

# Save Water



# Save Rivers

# Save Money



## The Potential of Municipal Water Conservation in Texas

In 2060, we could have almost twice the number of Texans we do now. If we're not careful, supplying water for those 45 million people could mean real trouble for our rivers, bays, and aquifers. With its new State Water Plan, the state is proposing a long list of high-dollar dams and pipelines, continuing to rely on the old "concrete and steel" approach to water development. But this approach means pumping more water from overtaxed aquifers and damming up more of our rivers to build reservoirs, depriving Texas bays of needed fresh water. Not only will the Plan's approach take a heavy toll on our wallets and our natural environment, but it misses the boat when it comes to tapping the true potential of municipal water conservation, which could provide an additional one million acre-feet – or around 326 billion gallons – of water a year. **Before we spend our hard-earned money and sacrifice Texas' precious natural heritage on building more dams, let's take a closer look at the potential and promise of municipal water conservation and how tapping this water supply will save water, save rivers, and save money.**

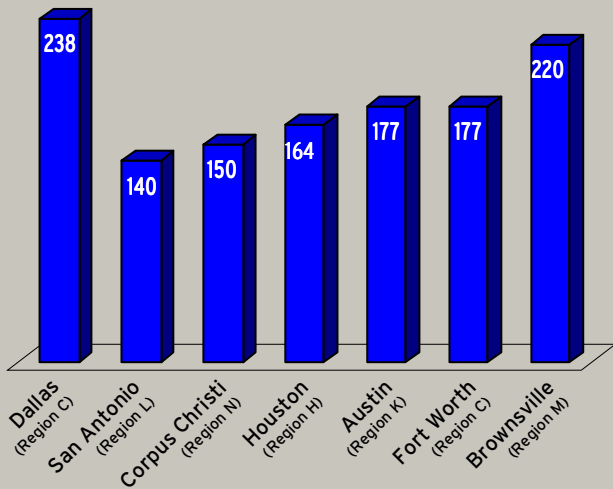


## Water Use Rates Vary Widely

As the chart below depicts, there is much disparity in per person rates of municipal water use – the water we put on lawns and use in our homes, schools, restaurants and other workplaces.

While some of this disparity is due to differences in precipitation rates or the number of water intensive businesses in a city, much is attributable to discretionary water use, such as filling decorative fountains and heavily watering thirsty St. Augustine lawns throughout the summer. But as San Antonio's success shows, the biggest factor affecting water use rates is the quality and implementation of a city's water conservation plan.

### Per Person Water Use in Seven Texas Cities\*



Source: Texas Water Development Board 2004 Water Use Survey

\* The amount of water leaving a city's treatment plants each day divided by the city's population: gallons per capita per day (gpcd)

## The San Antonio Success Story

Cities can help meet increasing water demands while postponing expensive and environmentally damaging water supply projects by ensuring wise water use. Just 25 years ago San Antonio had a municipal water use rate of 225 gallons per capita per day (gpcd). But a committed effort to reduce use has been tremendously successful – current water use is about 140 gpcd. That's a 1.5% per year reduction.

How did San Antonio do it? The city implemented a rigorous water conservation campaign. They have replaced half of the city's older water-guzzling toilets with more efficient models and offer rebates on efficient clothes washers, shower heads, and other items. Lawn watering is prohibited during the heat of the day and financial incentives encourage the use of native, drought-tolerant plants. The tiered rate structure charges heavy users more per gallon. Leaky supply pipes are replaced and the water utility helps businesses install more water efficient technology in restaurants, car washes, and cooling towers. For more on the ways they reduced use, see [www.saws.org](http://www.saws.org).

Although San Antonio's efforts have added up to big savings, they say there is more to do. In fact, they aim to get down to 124 gpcd by 2060.



## Saving Water Saves Money

Water conservation savings are quantifiable, reliable and cost-effective. For example, water efficient toilets have been shown to save 12 gallons a day per person. Low flow showerheads cost as little as \$15 and can save as much as 500 gallons a week for a family.

In Texas, water use often rises 50% during the summer due to increased lawn watering and other outdoor uses. But conservation measures can dramatically reduce that increase. For example, public education and watering limitations saved the North Texas Municipal Water District 200 million gallons a day in 2006.

Conservation generally costs far less than projects such as new reservoirs, pipelines and treatment plants. San Antonio reports that for every \$1 they spent on conservation, they avoided \$7 in new water supply costs. Now that is a promising return on investment.

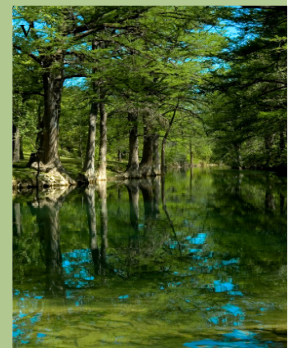


## Saving Water Saves Rivers

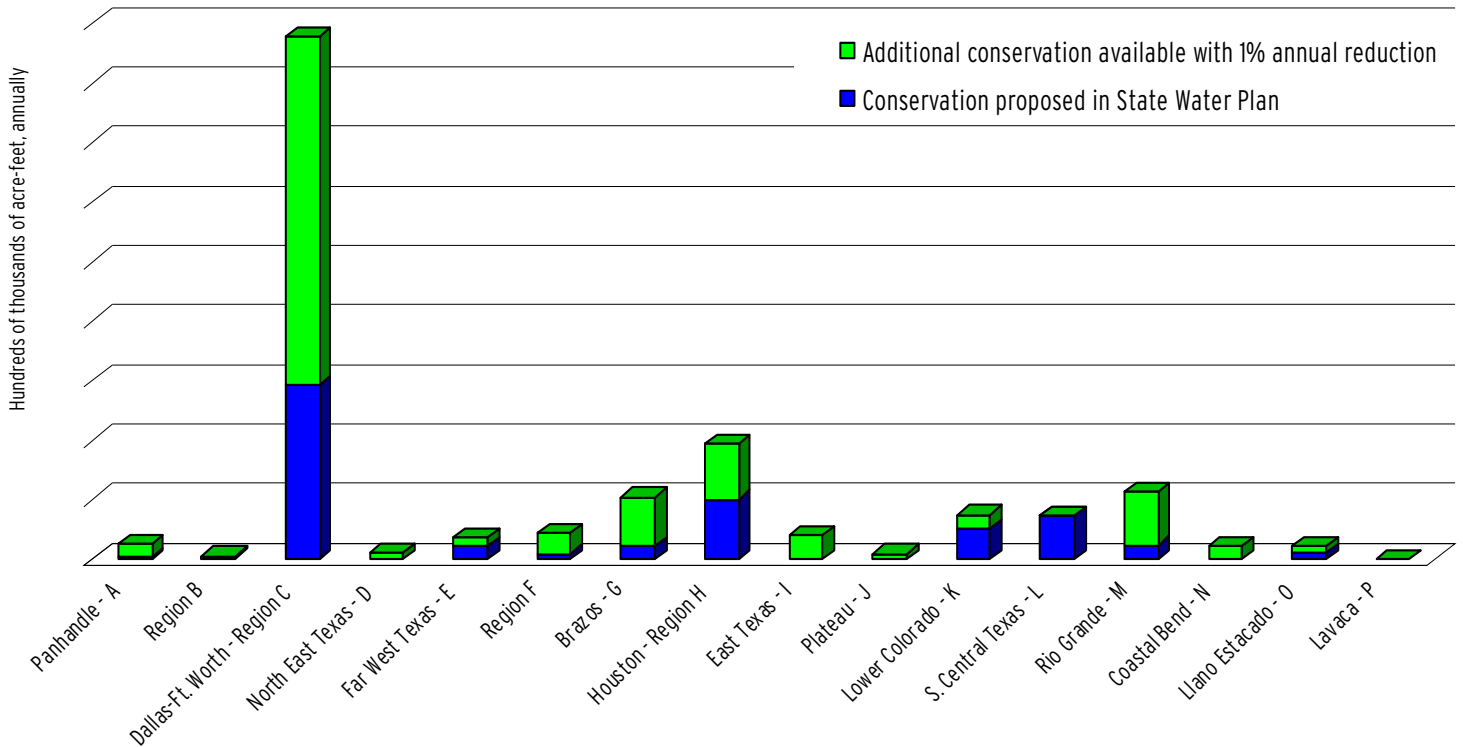
Reservoirs are not just an extremely expensive way to supply water, but they also take a toll on local economies and the natural environment.

For wildlife, dams are a losing proposition. The riverside habitat to be flooded is essential for many species. In addition, damming a river disrupts the natural variation in river flows below the dam. This harms native fish which rely on these flow patterns for cues to spawn. Dams also capture the higher flows that are vital to bottomland hardwood forests and other wetlands downstream which require periodic flooding.

From an economic perspective, the activities that once took place on the land inundated by a reservoir are lost. Additionally, the land now under water is removed from the tax rolls. In many cases, any increase in recreational economic activity does not make up for what was lost.

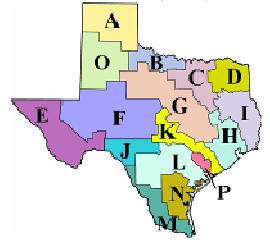


# The Potential of Municipal Water Conservation, by Region



The current State Water Plan proposes 613,000 acre-feet of municipal water conservation (one acre-foot is roughly 326,000 gallons). That's a start, but **the Plan overlooks an additional one million acre-feet of readily available municipal water conservation.** To achieve these savings, cities would need to reduce their current per-person water use by 1% each year until they reach a usage rate of 140 gallons per person per day. San Antonio's success shows this to be a very achievable guideline.

Water Planning Regions



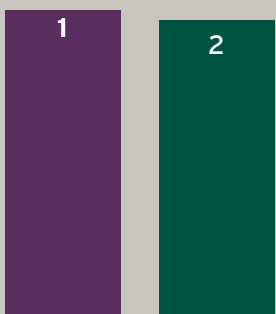
The State Water Plan **instead recommends building 16 new reservoirs**, which would cost at least five billion dollars, probably far more. **All these reservoirs combined would produce just over one million acre-feet of water per year – about the same amount that could be saved through municipal water conservation at a lower cost.**

## Using Water Efficiently Could Replace Destructive New Reservoirs

The State Water Plan projects that Texas cities will need 3.85 million acre-feet of new supplies by 2060. The Water Plan recommends 5.11 million acre-feet of new supplies – 1.26 million acre-feet of surplus. Much of this surplus would be from costly and damaging new reservoirs. However, additional water conservation measures could supply about the same amount of water for less money. While municipal water conservation likely will not eliminate every new reservoir in the State Water Plan, we owe it to our children and grandchildren to use the water we have efficiently before damming more of our rivers and flooding more of our forests.

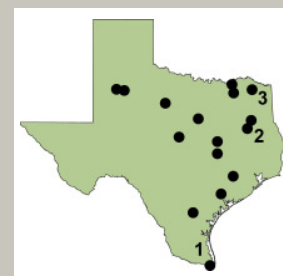
The planned oversupply and the inadequate emphasis on municipal water conservation in the State Water Plan illustrate why the recommendation to build 16 expensive, new reservoirs over the next fifty years, as shown on the map below, should be viewed with much skepticism.

The back page details three examples of destructive reservoirs, Brownsville Weir (#1), Fastrill (#2) and Marvin Nichols (#3), that could be avoided with better municipal water conservation.



- 1. New Reservoirs**  
1.07 million acre-feet – Amount supplied annually by all 16 proposed new reservoirs in State Water Plan
- 2. Additional Water Conservation**  
1.04 million acre-feet – Amount supplied annually by additional water conservation

*Figures are 2060 projections*





## Brownsville Weir – Unjustified Dam #1

\$89.6 Million

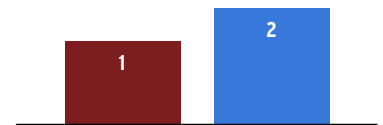
The Brownsville Weir is a dam proposed for the Rio Grande a few miles downstream of the International Gateway Bridge in Brownsville.

The dam would flood 600 acres of land. This would lower water quality and increase salinity downstream, harming fish and wildlife dependent on the river. The stretch of river to be flooded was recommended for long-term protection by the Texas Parks and Wildlife Department.

The Rio Grande is already a severely altered system. While some early explorers called the river the

Río Caudaloso (“carrying much water”), in some recent years water levels were so lowered by a combination of pumping and drought that the river failed to reach the Gulf of Mexico.

The Brownsville Weir would yield roughly 20,700 acre-feet a year, which would go to the City of Brownsville. However, if Brownsville followed the 1% conservation guideline, the city could save 40% more water than the reservoir would provide – 28,900 acre-feet every year by 2060.



1. 20,700 Brownsville Weir annual yield
2. 28,900 Additional conservation potential with 1% annual reduction to 140 gpcd

Figures are 2060 projections in acre-feet

## Fastrill – Unjustified Dam #2

\$569 Million

Over the past two hundred years, over three-quarters of East Texas' bottomland forests have been destroyed. These wooded wetlands, nurtured by the regular ebb and flow of a free-flowing river, are the most biologically diverse ecosystem type in the state.

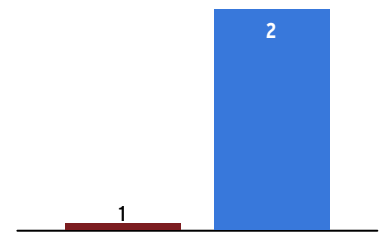
The area along the Neches River southeast of Tyler has some of the highest-quality bottomland hardwood forests that remain in Texas. In 2006, after years of study and with overwhelming local support, the U. S. Fish and Wildlife Service designated this area as a National Wildlife Refuge.

Dallas is suing the Fish and Wildlife Service over this decision because the city wants to dam the river

and permanently flood the forest to provide water for Dallas and its growing suburbs.

There is a cheaper and less destructive way for Dallas to have the water it needs to grow, without flooding the unique wildlife habitat on the Neches.

The State Water Plan recommendations would produce a large surplus of supply, meaning that only a small fraction of the water from Fastrill – 6,500 acre-feet – would be needed by 2060. Additional conservation could save far more – 224,700 acre-feet annually, allowing Fastrill to be avoided and even providing a cushion in case some other recommendations aren't pursued.



1. 6,500 Portion of Fastrill needed to meet Dallas Water Utility municipal demands - if all other DWU supply recommendations in State Water Plan were implemented
2. 224,700 Additional conservation potential with 1% annual reduction to 140 gpcd

Figures are 2060 projections in acre-feet

## Marvin Nichols – Unjustified Dam #3

\$2.2 Billion

The controversial Marvin Nichols dam is the largest reservoir proposed in the State Water Plan and one of the most environmentally destructive. The reservoir would flood roughly 72,000 acres, including 30,000 acres of bottomland hardwood forests, along the Sulphur River in Northeast Texas in Region D.

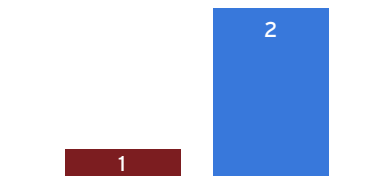
Most of the water from the reservoir would be piped 170 miles to three water providers in the North Texas/Dallas-Fort Worth area (Region C). These water providers have some of the highest per-person municipal use rates in the state.

There is strong opposition to the project and the Northeast Texas (Region D) water plan recommends

against building the dam because of its negative environmental and economic impacts.

The North Texas area can have the water it needs without building this massive and damaging reservoir.

The State Water Plan recommendations would produce a large surplus of supply, meaning that only a small fraction of the water from Marvin Nichols – 46,000 acre-feet – would be needed by 2060. Additional conservation could save far more – 278,700 acre-feet annually – allowing Marvin Nichols to be avoided and even providing the potential to avoid other expensive and damaging reservoirs.



1. 46,000 Portion of Marvin Nichols needed to meet N. Texas municipal demands - if all other supply recommendations for those utilities in Water Plan implemented
2. 278,700 Additional conservation potential with 1% annual reduction to 140 gpcd

Figures are 2060 projections in acre-feet

### Water for the Future of Texas

As we consider how to secure water supplies for the future, we cannot afford to overlook the additional one million acre-feet of water per year that could be made available from improved municipal water conservation. With conservation, we can supply water for an increasing population and economic growth while preserving Texas' unique natural heritage for future generations.

The information presented here is based on detailed calculations in *The Potential and Promise of Municipal Water Efficiency Savings in Texas*, December 2006, by Norman Johns, PhD, of the National Wildlife Federation. For the full report, go to [www.texaswatermatters.org](http://www.texaswatermatters.org)

For more information about tapping the potential of water conservation in Texas, contact Jennifer Ellis at [ellis@nwf.org](mailto:ellis@nwf.org) or 512-476-9805.