Water for Texas 2012: You and the State Water Plan

December 3, 2012
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With the effects of last year's drought still lingering throughout much of Texas, water is the issue that would be expected to dominate the 2013 Legislature. But will it?

In the meantime, by increasing our water awareness we can make better choices about the ways we use water as lawmakers consider water needs amongst other competing legislative priorities.

This first of a four-part series begins with the state of our present and future water needs as they are spelled out in the state water plan. In part two, learn what it will cost to implement the plan.

Part three concentrates on the need for Texas as a whole to conserve water in the future while the conclusion to the series presents what you specifically can do to conserve this resource to meet your needs today.

No matter what happens next year in Austin, the cost of investment in water is expected to be significant—huge and the time required to develop "new" water will generally be long—many years. In the near term, there are options to make better use of the water that is available now.

Tipping that scale in your favor, through your action, can lead to your water independence.

Part One-Drought Highlights State Water Plan

The unexpected recent severe drought may have led to an increase of public awareness today, but when considering the years ahead of us, we all must recognize that water will become an even more scarce resource as population swells.

If you think this drought is over, think again. In the most recent climate assessment by the Texas State Climatologist, Dr. John Neilsen-Gammon states: "What was the worst one-year drought on record for Texas has lasted for two years so far."

Should this drought persist, the newest version of Texas's State Water Plan, published by the Texas Water Development Board (TWDB), clearly states the seriousness of what the future may hold.

The primary message of the 2012 State Water Plan is a simple one: "In serious drought conditions, Texas does not and will not have enough water to meet the needs of its people, its businesses, and its agricultural enterprises."

This is because Texas water planning requires applying a "worst case scenario"—the effect of a drought of record on existing water supplies—water that is both legally and physically available.

By definition, the Texas drought of record is generally considered to have occurred from about 1950 to 1957. However, far worse droughts throughout several thousand years of history have been documented in recent tree ring studies.

Fortunately, a number of Texas leaders have realized our lives and livelihood—our economic future, is directly linked to how well we meet our water needs both today and tomorrow. Particularly noteworthy is a repeated call for a "Manhattan-project type water program."

According to the U.S. Congressional Research Service, the cost to develop a wartime nuclear weapon capability—The Manhattan Project, over five fiscal years, adjusted to 2008 dollars, was $22 billion.
To put this in perspective, consider that the estimated capital cost to implement the recommended water management strategies in the 2012 State Water Plan is $53 billion. This represents the cost of the infrastructure that would, or could, treat and move water to an end user.

It is only part of the $231 billion that would be needed to pay for all water related requirements such as the replacement of aging water systems infrastructure, wastewater treatment, and flood control for the next 50 years.

Indeed, it could be said Texas has already initiated its own version of The Manhattan Project.

Of the $53 billion, water providers estimate that $27 billion will be needed in government financial assistance. Of this figure, approximately $16 billion is essentially needed now—from the years 2010-2020.

This leaves roughly $26 billion to be funded from sources elsewhere. That logically would leave either the rate payers or the water industry itself to foot the bill. The alternative is legislative action and something few want to hear—new taxes or new fees to pay for water.

The plan identified 562 "potentially feasible" water management strategies. The completion of each of these strategies is subject to political will and many may never actually be completed.

If you're wondering about how to track the progress on these strategies, the TWDB currently lacks a formal mechanism to do so. Beginning with the 2016 Regional Water Plans, progress reports will be required and will be included in the 2017 State Water Plan.

Obviously we are not talking about funding for projects to counter the threat of an armed enemy, but we are contemplating investment that could be considered a threat and certainly an enemy—debt.

How much are we willing to pay for the water of tomorrow? The answer clearly impacts our future economic viability and the 2012 State Water Plan illustrates what it will cost should we try to continue to build ourselves out of our water problems.

Part Two-The Cost of Water

In the September 2012 report "Your Money and Local Debt", the Texas Comptroller of Public Accounts, Susan Combs, recorded the per capita debt in 2011—the amount of public debt owed by each man, woman and child in Texas.

The state share is $1,577.00, another $7,507.00 is owed to pay for the daily operations and to service the existing debt of local government. The federal portion is $47,383.00.

If you're still counting, the total per capita debt for local, state and federal government is currently just over $56,000.00.

Though the total state debt exceeds $40 billion, the debt of local government is far greater—$192.7 billion. Interestingly, less than $3 billion of state dollars are owed to fund water infrastructure projects.

On the local level, water districts and authorities, which provide water and services such as conservation, flood control of wastewater treatment account for $30.3 billion of what is owed.

Water is generally expected flow downhill, but it can be made to flow the other way—if you can afford to pay for it and as history shows, it won't get any cheaper.

The estimated cost to implement major supply water projects in the 1997 State Water Plan through the year 2050 was $4.7 billion. The 2002 plan estimated that $17.9 would be required and by the time the 2007 plan was published this cost had risen to $31 billion.

With this reality in mind, and the current state of local, state and national economies, consider this assessment by Sir Winston Churchill as the leaders of England struggled to pay for the defense of their country in WWII: "Gentlemen we have run out of money. Now we must begin to think."

One such thought is desalination. Freshwater could certainly come from brackish groundwater. It is a source that could ultimately provide up 2 percent of future water supplies in Texas.

However, the cost of building one such facility for San Antonio Water System (SAWS) is $145 million. By 2016, up to 10 million gallons a day is expected to be produced.

As reported by the San Antonio Express News, when the cost of the water treatment and the energy required to pump it up hill to San Antonio are factored in, this water is about five times more expensive than the water that is pumped from the Edwards Aquifer.

Full scale desalination of seawater is described in several approved strategies in the 2012 State Water Plan. Ultimately this strategy could add up to another one percent of new water supply.

One of these projects is the Region L San Antonio Water System Seawater Desalination Project. If funded it could bring significant quantities of freshwater from a seemingly unlimited source—the Gulf of Mexico.

The entire system of intake, filters, pumps, tanks and 126 miles of pipeline to move the freshwater from Seadrift to San Antonio is estimated to cost nearly $1 billion—the capital investment cost in 2008 dollars exceeds $873 million. The estimated start-up decade is 2060.

Though the investment in brackish or seawater may sound prudent, the real promise is realistically decades away—if research can cut the cost that will be required to produce about a three percent gain in new water supplies from desalinated water.

This is made clear on the website of Sandia National Laboratories where discussion with the U.S. Department of the Interior and Bureau of Reclamation concludes that desalination is not a silver bullet, remarking that the cost to build and operate desalination current technologies is its Achilles Heel.

Alternatives to expensive, long term, large scale water projects abound. First and foremost is water conservation, a strategy that is misunderstood and underutilized, but one that may provide immediate relief until other water management strategies can be implemented.

Part Three-Water Conservation for Today

The 2012 State Water Plan proposes a number of expensive, long term, large scale water projects. However, we do have other alternatives to fill the existing shortfalls that can be deployed right now. The highest return on any investment in water is literally under our feet—our land.

Open spaces can be valued not only for aesthetics but for their contribution to the water supply as they enhance both water quality and quantity locally as well as many miles away. Good land stewardship means good water whether it is on the surface or under the ground.

Citizens can support landowners in their efforts by purchasing conservation easements as San Antonio has done. The taxpayer approved, sales tax funded, Edwards Aquifer Protection Program has invested $135 million to preserve 97,000 acres in the Edwards Aquifer recharge zone.

Improving the quantity and quality of this recharge in turn reduces the demand on non-Edwards sources—the most common approach used by SAWS to meet the present and future needs of San Antonio.

This is particularly true when one of those sources is the Trinity Aquifer—the primary source of water for much of the Hill Country.

This aquifer is part of an inter-connected system of aquifers described by the United States Geological Survey (USGS) as the Edwards Aquifer, the Trinity Aquifer and the Edwards-Trinity Aquifer (also known as the Plateau Aquifer).

Lacking access to tax dollars, a number of land trusts seek to encourage land owners in the Hill Country to protect their property from being developed by offering federal tax savings. To date The Cibolo Land Trust has arranged for 20,000 acres in Kendall County to be saved from development for perpetuity.

These efforts go far to keep the seeps and springs of Bandera, Kerr, Kendall, Comal, Blanco and Hays counties flowing—the sources of the Medina, Guadalupe and Blanco Rivers or Cypress and Cibolo Creeks, waters that are the source of the character of the Hill Country everyone so greatly appreciates.

In turn, this also improves the quality and quantity of the water that recharges the Edwards Aquifer through locations in and around Bexar County.

A review of the recently published Edwards Aquifer Habitat Conservation Plan describes the relationship between the Edwards and Trinity Aquifers very well. It notes that losing streams in the Edwards Aquifer contributing zone, an area which is actually above the Trinity Aquifer, have a greater connection to the Edwards Aquifer than previously thought.

Dye tracer studies conducted in north Bexar County show the connection between the two aquifers is “prolific”. Furthermore, though most recharge to the Edwards Aquifer comes directly from rainfall, a significant quantity of groundwater can be traced to inter-formational flow from the Trinity Aquifer.

To avoid taking a financial sledgehammer to drive in a proverbial nail, the cheapest and quickest way to have more water available is simply to conserve it. State water planners are counting on us, literally counting by the gallon, to conserve more water in the future.

Crucial to meaningful conservation is the ability to measure it accurately. The gallon per capita per day is the common metric used by municipalities to measure how much water each person may use each day. However, due to a variety of factors, this metric has proven to be unreliable.

Similar problems exist in trying to apply this population based metric in measuring water conservation in other such sectors such as agriculture or industry.

In enacting SB 181, by early 2013, the Legislature has directed the Texas Commission on Environmental Quality (TCEQ) and TWDB to develop the methodology, guidance and required programs or programs that will be needed to accurately measure the use of water throughout all sectors. By 2015, TWDB is to provide the first report based on these activities.

By 2060, the State Water Plan forecasts that 24 percent of all the water that will be required to meet anticipated demand is planned to come from the conservation measures. Municipal users account for about 7 percent of this number and the conservation of water used for irrigation purposes represents the rest.

Keep in mind that the restricted use of water during drought is not water conservation. It is a temporary response to a temporary condition. Meaningful water conservation is to reduce water demand to increase the water supply and begins by changing the way we use water today both in cities and on the farm.

At the time of this writing, TCEQ reported more than 1,000 out of the more than 4,600 community water systems were operating with some form of restricted water use.

Changing our water habits permanently can provide more water for the future, conceivably delaying the restrictions many see today. Again, the time to act is before, not during, a drought.

In doing so, we may see a reprieve, not necessarily a solution, to our future water needs. Therefore, the temptation to trade conserved water for less investment in future water supplies is neither prudent nor practical.

In the meantime, a water conservation strategy based on a call to reduce demand, increase supply and change the culture makes sense.

Part Four- Your Water Conservation Benefits You First

In contrast to the weather, a subject that everyone talks about, but does nothing about, water conservation at home can make a significant difference in improving our water situation today.

Many know how to save water indoors—fixing leaks, installing low water demand fixtures and appliances or taking shorter showers. But what else can be done?

The TWDB estimates that 40 percent of all municipal water use is outdoors. Of that, half is lost to runoff from the excessive watering of lawns. This is drinking water that is simply wasted.

Clearly this means that significant quantities of water could be conserved by reducing the amount of water that is used to keep grass green not only during the summer, but during the entire growing season. This is not to say that turf grass is the only culprit in water waste, but landscapes in general are known to be a major contributor.

Landscapes that have been appropriately designed for the local climate, with native and adapted plants, maintained with an organic program based on compost instead of synthetic fertilizers typically do well in times of low rainfall.

Perhaps more importantly for the homeowner, to protect this investment, these landscapes have significantly better chances of survival when drought restrictions are imposed over those with high water needs.

Xeriscape principles can be applied not only to cut outdoor water use, but to save on maintenance cost. According to the U.S. Environmental Protection Agency: "Based on site conditions, xeriscaping can reduce landscape maintenance requirements by up to 50 percent and reduce watering requirements by up to 60%.

To quantify these savings begin with a look at your water bill if you currently have a yard that requires a lot of water, especially in the summer.

Then calculate what you spend on not only synthetic fertilizers, but also those that combine herbicides—weed and feed products. Add in the cost to operate and maintain lawn mowing equipment plus your time over the space of a year and the potential savings are significant.

Much of our outdoor needs can be met through the capture, storage and use of gray water—water that was used for bathing or captured from a sink after washing. The most overlooked source comes from washing clothes. The storage and use of this water in the home landscape is approved by law through the Texas Administrative Code—up to 400 gallons without a permit.

The most significant potential source of water for the vegetable garden or landscape falls from the sky and is mostly lost as runoff. Rainwater can be captured for storage at a rate of approximately 650 gallons per inch of rain that falls on every 1,000 square feet of roof.

With additional readily available filtration and sanitation equipment, this water can become drinking water quality for home use as it is in many areas of the state today.

Concerned it may not rain enough to catch enough? The statewide average is 28.4 inches. In an average year, Beaumont receives 52 inches, San Antonio 32 inches and El Paso 12.

According to the National Climatic Data Center, though the year 2011 was the driest on record, the average total rainfall across Texas was 14.88 inches, beating the previous record low of 14.99 inches established in 1917.

Even in drought years it does rain, all you need is enough capture area and storage capacity to meet your estimated demands in between rain events.

Thinking about the sources of water and the use of it at the lowest possible level gets to the root of how to reduce our water shortfall—you and I taking personal responsibility today.

In the balance is both a huge investment in cost coupled with the long time span typically required to develop "new" water or the choice to make better use of the water that is available for the taking now.

Tipping that scale in your favor, through your action, can lead to your water independence.

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