RESPONSE

Comment on *Western Growth and Sustainable Water Use: If There Are No "Natural Limits," Should We Worry About Water Supplies?*

by Benjamin H. Grumbles

I. Introduction

Too often Americans take for granted a system that provides clean, safe, and inexpensive water: from the drinking water that comes out of our taps, to the water that helps us flush our toilets, to our local watersheds where we live, work, and play. Americans also tend to forget the connection between land use and water, particularly when growth drives the agenda. But what happens when the well runs dry? People suddenly will pay greater attention to their usage and will think about reductions, restrictions, and bans.

Dan Tarlock and Sarah Bates examine the question of what limits on sustainable growth are posed by the climate and landscapes of the American West in their article, *Western Growth and Sustainable Water Use: If There Are No "Natural Limits," Should We Worry About Water Supplies?*[1] The authors articulate the struggles that water managers will face to meet increasing demands. How can we handle the current growth? Many agencies have changed their focus, and we all need to change how we view, value, and manage water.

II. The True Value and Full Cost of Water

For generations, Americans have enjoyed the benefit of a system that provides clean and inexpensive water. The public at large has long taken it for granted, and as a result, the value of water and our water infrastructure has diminished. For its part, the U.S. Environmental Protection Agency (EPA) is increasing the public awareness of the value of water to help people realize that investments in water infrastructure are investments in their communities, and that customer rates must reflect that value.

Promoting full-cost pricing has been a major EPA priority for the last several years. When measured as a percentage of household income, the United States pays less for water bills than other developed countries. The public believes water is readily available and cheap. There is a need to fundamentally shift thinking in this area to meet essential infrastructure needs. Pricing water in a way that recovers the costs of building, operating, and maintaining a system is essential to achieving sustainability. Drinking water and wastewater utilities must be able to price water to reflect the full costs of treatment and delivery.

A century ago, the average American used only about 10 gallons of water per day (gpd). Today, Americans use 100 gpd.[2] Ultimately, prices signal value to consumers, and it is important for prices to reflect the increasing scarcity of water. Part of this value includes the increasing financial obligation needed to maintain our water infrastructure.

III. Reducing Water Waste and Inefficiency

EPA believes the Three Rs—Reducing, Reusing, and Restoring—are the key to water sustainability. Reducing waste is not just about pollution prevention; it is also about cutting water waste and inefficiency. Improving water efficiency is an effective way for communities to manage their supplies. With less water moving through the system, utility operating costs will decrease because of reductions in costs for treatment chemicals, residuals disposal, and energy associated with water collection, treatment, and distribution. Fostering a national ethic of water efficiency is important, particularly in the arid Southwest so that water is valued as a limited resource that should be used wisely.

In June 2006, in San Antonio, Texas, EPA announced WaterSense, a new national program to help people make smart water choices that save money and maintain high environmental standards. The WaterSense program reduces water use by creating an easy-to-identify label for water-efficient products. WaterSense products use 20% less water and perform as well as—or better than—conventional models. To earn the WaterSense label, products must be independently tested and certified to meet EPA's criteria for efficiency and performance.

Public awareness of the WaterSense label is growing every day. More than 125 models of high-efficiency toilets and 30 bathroom faucets and faucet accessories have earned the label, and almost 600 manufacturers, retailers, utilities, and professionals have joined the program as partners. EPA is working with its partners and the media to educate consumers on the benefits of switching to water-efficient products.

For example, toilets account for about 30% of the water used in the home. By replacing an older toilet with a WaterSense model, a family of four could reduce total water use by about 16%. If every home replaced one old toilet with a WaterSense High-Efficiency Toilet, the water savings would be enough to supply nearly 10 million U.S. households with water for a year.[3] These benefits could materialize in Santa Fe, New Mexico, mentioned by Tarlock and Bates as a city that in 2003 began requiring all new city projects to offset a project's water budget by retrofitting existing toilets with high- efficiency models.

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1. A. Dan Tarlock & Sarah Bates, *Western Growth and Sustainable Water Use: If There Are No "Natural Limits," Should We Worry About Water Supplies?*, 38 ELR (Envtl. L. & Pol'y Ann. Rev.) 10582 (Aug. 2008) (a longer version of this article was originally published at 27 Pub. Land & Resources L. Rev. 33 (2006)).
2. *See* Wayne B. Solley et al., U.S. Geological Survey Circular1200, Estimated Use of Water in the United States in 1995, at 24 (1998), *available at* http://water.usgs.gov/watuse/pdf1995/pdf/circular1200.pdf.
3. *See* Benjamin Grumbles, Ass't Administrator for Water, U.S. EPA, Growing With the Flow: Water and Sustainable Development, Speech before the Texas Water Development Board Water Summit 4 (Dec. 3, 2007), *available at* http://www.epa.gov/ow/speeches/2007-12-03bg.pdf; *see also* Testimony of Benjamin Grumbles, Ass't Administrator for Water, U.S. EPA, before the Subcomm. on Water Resources and Env't of the H. Comm. on Transportation and Infrastructure 3 (Nov. 8, 2007).

And while the WaterSense program focuses on more efficient water use by end users, EPA also is working to identify effective leak detection strategies that public water systems can use to minimize leakage in the distribution systems. Water efficiency strategies incorporating water-saving technology can be implemented and still deliver an unchanged or improved level of service to consumers. Acceptable industry standards for water loss are on the order of 15 to 20%. However, in many utilities, water loss through deteriorated distribution pipes can exceed 60%.

IV. Reusing Water

Continued growth and demand for water will likely lead to an increased dependency upon water reuse. Areas with limited water resources such as the arid Southwest already have well-established water reclamation and reuse programs. The authors mention Arizona's move from a reliance on groundwater to obtaining supplies from the Central Arizona Project and recycled water. There are also California's Title 22 standards, which have stood the test of time and serve as the basis for a number of the state's other requirements. Under the requirements set by Title 22, over 525,000 acre-feet per year (nearly 470 million gpd) of water were recycled annually in California in 2003, with nearly 46% of recycled water used for agricultural irrigation.[4] The current goal set by state legislation is for this amount to increase to 1 million acre-feet per year (over 890 million gpd) by the year 2010.[5]

The popularity of reuse has grown in other areas such as Florida, which now has over 1.2 billion gpd of total reuse capacity and over 630 million gpd of reclaimed water actually being reused, with 50% of that used for landscape irrigation in public access areas, such as residences, golf courses, parks, and school grounds. The WateReuse Association estimated the amount of water reused in the United States in 2004 to be about 2.6 billion gpd and projected this amount will increase to about 12 billion gpd by 2015.[6] As demands on existing water supplies increase, more communities will become interested in making greater reuse of reclaimed water.

V. Restoring Watersheds

In some respects, the third "R," restoring watersheds, is the most important because it centers on upstream pollution prevention. Aquatic ecosystem restoration was also a central recommendation by the 1998 Western Water Policy Review Advisory Commission.[7] The authors note the increased involvement of local authorities in decisions that were once made mostly at the federal level.[8] Along those lines, EPA is integrating watershed-based approaches into decisionmaking at the local level so communities can make the most informed and cost-effective infrastructure decisions to help ensure the overall health of the watershed. Watershed-based approaches, such as source water protection, water quality trading, and watershed permitting, help reduce overall infrastructure costs and connect the many different actions within a watershed or sewershed: whether above-ground or underground, upstream or downstream.

EPA is also putting technology and innovation to work in a stormwater permitting program. The vision is to work with communities, companies, and citizens to view stormwater as a water resource, not simply a waste product. Beneficial reuse of stormwater, whether on a watershed scale or through individual rain gardens and rain barrels, helps conserve our water resources.

VI. Smart Growth and Green Infrastructure Strategies

Tarlock and Bates discuss smart growth management techniques, albeit not in the most flattering light. Growth and development clearly have important linkages to water resources, and development may actually be more advantageous than the authors give it credit. Depending on where it occurs and how it is designed, development can either result in more runoff and increased pollution to our rivers, lakes, and estuaries or it can be protective of these resources. Development can either destroy sources of clean drinking water or preserve them, and it can either create the need for expensive new water infrastructure, or use existing capacity and generate reinvestment in aging infrastructure.

If implemented properly, smart growth techniques—using land more efficiently, reinvesting in existing communities, and cutting-edge site design—make it easier to maintain healthy water quality. For example, every acre of redeveloped brownfields translates to the perseveration of nearly five acres of green fields. Smart growth plans that leave natural ground covering intact can achieve similar results; a natural meadow absorbs 16 times the amount of stormwater that would run off of a same-size parking lot. Taking advantage of these opportunities is crucial, as runoff from developed areas is a leading source of impaired water quality in our streams, lakes, and estuaries.

This is one reason EPA released a comprehensive plan in January 2008, to reduce stormwater runoff and sewer overflows. The Green Infrastructure Strategy[9] promotes approaches, such as green roofs, trees and tree boxes, rain gardens, and porous pavements, and it explains how states, municipalities, permitting authorities, and nongovernmental organizations (NGOs) can use these and other low impact development (LID) practices to meet water quality goals while sustaining their infrastructure. EPA also published a report in December 2007, titled *Reducing Stormwater Costs Through Low Impact Development (LID) Strategies and Practices*.[10] The report contains 17 case studies showing the economic viability of LID practices. Some common LID

4. Cal. Dep't of Water Resources, Water Recycling, Water Facts, Oct. 2004, at 1, *available at* http://www.owue.water.ca.gov/recycle/docs/WaterFact23.pdf.

5. *Id.* at 2.

6. *See* Testimony of Richard Atwater, CEO, Inland Empire Utilities Ass'n, before the Subcomm. on Water and Power of the H. Comm. on Resources 7 (Sept. 9, 2004), *available at* http://www.watereuse.org/pdf/testimony090904.pdf (Atwater testified on behalf of the WateReuse Association); *see also* Wade Miller, Dir., WateReuse, Keynote Address at Arizona WateReuse 2007: National Perspective on Water Reuse (July 30, 2007).

7. Western Water Policy Review Advisory Comm'n, Water in the West: Challenge for the Next Century xiv (1998).

8. *Id.* ch. 2, at 38-40.

9. U.S. EPA, Managing Wet Weather With Green Infrastructure: Action Strategy 2008 (2008), *available at* http://www.epa.gov/npdes/pubs/gi_action_strategy.pdf.

10. U.S. EPA, Reducing Stormwater Costs Through Low Impact Development (LID) Strategies and Practices (2007) (EPA 841-F-07-006), *available at* http://www.epa.gov/owow/nps/lid/costs07/documents/reducingstormwatercosts.pdf.

practices include rain gardens, grassed swales, cisterns, rain barrels, permeable pavements, and green roofs.

VII. Climate Change

In many ways, water is at the center of the climate change debate. Climate change may have impacts on water infrastructure and watersheds that will affect our actions under the Clean Water Act (CWA), Safe Drinking Water Act, and various ocean and coastal laws.

Tarlock and Bates mention climate change as an additional force to be reckoned with, particularly in the West. Innovative solutions will be critical to meeting this challenge, including technologies and practices to mitigate greenhouse gas (GHG) emissions. For example, EPA is investigating carbon capture and storage (CCS), a process that involves capturing carbon dioxide from power plants and other industrial sources and injecting it into deep, subsurface geologic formations for long-term storage. CCS is one of several innovative technologies that could significantly reduce GHG emissions to the atmosphere.

Additional research and adaptation of all levels of authorities are the other major components of a climate change strategy. How will state, tribal, and local agencies adjust their programs and policies to respond to changes in temperature, precipitation, and storm intensity? How will CWA permits and standards change for arid areas? What research and modeling will allow communities to move toward drought-proof and climate-ready status? Federal agencies must continue to work closely with the Western Governors Association and other partners to advance sustainable water management and land use.

VIII. Conclusion

The Three-R focus—reducing water waste and inefficiency, reusing water, and restoring watersheds, is an integral component in planning for development and growth throughout the West. The article emphasizes the need for collaboration across all levels of government, and EPA will continue working collaboratively across all levels of government: NGOs, associations, and the private sector. Working with local public officials and utility managers to identify strategies for reducing water loss from systems is another way EPA intends to confront the issue of growing western communities facing scarce water supplies.

Tarlock and Bates describe similar actions and the need for connecting land use with water sustainability throughout the West. Whether or not this linkage is ultimately achieved, communities should strive to "grow with the flow" and not simply go with the flow in a haphazard manner. While growth caps, bans, and service denials are on the rise, the real wave of the future is proactive smart growth policies that embrace water efficiency and confront the uncertainties and realities of climate change.