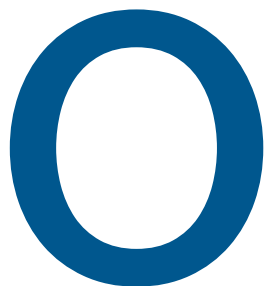


Our Water. Our Florida.

A WATER ETHIC FOR FLORIDA
By Cynthia Barnett



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On the other side of the world from Florida, another Sunshine State lies along the eastern coast of another prosperous, beautiful country. Queensland, Australia, even has a Miami, a Palm Beach, and a coastal Highway 1.

Walking around the capital city of Brisbane feels a lot like home: In the leafy neighborhoods, jacaranda trees spill their purple blossoms onto the sidewalks. Downtown, amid the humming central business district, overbuilt condo towers are quiet save for loud sale signs.

Businesses – including the innovative new industries around which Florida is trying to reorient its economy – want to figure out how to use a lot less water, rather than have to pay for more.

One fact of life, however, could not be more different: The way residents, businesses and elected leaders have come to value water. Like Florida, Southeast Queensland is surrounded by water, and has some of the highest rainfall rates in the country, around 45 inches a year. Also like Florida, the region can see one year swamped with floodwaters and the next seized by drought. But no one here seems to waste a drop. The two million residents of Brisbane have some of the lowest rates of water use in the developed world – about forty U.S. gallons per person a day. That compares with 158 gallons for Floridians.

It wasn't always this way. Ten years ago, Brisbane-area residents and businesses used twice the water they do now. The city, the state of Queensland and Australia as a nation changed direction for water in the face of a drought so severe that running dry seemed like a real possibility. Southeast Queensland's dams dropped to 16 percent of their capacity. Governments had to ban lawn-watering. Beach towns shuttered public showers and foot-washes.

Southeast Queensland got to work building Australia's largest water-infrastructure project, a \$9-billion network of dams, reservoirs and plants, including the Gold Coast Desalination Plant. But Stephen Robertson, Queensland's minister for natural resources, energy and trade, says the lessons of the Millennial Drought are not about infrastructure. They're about how everyone – from the highest levels of government to private industry to citizens – came to cherish water.

"The lasting lesson," Robertson says, "is that people in a subtropical climate who didn't value water learned to value water."

The lesson offers a pivotal opportunity for Florida.

Water defines us as Floridians no matter where we live: Idyllic beaches surround us on three sides. Rivers and streams flow for ten thousand miles through the peninsula. Our state is blessed with nearly eight thousand lakes and seven hundred freshwater springs – the largest concentration of springs on the planet. The rainfall, too, is a gift from heaven: Florida's average 54 inches a year is among the highest in the nation. Finally, as much water as we can see in Florida, there's more we cannot: More than a quadrillion gallons lie underground, in the deep cracks, channels and pores of the state's limestone foundation.

This bounty makes it hard to fathom how any one of Florida's regions could have depleted its share, but every region has: Tampa Bay area cities and counties were the first to tap out their corner of the Floridan Aquifer, leading to decades-long water wars. In recent years, Southeast Florida's communities have learned they can no longer rely on their traditional supply, the Biscayne Aquifer. They're struggling to figure out new sources even as the Everglades' plumbing system drains an average 1.7 billion gallons of freshwater a day to the sea. In Central Florida, withdrawals for mining and agriculture helped erase lakes, wetlands and springs most people don't even remember, along with some we sorely miss: Kissengen Springs, a once-popular tourist attraction that bubbled up thirty cubic feet of water a second, was the first major spring in Florida lost to intense withdrawals. It may not be the last. In North Florida, residents fret that metropolitan areas will someday run a pipeline to pull water from the Suwannee River. But an invisible pipeline has been doing so for fifty years: Scientists with the U.S. Geological Survey report a 25% decline in flow

Toward a Florida Water Ethic...

Guiding principles to secure Florida's water resources for the long-term future:

- Floridians value water, from appreciating local streams to being willing to pay an appropriate price for water.
- We work together to use less and less – rather than fight each other to grab more and more.
- We try to keep water local in order to avoid the financial, environmental and energy costs of long-distance transfers.
- We avoid the two big mistakes of our history: over-tapping our natural supplies and over-relying on the costliest fixes that bring unintended consequences to future generations.
- We leave as much as prudently possible in nature – aquifers, wetlands and rivers – so that our children and grandchildren, with benefit of time and evolving knowledge, can make their own decisions about water.

Adapted from Blue Revolution: Unmaking America's Water Crisis, by Cynthia Barnett, forthcoming from Beacon Press, September 2011.

> Opposite: The state of Queensland, Australia, has a lot in common with Florida, with a similar look, feel, and climate – and times of too little water, or too much. Queensland has come to embrace an unmistakable Water Ethic. The once water-wasting citizens of Brisbane, the capital city pictured here, now have some of the lowest water-use rates in the world – about forty U.S. gallons per person a day.

> Cover: photo by Kochneva Tetyana



Taking the Plunge, Ichetucknee Springs State Park, Columbia County, photo by John Moran/JohnMoranPhoto.com

in that time in the spring-fed Ichetucknee River, a tributary of the Suwannee, which they link to pumping in south Georgia and northeast Florida, now the equivalent of pulling 80 million gallons of freshwater a day to the east. Even along the slower-growing coastal Panhandle, some water levels in the sand-and-gravel aquifer have plummeted more than 100 feet since 1950, causing utilities to punch their wells farther and farther inland.

Floridians have no need for another white paper on what went wrong. Half a century's scientific reports, legal opinions, newspaper articles and books can be boiled down to two big water mistakes: The first, taking too much from our natural systems by draining, dredging and groundwater pumping; and the second, over-relying on large infrastructure fixes. Florida's environmental history has shown repeatedly that the larger the technical solution today, the

larger the headaches it may bring Floridians tomorrow. Take the Kissimmee River: Taxpayers spent \$35 million to channelize it in the first place; we've spent more than 10 times that, or more than \$500 million, to restore those parts of the river that we can.

In the 19th Century, Floridians were guided by how much water we could push off the land. In the 20th, we were guided by how much we could pump. In the 21st Century, Floridians must finally be guided by our consciences.

What Florida needs now is a new way to value water. We need a water ethic.

In 1972, the Legislature passed *The Water Resources Act*, based on late University of Florida law Dean Frank Maloney's *Model Water Code*, which foretold the current water crisis with remarkable prescience. The law declared Florida's waters "a public resource benefiting the entire

- > Florida is home to the world's largest concentration of freshwater springs. But their flows are significantly lower than historic levels. Reduced flow at Volusia County's much-loved Blue Spring, for example, threaten key habitat for West Indian Manatee population of the St. Johns River.
- > Opposite: Sinkhole formation is one of numerous negative consequences associated with groundwater over-pumping, which remains a problem in Florida despite increasing awareness.

state” and called for planning, permitting, and water-management districts drawn along surface-water rather than political boundaries.

Florida’s water law and what became the five districts were far-sighted accomplishments. Legal scholars call the state’s water-management system among the most progressive in the nation for balancing the needs of water users with the public interest. Since 1972, Florida supplied water to 11 million new residents even as it carried out some of the most successful restoration projects in the nation, including those in the Upper St. Johns River and Tampa Bay, where 6,000 acres of sea grasses have made a comeback in an ecosystem shared with millions of Floridians and the Port of Tampa.

Yet after four decades’ experience managing water, we haven’t been able to shake the mistakes of history: over-tapping natural waters and turning first to costly technologies that future generations of Floridians may not appreciate.

Florida’s permitted water use is demonstrably more than our natural systems can handle. During the freeze of January 2010, farmers in the Plant City area pumped a billion gallons a day from the Floridan Aquifer to protect berry and citrus crops. Eleven nights of nonstop pumping dropped parts of the aquifer here by sixty feet. One hundred and forty sinkholes opened up in surrounding communities. Seven hundred and fifty residential wells went dry. An underground chasm closed Plant City’s Trapnell Elementary School for three months. Another sunk part of Interstate 4, impeding traffic for days.

Water managers called it a rare event, and the volume of water pumped was allowable under the permits granted by them; no farm took more than its legal share. But the permitted use cost Florida taxpayers millions in public repairs and helped lead to property insurance hikes, not to mention the direct harm to private homeowners and the area’s real estate market: *The Wall Street Journal* called the eastern Hillsborough County communities affected “sink-hole subdivisions.”

When it comes to large infrastructure projects, Tampa Bay Water’s 25-million-gallon-a-day desalination plant is another

cautionary tale. This is not to say that regional infrastructure projects cannot be part of the solution, but we must be mindful of their consequences. The plant, which has been plagued with technical difficulties, cost about \$50 million more than promised. But among less-foreseen consequences are its enormous energy demands and carbon emissions. According to an analysis by the University of Florida’s Program for Resource Efficient Communities, between 2006 and 2009, as Tampa Bay Water gradually upped its reliance on the plant, the utility’s annual electricity costs went up 2.4 times — by an additional \$10 million. In 2009, the plant accounted for half Tampa Bay Water’s electric use and associated carbon emissions while producing only 10 percent of water supplies.

On the other side of the Sunbelt, in the American West, scientists and policymakers are raising serious questions about the ability of arid regions to thrive in a future era of water scarcity. Any business person working to locate, say, a microchip plant or Google server farm, both of which require large amounts of water, is poring over climate-change and water reports to avoid those parts of the country where scarcity or

conflict could worsen.


Florida is at a crossroads. We could keep to the current road of extracting too much, and using too much, which has led to both scarcity and conflict. Or, we could take a new path to a statewide water ethic. Unlike some other states, our water wealth, along with technological breakthroughs lining up with fresh political leadership and keen new interest in water sustainability among residents and businesses, give us an unprecedented opportunity to do so.

The conventional wisdom maintains that the answer to our water woes is to continue raising water prices and tapping state funding to fortify the peninsula with new water-supply projects. Pricing water right is part of the answer. But businesses — including the innovative new industries around which Florida is trying to reorient its economy — want to figure out how to use a lot less water, rather than have to pay for more.

Businesses are beginning to put water conservation on par with greenhouse-gas reductions as integral to sustainability plans. Filtration advances make recycled water an option for even those industries that require the purest water. U.S. food giant Kraft — which has cut global water use



Plant City, Hillsborough County, Department of Environmental Protection

A landscape photograph showing a field of tall, golden-brown grass in the foreground. In the middle ground, there is a line of palm trees. The sky is a deep blue with a faint rainbow visible in the upper left quadrant.

by 20 percent, or three billion gallons, in less than three years – switched to recycled water to cool coffee grinders at its Maxwell House plant in Jacksonville, keeping twenty million gallons a year in the St. Johns River.

Such innovations are possible – and many of them already happening – in every corner of Florida, from citrus fields that use 65% less water with micro-irrigation, to green buildings that collect rain from rooftops to flush toilets and irrigate landscaping.

A building with water-efficient designs and products has an average 15 percent

lower water use, 10 percent lower energy use and 12 percent lower operating costs, according to McGraw-Hill Construction. But surprisingly, some of the most innovative water-conservation strategies remain difficult to permit in parts of the state, including green-building practices such as capturing rainwater for toilets and clothes washers, or low-impact designs such as swales instead of curbs, narrow streets and other elements that can shrink a community's water footprint.

These are small challenges we will easily overcome if we buy into the bigger vision for Florida's future – the water ethic.

At its most basic, the water ethic means we come together as Floridians to use less, avoid the mistakes of the past, and build a future of water sustainability so that the way we use water today will not jeopardize our children and grandchildren's ability to use and enjoy water in the future. This is a moral, rather than political, call: *A Moral Water Code* to bolster our *Model Water Code*.

Florida's political water-planning assumption is that we must find more and more water to grow and prosper: The Department of Environmental Protection's statewide water plan says that 20 years

from now, we'll need to have added an additional 2 billion gallons of water to our current, 6.8-billion daily supply.

A moral water-planning assumption would hold that the opposite is true: The most prosperous societies of the 21st Century will be those that figure out how to use less water – relieving pressure on both ecosystems and economies.

Other parts of the world, the United States, and in fact our own state have proven that economic prosperity and population growth need not mean greater and greater water use. Florida today uses less water total than in 2000, when we tapped more

than 8 billion gallons a day, even though our population grew 15% in that time.

Water managers point out that 2000 was a drought year, meaning we irrigated more than usual and perhaps haven't accomplished as much as the numbers indicate. During some times of the year, we still pour as much as half of our potable water on lawns – water we developed from new sources, and treated at significant cost to meet standards for drinking. That makes significant conservation gains all the more possible.

> The Everglades ecosystem, the largest wetland in the continental United States, is one of the nation's last great wild places, and home to 67 endangered species. But it's also a crucial water supply for millions of people, thousands of acres of farms and the statewide economy.

Magic in the Glades

Big Cypress National Preserve, Collier County
photo by John Moran/JohnMoranPhoto.com



From the University of Queensland to the University of Florida, researchers are showing how everything we do as a society can be done with far less water. Agricultural researchers have figured out strawberry-irrigation techniques that require as little as one-fourth the water customarily used for freeze-protection. But these practices require new or modified irrigation systems – not easily affordable for many farm operations.

In the wake of last year’s sinkhole emergency, the Southwest Florida Water Management District offered to share 75% of the cost for any upgrade that would cut a farm’s pumping in half. Farmers lined up to install “tailwater recovery” ponds that collect excess irrigation and rainwater for reuse, soil-moisture probes and weather stations to prevent over-watering, and other technologies. The price tag for Floridians is a fraction of what it costs to develop new water sources, much less to repair sinkhole damage.

Since farmers account for the largest portion of Florida’s water use, at 40% of

the total, agriculture is the most logical – and symbolically important – catalyst for the water ethic. As some of Florida’s largest private landowners, agricultural companies are already becoming part of the solution for the state’s water storage and water clean-up challenges. In Australia, the government is spending \$5.8 billion on “sustainable rural water use and infrastructure” for the agricultural industry, almost half the nation’s 10-year, \$12.9 billion *Water for the Future* plan that includes both new-construction and conservation solutions.

Public supply – the water we use in our homes and yards – comes a close second in Florida’s total water use, 37%. That makes it another key target for saving water and money. Water-efficiency costs between \$450 and \$1,600 for every million gallons it frees up. Every other new source costs considerably more, with desalination the most expensive at around \$15,000 for the same million gallons, according to the Alliance for Water Efficiency.

At those prices, we would be wise to send a brigade of plumbers across the pen-

insula to switch out every toilet installed before 1996 – freeing up 11,000 gallons a year per commode – before we break ground on the next desal plant.

The Miami-Dade County Water & Sewer Department has done just that. Utility officials there have found that toilet rebates for families, and full retrofits for elderly residents who can’t afford them, are the cheapest way to obtain “new” water. These and other water-conservation investments have proven so successful, the utility recently canceled two planned Floridan Aquifer projects, saving further pressure on the aquifer and millions of dollars.

Miami-Dade’s stance stands in sharp contrast to other South Florida utilities that in 2010 fought permanent lawn-irrigation limits sought by the South Florida Water Management District. The utilities argued that conservation cuts too deeply into revenues – at just the time they must invest heavily in new water sources.



In another growing Sunbelt state, on another over-tapped aquifer, the San Antonio Water System has transformed over the past quarter-century from a utility that believed conservation sank revenues to one that pays commercial customers big bucks to use less. The utility, which goes by the name SAWS, has halved per-capita water use in twenty-five years, to an average 115 gallons. It also pumps less overall from the Edwards Aquifer – with 67% more customers.

Like Miami-Dade, SAWS views conserved water as the best and cheapest “new” water. Conserved water costs SAWS \$400 an acre-foot, compared with \$2,822 an acre-foot for desalinated water, which San Antonio has not yet had to develop but may in the future. The utility “buys” the water by funding retrofits for commercial users. Every sort of business seems to be able to take advantage: A Frito Lay potato chip plant saved 43 million gallons a year – *and \$138,000 annually on its water bill.*

A local granite company figured out a way to recycle water used in its wet saw, and other stone cutters followed. A dentist realized that old “dental vac” machines wasted an inordinate amount of water compared with newer models SAWS would help pay for. Other dentists are now switching. Hotel managers have booked some of the biggest savings. The water ethic has flowed across San Antonio this way – granite-cutter by granite-cutter, dentist by dentist and hotel by hotel.

In 12 years, the commercial rebate program has paid off in more than 580 million gallons a year saved in manufacturing plants, hospitals, laundries, hotels and other businesses. Doug Evanson, the utility’s CEO, says this and other programs have deferred a total of \$3.3 billion in alternative water-supply projects. Less water used also

> The people of San Antonio, Texas, once took little notice of the river running through their community, but that has changed. The San Antonio River is now a focal point – as is the city’s water ethic, which has spread throughout the fast-growing metro from citizens to business owners to churches.

> Opposite: Florida’s agricultural operations represent both the greatest water use in the state, and some of the best potential for solutions, from greater efficiency to creative water-storage opportunities.





Canoeing on Fisheating Creek, Glades County, photo by Ilene Safron

means less running into sewers: conserving that much saved an additional \$1.1 billion in wastewater treatment and storage costs.

The utility did all this in the decades that San Antonio's population doubled to 1.4 million. But SAWS' most remarkable role was leading the city to a water ethic that now permeates every level, from residents who irrigate with great care, to commercial building superintendents who pride themselves on saving water and money. San Antonio's faith communities have taken a special interest in water sustainability as a moral cause.

In 2005, the city went further to pass an unprecedented water-conservation ordinance after a three-year collaboration that won the full support of everyone from irrigators to developers. The ordinance makes it illegal to waste water: It's against the law to let water run down the street into a gutter or ditch, to have a gushing pipe and not call someone to fix it. All new homes and businesses must be built water-efficiently. Grass is okay, but only drought-tolerant types, and everyone knows not to irrigate it during the day.

San Antonio's water ethic was born in crisis. Ruling in an Endangered Species Act case in 1993, the late U.S. District Judge Lucius D. Bunton III forced the city to lay off the Edwards Aquifer, calling for "*a fundamental change in the value the region*

places on freshwater; a major effort to conserve"

Those words are familiar in Georgia, where in 2009, U.S. District Judge Paul Magnuson, in the 20-year legal battle among Florida, Georgia and Alabama, ruled that Lake Lanier was never authorized to quench Atlanta's thirst. "*Only by cooperating, planning, and conserving,*" Magnuson wrote, "*can we avoid the situations that gave rise to this litigation.*"

The Lake Lanier crisis inspired Georgia in 2010 to pass the Water Stewardship Act, which is saving the state millions of gallons every day. Our water rivals in Atlanta already used less per person than Floridians, an average 120 gallons. The new law aims to build a "culture of conservation" – for example, similar to San Antonio, no one in Georgia can water grass between 10 a.m. and 4 p.m. anymore; the evaporative loss and waste are too great. Georgia's law promotes water-efficient plumbing retrofits in residential and commercial buildings, along with reuse of rainwater and graywater (from laundry, bathing and dishwashing). Such investments, for not only toilets, but also pool covers and rainwater tanks, began en masse in Australia in the face of crisis, too – in the early years of the Millennial Drought.

Florida's water managers deserve credit for the extent to which they've reduced groundwater pumping, and damage from exces-

Water is the defining element – the essential elixir – of the good life here in Florida. That makes it easier to find common ground. Especially when it's the high ground.

sive withdrawals, without a federal judge making them. Likewise, it shouldn't require a crisis for Florida to take the next step toward water sustainability – creating a statewide water ethic.

Many Florida communities are already there. Sarasota County once had its share of over-watered lawns, and its average water use was about 140 gallons a day. Two droughts ago, in 2002, the County Commission passed irrigation rules, including once-a-week watering and conservation-rate pricing – customers who use a little water pay a little, those who use a lot pay a lot. Other local governments passed drought restrictions, too, but lifted them when the rain started falling again. Sarasota decided to keep them on the books. In the years since, the county has built an unmistakable ethic among citizens and businesses and slashed average water use in half, to less than 80 gallons.

Other Florida governments have become national leaders in reuse. Two wastewater facilities in Orlando, for example, help the city recycle 100% of its wastewater, treated to irrigate more than 2,900 acres of citrus, 1,400 acres of golf courses, 2,100 acres of parks and more than 3,600 yards.

Yet, the water ethic has never caught on statewide as have other conservation ethics such as the near-elimination of littering on Florida's beaches. That cultural shift required leadership from top levels of government, which set standards by making laws, and from private industry, which committed to changing long-time practices such as manufacturing cans with pop-tops. Littering studies show that *most* responsible for the turnaround since 1969 was that citizens came to believe littering was ethically wrong. But they weren't willing to change until government and corporations proved they would do their part.

Plant City resident Bruce Allen, one of the homeowners impacted by the 2010 sinkholes, articulated a common frustration when he asked water managers how it was that they could impose lawn-watering restrictions on citizens, then allow billion-gallon-a-day pumping for farmers. Floridians have long uttered variations on this theme, often: Why should I save water when you're going to hand it to the golf course next door?

They have a point. But the water ethic will transcend such conflict if it's taken seriously by elected officials, and as industry begins to show the dramatic water savings possible in all sectors of Florida's economy. Over time, the water ethic will ripple out into communities, from college campuses to civic groups to churches to citizens.

Finding common ground is often difficult for Floridians, with our people and places as different as Miami-Dade's Little Havana is from Gadsden County's town of Havana. But water is the one bond we share as Floridians. Water is our common passion whether we live along the coast or in the lake-dotted interior. It's our common economic interest whether we do business in Fort Lauderdale or Fort Walton Beach. It's what brought us here, and what keeps us here, no matter our politics.

Water is the defining element — the essential elixir — of the good life here in Florida. That makes it easier to find common ground. Especially when it's the high ground. ■

About the Author

Cynthia Barnett is senior writer at *Florida Trend* magazine, where she has covered investigative, environmental, public policy and business stories for more than 12 years. She is the author of *Mirage: Florida and the Vanishing Water of the Eastern U.S.* (University of Michigan Press, 2007), and the forthcoming *Blue Revolution: Unmaking America's Water Crisis* (Beacon Press, September 2011).



She earned a bachelor's degree in journalism and master's in American history with a specialization in Florida's environmental history, both from the University of Florida. In 2004, she was awarded a Knight-Wallace Fellowship at the University of Michigan, where she spent a year studying freshwater supply. Her numerous awards include a national Sigma Delta Chi prize for investigative magazine reporting; a gold medal for best non-fiction in the Florida Book Awards; and eight Green Eyeshades, which recognize outstanding journalism in 11 southeastern states.

Ms. Barnett is a fifth-generation Floridian, and mom to two sixth-generation Floridians. She wrote this vision for a Florida water ethic on behalf of the Collins Center for Public Policy as part of a journalist's travel grant funded by the Collins Center for reporting in Australia and Singapore for *Blue Revolution*. The book is a call for a water ethic for America.

Our Florida. Our Future.



Our Florida. Our Future. is a multi-year effort to envision the future of Florida. It includes three major thrusts: develop a scenario planning process, reach at least 4 million Floridians in this discussion, and support both the scenarios and the civic engagement efforts with appropriate research, data collection and policy papers.

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