ISLAND PRESS

FOR IMMEDIATE RELEASE

CONTACT Jaime Jennings, 202-232-7933x44
EMAIL jjennings@islandpress.org
WEBSITE www.islandpress.org/unquenchable

QUESTION AND ANSWER

Unquenchable: America's Water Crisis and What to Do About It by Robert Glennon

Q You talk about America's water crisis, but most Americans are not aware of it. Why is that?

A We Americans are spoiled. Turn on the tap and out comes a limitless quantity of high-quality water for less money than we pay for cell phone service or cable television. Water utilities have done such a fine job in providing water that the crisis has been masked. We think of water as we think of air: limitless and inexhaustible. In fact, water is both finite and exhaustible.

Q But is the crisis real?

A You bet it is. Consider these events that have occurred in the last two years:

- Lake Lanier, the water supply for Atlanta, a metropolitan area of 4.5 million people, came within 90 days of going dry.
- In the summer of 2009, California is facing mandatory water rationing. Many farmers may be entirely cut off, costing the economy more than $1 billion and putting more than 50,000 people out of work.
- In South Carolina, a paper company, Bowater, was forced to shut its doors and lay off hundreds of workers when low flows in the river prevented the company from discharging its wastewater.
- In Georgia, Idaho, Montana, and Arizona, regulators denied permits for new coal-fired and nuclear power plants because there was not enough water to run them.
- In Riverside County, California, more than a dozen proposed commercial and residential developments were halted, due to a lack of water.
- Lake Superior, the earth's largest freshwater body, was too shallow to float fully-loaded cargo ships.
- Decimated salmon runs prompted cancellation of the commercial fishing season off the coast of California and Oregon.
- Excessive groundwater pumping has caused sinkholes, earth fissures, and subsidence in geographic regions that range from California to Florida.

- Plummeting groundwater tables along coastal areas have caused saltwater to intrude into the fresh water aquifers, contaminating the aquifers and rendering them unusable.

Q But aren't some of these problems due to temporary droughts?

A That's a great question, and that is the answer some people would like us to believe. But hydrologists have demonstrated that Georgia and California, for example, have suffered similarly low levels of precipitation in times past, without the current economic and environmental problems. The stark reality is that growth has outstripped the available water supply. The population of the United States increased to 300 million a couple of years ago and the U.S. Census Bureau predicts that we will reach 420 million by mid-century.

Q Is this an environmental crisis?

A In part, but it's also an economic crisis. Water lubricates the American economy just as oil does. We may fret about the sources for our future oil needs, but we need also to think about securing water for high-value uses, such as Google and Intel. A vibrant American economy depends on an adequate supply of water for high-value uses. We still have water available, but, like a gambler at the craps table, we're rapidly depleting our resources.

Q Google and Intel? These are not the companies that most Americans would associate with a need for water.

A That's true, but they're wrong. Water plays a critical part in Intel's manufacturing of semiconductors—the core of the computer age. And while Intel has done a terrific job in reducing its own water use, new fabrication facilities require large volumes of water. In deciding whether to locate manufacturing plants in the United States—or in China or Ireland—water is a key input in Intel's decision-making.

Q Okay, so I understand the Intel connection, but Google?

A When most of us think about Google, we think about its Mountain View Valley campus with algorithms producing the secret formula for www.google.com. But the algorithm is merely a mathematical equation. It has to be run through computers, which Google does in what it calls "server farms." These bear no resemblance to Old MacDonald's farm. They are immense, windowless, concrete buildings housing tens of thousands of computers all linked together. Every time an Internet user does a Google search, one of these server farms cranks up and provides the instant answer. But operating that many computers generates immense quantities of heat, which must be cooled, using large quantities of water.

Q What are the greatest wastes of water today?

A Waste, like beauty, is in the eyes of the beholder. Some people would point to Las Vegas' casinos, golf courses in the desert, lawns in California, farming operations in the West that grow low-value crops, like cotton or alfalfa, or bottled water. In the book, I have some rather amusing stories about "power showers" that use hundreds of gallons of water through eight or ten shower heads, and a theme park outside Atlanta named Stone Mountain that

brought on-line an enormous outdoor snow-making project in the midst of the worst drought in modern history, on a day when the temperature reached 81 degrees.

Q What are new sources of water we can utilize as our population grows?

A The most obvious one is municipal effluent. Reclaimed water, as it is called, literally grows as the population grows. It offers a terrific source for many uses, including watering of turf facilities, highway medians, cemeteries, and golf courses.

Q Are we currently drinking our sewage water?

A Indirectly, yes. Think about, for example, the Mississippi River and how an upstream community treats and then releases its wastewater to the river, where it flows downstream to be diverted by a second city, and on and on.

Q Speaking of energy, your book has as a major theme the close connection between water and energy. Would you explain this connection?

A Sure. Consider ethanol, which many people think is a perfect solution for our reliance on oil. In a modern ethanol plant that recycles its water, it takes more than four gallons of water to refine each gallon of ethanol. And first, farmers must grow the corn. Most new ethanol plants are in the American West, where irrigation is an essential part of farming. It may take as much as 2,500 gallons of irrigated water to produce enough corn for *one* gallon of ethanol. The state of California has a goal of producing a billion gallons of ethanol per year. But that would take 1.7 trillion gallons—which is more water than now goes through the Bay Delta—to supply Southern California cities and Central Valley farmers.

Q Is the ethanol example an unusual one?

A Not at all. Most forms of energy production, including concentrated solar thermal, require large volumes of water. And there is a flip side to this. Just as the energy industry uses lots of water, the water industry uses lots of energy. In the U.S., we have 60,000 water systems and 15,000 wastewater systems that consume 3 percent of the nation's energy in pumping, transporting, treating, distributing, collecting, and treating again, the water. In California, a remarkable 19 percent of *all* electricity used in the state conveys, treats, and distributes water and wastewater. In short, our thirst for energy has frightening implications for the economy and the environment. The reality is that we don't have enough energy *or* water.

Q Is desalination a solution to the water crisis?

A Desal will be part of the portfolio of some water systems—particularly those with acute needs for new supplies and where the new supplies are needed for high-value uses. The problem with desal is threefold: It uses a lot of energy; the membranes are expensive and prone to fouling; and there is an environmental challenge in trying to dispose of the concentrated brine residue from the desalination process.

Q What are some of what you call the "surreal" solutions?

A My favorite example is cloud seeding, a technology that has been around for six decades, but one that the National Research Council finds has "no convincing scientific proof." The traditional response to water shortages in the United States is to devise an engineering fix: build more dams, divert more water from rivers, or drill more groundwater wells. If that won't suffice on a local basis, perhaps water-short areas can import water from water-rich areas. These dreamers, whom I call water alchemists, covetously gaze at icebergs in Alaska or rivers that flow into Hudson Bay, and imagine pipelines going over mountains, delivering water to the arid Southwest.

Q Well, let's turn from surreal to real solutions. What are some of them?

A Let's begin with conservation. In some regions of the country, little effort to conserve water has ever been made. I was amused recently to hear the mayor of Los Angeles urge Angelenos to water their lawns only twice a week. I thought to myself, "Gosh, don't these people realize that Los Angeles is a desert?" L.A. gets barely three inches of rain a year more than Tucson. Yet millions of Southern Californians have lush, water-intensive landscapes. Surely, the state can do better than that.

Q What else can we do to save water?

A I think we should reexamine the role of toilets in our society. To me, toilets are the biggest domestic waste of water in the United States. Approximately one-third of indoor domestic water use is to flush toilets. That's six billion gallons per day, or two trillion gallons per year. Toilets waste water, energy, and money, harm the environment, and threaten human health. A century ago, Teddy Roosevelt commented that "civilized people should be able to dispose of sewage in a better way than by putting it in the drinking water." A century later, that's exactly what we still do. I cannot overemphasize the change in water use in the United States that has come from indoor plumbing. In the mid-19th Century, Americans used between three and five gallons per capita per day. Today that number runs from 150 to 300 gallons. Our water systems and wastewater systems are in a chronic state of disrepair. Philadelphia alone suffers 800 breaks in water and sewer lines each year. We need a national commitment to find alternative ways to dispose of human waste.

Q What are the other viable solutions to this crisis?

A What we have not tried in the United States, but should do, is use price signals and market forces to encourage conservation and the reallocation of water from low-value to high-value uses. In some communities, there is no assessment for water at all. The city of Sacramento, California has no water meters in individual homes. In many other communities, there are water rates, but they are flat rates or, in one-third of all water systems in the United States, declining block rates. That is, for each additional unit of water used, the user will pay less than for the earlier blocks. What we must recognize is that water is a finite and valuable resource. And the way to do that is to have increasing block rates to encourage conservation.

Q But won't this harm poor people or people of moderate means?

A No, because we should recognize a human right to water for basic necessities. That amount has been calculated at between 7 and 13 gallons per capita per day. We should create a lifeline supply that recognizes a human right to water for basic needs. If the richest country in the history of the world cannot make that commitment to its people, then we are a sorry lot. But once we have taken care of basic needs, much water use is for discretionary purposes, such as lush landscaping or swimming pools. We need to encourage conservation by using price signals. Decades of voluntary and mandated water conservation systems have had some success, but what we have not done and need to do is to get people's attention based on their pocketbooks.

Q And what do you mean by market forces?

A The United States is entering an era of water reallocation, a time when water for new, high-value uses, such as for Intel or Google, will come from existing users making do with less. Think of our water supply as a giant milkshake glass. And think of each demand for water as a straw in the glass. What many states permit is a limitless number of straws in the same glass. In Georgia, for example, there is no need to obtain a permit for a groundwater well unless the person intends to use more than 100,000 gallons per day. That is utter madness! What we need to do is to make growth pay its own way. Any new user who wants to put a new straw into the glass must pinch someone else's straw. That is, the new user must purchase and retire an existing user's water in exchange for permission to put a new demand on the resource. There are success stories, and in *Unquenchable,* I tell a number of them.