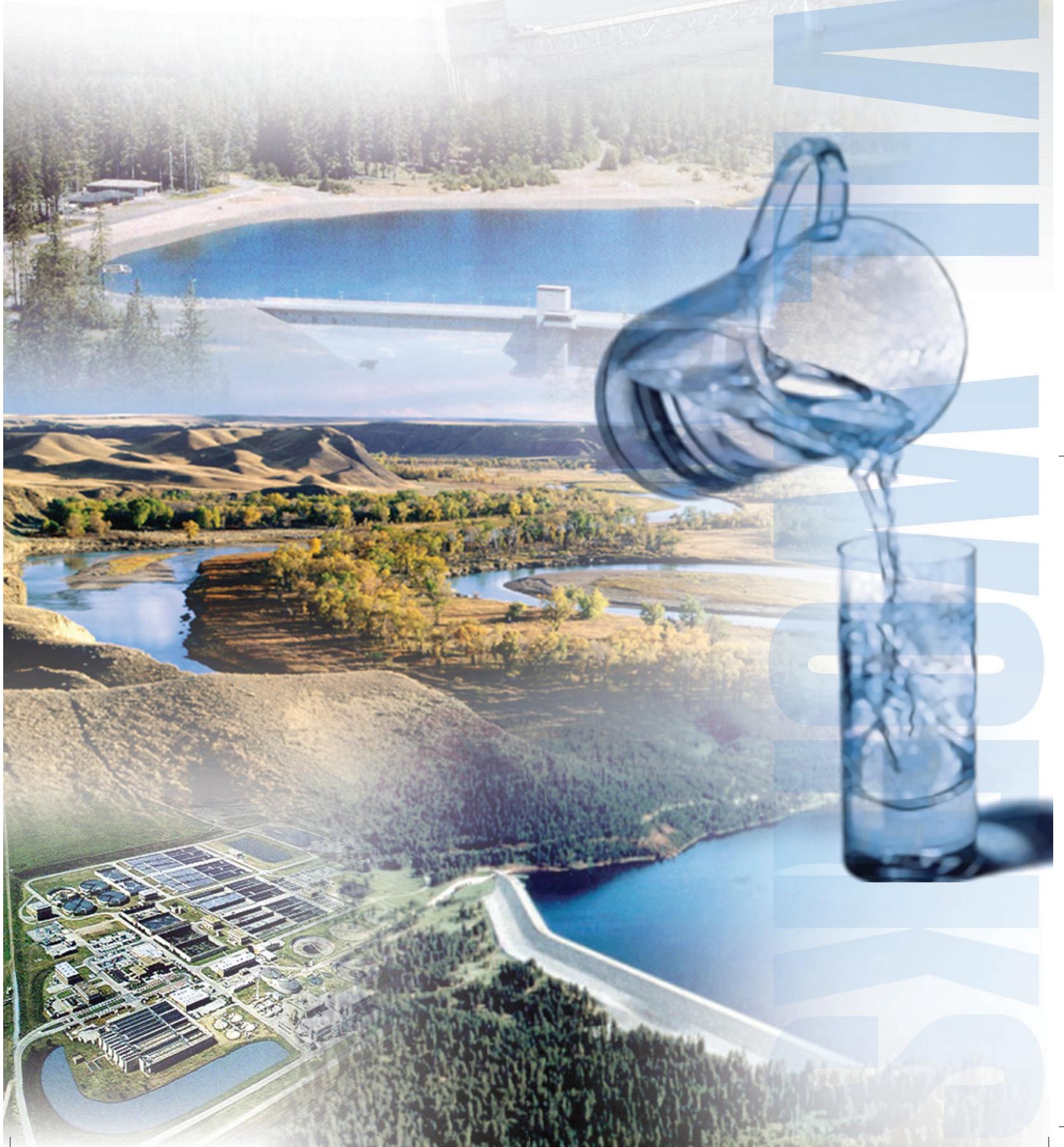




**US Army Corps
of Engineers®**

Water Supply

Value to the Nation



The Value of Water

How much water do you use in a day?

Would you believe more than 1,200 gallons?



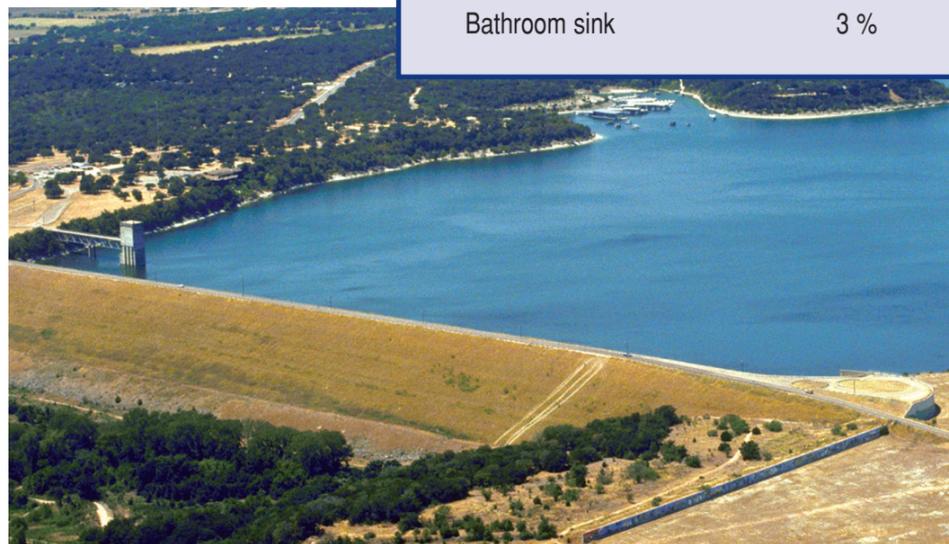
The typical household only uses 50 to 85 gallons a day, but it takes nearly 1,200 gallons per person per day to meet the needs of farmers, factories, electrical utilities, and the many other organizations that make it possible for us to have food on our table, a computer on our desk and power for our house.

So where does all that water come from?

Water covers more than two-thirds of the earth's surface, but very little of it is fresh water. In fact, only about 0.3 percent of the world's water supply is available for human use. In the U.S. about 80 percent of that amount comes from streams and lakes, with the remainder taken from wells.

Most days, that small percentage of available water is more than enough to meet our needs. For example, the United States has over 400 billion gallons of usable water available every day. On the average day, we use less than 350 billion gallons.

But as many of us have experienced in recent years, that's not the whole story. In 2006, droughts



affected huge portions of the United States forcing restrictions on water use, damaging the environment and causing a severe economic impact.

Even in a good year, seasonal variations in rainfall can cause shortages in some areas of the country. Moreover, the western United States is consistently dryer than the east and faces constant water supply issues.

Careful management of the nation's water supply is critical to limiting water shortages and lessening the impact of droughts.

How do you use water?



In the typical household water is primarily used for:

Flushing the toilet	40 %
Baths and showers	32 %
Laundry	14 %
Dishwashing	6 %
Cooking and drinking	5 %
Bathroom sink	3 %

Value to Individuals and Communities

As one of the nation's largest water management agencies the U.S. Army Corps of Engineers plays an important role in ensuring that Americans have enough water to meet their needs.

The Corp helps supply water to homes, businesses, and farms nationwide. Corps personnel also work closely with states and local communities to lessen the effects of droughts.

Serving communities

One hundred thirty four of the Corps 400 multipurpose reservoir projects are used for water supply storage. Collectively these 134 projects are capable of providing more than 3 billion gallons of water per day for use by communities, industries and businesses. That is enough water to supply the average yearly household needs of about 55 million Americans.

Local water companies typically have primary responsibility for meeting community needs, but the Corps water supplies help augment local efforts, particularly in areas where shortages are common, such as Texas, Oklahoma and parts of the southeast. The Corps also is the primary supplier of water for the nation's capital.

Helping farmers

Eighty percent of the water consumed in the United States is used to irrigate crops, feed livestock and support other agricultural uses, which allow the United States to maintain its role as one of the world's leading suppliers of food.

The Corps plays a key role in this effort, by working with the Bureau of Reclamation to help provide

irrigation water to western farmers. These farmers care for 10 million acres of land, producing 60 percent of the nation's vegetables and 25 percent of its fruits and nuts. The Corps has about 56 million acre-feet of storage space in 48 western reservoirs available for irrigation and other uses.

Assisting in water supply emergencies

Corps personnel work closely with states and local communities to help lessen the impact of droughts and other disasters on water supplies. These efforts include:

Supplying additional water.

In many instances, the Corps can temporarily provide water from its reservoirs to help meet local needs during droughts. For example, during a 1999 drought in Maryland the Corps



released 3 billion gallons of water from one of its reservoirs to relieve water shortages for about 25 days. Had the drought escalated the reservoir could have provided up to another 3 billion gallons of water.

Value to the Economy



other state and federal facilities, has heightened its already stringent levels of security to ensure the safety of the water supply. Steps we have taken include:

- provided specialized training for all personnel at our water supply facilities;
- re-evaluated security requirements at each site and made any necessary changes;
- upgraded physical security precautions such as fences, gates and electronic monitoring systems; and
- coordinated security plans with local and national law enforcement agencies.

Providing emergency clean water.

In cases of a flood or hurricane, the Corps can provide a city with clean water to replace contaminated supplies.

Constructing emergency wells and water transport.

The Corps can construct emergency wells and transport water when necessary to help farmers, ranchers or communities that are being adversely affected by a drought.

Advising on resource use.

Corps personnel conduct research and provide advice and expertise to help local communities better utilize water resources and minimize the impact of droughts.



Securing water supplies

The tragic events of September 11, 2001, raised concerns about the security of the nation's water supply. In the wake of those events, the Corps, like



Foremost among these is the rapidly growing need for increased water supplies in certain parts of the country. In general, the country is using water more efficiently today than ever before, particularly in the agricultural industry. But the population of many U.S. cities is growing so fast that it is outstripping these efficiency gains, requiring communities to develop new water supply sources.



Meeting business needs of today

Water plays an integral role in the day-to-day operation of just about every business in the United States. A reliable water supply system is crucial to the effective functioning of the economy.

The Corps programs help ensure a steady flow of water to the nation's businesses. It is estimated that the water supplied by the Corps contributes nearly \$800 million to the economy each year.

The Corps drought assistance programs also help to limit the impact of water shortages on businesses, which can run into the billions of dollars during severe droughts such as those seen in 2002.

By providing advice and technical assistance to state and local governments, the Corps is helping communities and businesses use water resources more efficiently and cost-effectively. Our Hydrologic Engineering Center has developed state-of-the-art computer software to assist businesses and government agencies in conducting water supply analyses and developing water utilization plans.

Further complicating the problem is the fact that between 1990-2000 some of the greatest areas of growth were in the driest parts of the western U.S. including:

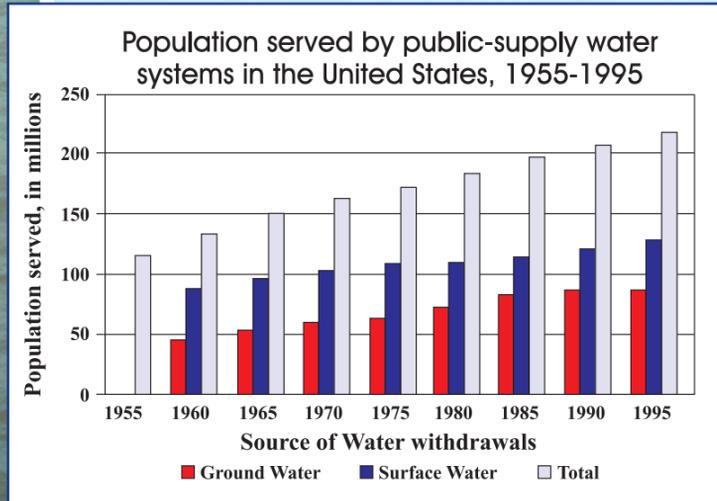
Nevada	.66 percent growth
Arizona	.40 percent
Colorado	.31 percent
Utah	.30 percent
Idaho	.29 percent

Addressing the challenges of tomorrow

The Corps also is working to address future challenges to the water supply system, which could have a substantial impact on the economy.



Value to the Environment



To address these concerns the Corps is exploring ways to increase the available supply of water for communities and businesses by:

- Modifying dams to provide more water storage space – recently accomplished at the Prado project in California and at the Howard Hanson, Washington, project;
- Converting storage space being used for other purposes to water supply storage – under study at locations to help solve the water needs of north Texas, Denver, Colorado, and a public utility serving the needs of a five-county area in Kentucky; and
- Making other changes that will maximize the amount of water supply storage space available at existing projects – this is being performed continually through modifications and fine-tuning of project water control manuals.

In addition, the Corps is working with state and federal water supply agencies and private companies to upgrade the nation's aging water infrastructure (*reservoirs, diversion structures, pipelines, etc.*). In many sections of the U.S. significant parts of the infrastructure are 50 to 100 years old.

Updating these facilities is expensive and requires careful study to minimize adverse environmental impacts. These updates, though, will have a number of positive benefits for both the environment and the economy including:

- increasing the efficiency of water supply systems;
- enhancing the quality and quantity of available water supplies;
- improving water conservation;
- achieving economies of scale by combining small systems into regional ones; and
- providing increased security against chemical and biological threats.

The Corps undertakes numerous water supply projects each year designed to protect and restore the environment. Many of these projects involve improving fish and wildlife habitats by reallocating water supplies or revising dam operating plans.

For instance, on rivers that experience periods of low natural water flow, the Corps can temporarily store water in its reservoirs and selectively release

it to increase flow, significantly improving habitats and enhancing overall water quality.

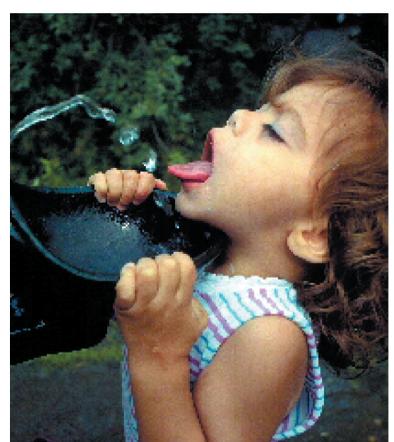
Environmental considerations are a top priority in all of the Corps water supply projects. We always carefully evaluate ways to minimize any negative environmental impacts and to enhance the environmental benefits of each of our projects.



Sharing the Challenge

Working together

The Corps works with a wide variety of federal agencies, including the Federal Emergency Management Agency, the U.S. Environmental Protection Agency, the U.S. Department of Agriculture and the U.S. Fish and Wildlife Service to ensure a reliable water supply and to address shortages when they arise.



We also provide advice and support to hundreds of state and local agencies, nonprofit organizations, businesses, farmers and ranchers each year to help them develop more effective methods for managing water resources.



Learning more

For detailed information on the Corps water supply program check out the Water Supply Handbook, a comprehensive electronic desktop reference guide available online at www.iwr.usace.army.mil/inside/products/pub/iwrreports/96ps4.pdf.

For general information about the Corps water supply programs, visit www.CorpsResults.us or www.iwr.usace.army.mil.

For general information about water supply issues, visit the American Water Works Association's web site at <http://awwa.org>.



Visit our Value to the Nation website: www.CorpsResults.us
©2008 Produced by the U.S. Army Engineer Institute for Water Resources.
To inquire about this brochure, please contact the IWR publications office at CEIWR.Publications@usace.army.mil.
For the sources of information used in this brochure, visit www.CorpsResults.us.

US Army Corps of Engineers®