

Introduction

ON THE MORNING OF JUNE 18, 2012, the residents of Cedar Key, a picturesque, fishing-island community on Florida's gulf coast, awoke to what they thought would be another normal day. They turned on their faucets to get water to make coffee, or to shower, shave, or brush their teeth. The water tasted normal.

But there was a problem—a big one.

As the locals and tourists went about their morning rituals, the town's water utility staff members were taking periodic monitor readings of the community water supply and were shocked. They'd been tracking a noticeable uptick of salt in the water for several days, but now "the readings for chloride were so high, and the change happened so fast, that the men thought the testing equipment was broken and sent it off for repair," recalls John McPherson, general manager for Cedar Key Water and Sewer District.

The people of Cedar Key are used to a little salty flavor in their water. After all, they like to kid themselves by saying that whenever they go out of town and order a coffee, they always add a little salt to make it taste right.

This time, though, salinity in the water was no joke. The next day everyone in town learned that Florida's Department of Environmental Protection (DEP) was shutting down their water supply because the salt

level was dangerous to human health. There was nothing wrong with the water testing equipment.

Later that day donations of bottled water from the nearby towns of Bronson and Chiefland arrived on trucks to keep everyone hydrated until officials could figure out what to do.

What had gone wrong? “It was a combination of drought and pumping too much,” says McPherson.

And maybe sea level rise.

City officials next installed a new reverse osmosis system that converts salt water to fresh when needed; not long afterward two tropical storms blew in and recharged the aquifer, pushing the salt water back down into the ground underneath a layer of fresh water. The town’s problems weren’t over yet, however. For a while, the fresh water filled with iron and organic compounds that kept clogging up the filters of the new system.

Then in September 2016, Hurricane Hermine blasted into town and caused more grief for the locals of Cedar Key. Flooding ruined homes and businesses. City waterlines broke and drained the town’s landmark freshwater tower. Stormwater lines filled with seawater that disrupted the treatment process of stormwater at a nearby facility.

Today Cedar Key’s water supply problem has been fixed, but perhaps just for the moment. “There’s a sense in town that Cedar Key is imperiled,” says McPherson. “It is so low lying, that before our well fields are destroyed, our town will be destroyed. It’s already flooding with seawater.”

By now, he adds, you start to wonder, “At what point do you stop investing in the city’s water supply and give up because it’s futile?”

It’s a sobering, yet logical, question. After all, without water there’s no point of having a community.

What Cedar Key’s residents have already endured should serve as an early warning system for much of the state. They, after all, aren’t the only Floridians contending with water woes. In fact, you have to search hard to find a Florida community that doesn’t have a water problem, or soon will have.

Sea rise and drought aren’t the only culprits. In 2007 Cynthia Barnett, in her award-winning book *Mirage: Florida and the Vanishing Water of the Eastern U.S.*, warned Floridians their drinking water was imperiled.

A main reason? Overconsumption. “Today, Floridians are pumping groundwater out of their aquifers faster than the state’s copious rainfall can refill them,” Barnett wrote. “Meanwhile each new master-planned community, shopping mall, and highway drains water in a bit of a different direction and lowers groundwater levels a little bit more.”

In an interview with National Public Radio’s Renee Montaigne, Barnett said, “Florida’s groundwater has been over allocated—not just in South Florida, but also throughout the state. In addition, we just haven’t taken conservation as seriously as other parts of the country. People are in denial.”

In that same year, John Mulliken, director of water supply for the South Florida Water Management District, told the Associated Press, “We just passed a crossroads. The chief water sources are basically gone. We really are at a critical moment in Florida history.”

Barnett’s and Mulliken’s analyses still ring loud and true. Today, Florida’s water problems loom large and are likely to worsen, especially if Floridians continue to treat water as a business-as-usual matter.

In fact, many Florida researchers believe that if their state remains on its current population growth and development trajectory, eventually there probably won’t be enough good, clean water for everyone—humans, wildlife, and ecosystems alike. In short, what Floridians are doing is clearly not sustainable.

At the same time, the state must also contend with periodic flooding episodes that are more likely to worsen thanks to both nonstop urbanization and powerful storms. This situation means billions of gallons of water will keep draining out to sea. Only in Florida, perhaps, would you hear water managers warning of coming shortages as they simultaneously plan to control flooding by piping “excess” fresh water so deep into the ground that it can never be retrieved.

Meanwhile, there’s a growing welter of water pollution problems from Key West to the Georgia state line. Too many of Florida’s rivers, lakes, springs, marshes, wetlands, estuaries, and even aquifers—or underground water reservoirs—are now menaced by a slew of dangerous toxins, ranging from algae to chemical and radioactive substances.

Making matters worse, huge earth-moving machines relentlessly destroy Florida’s farmlands, forests, marshes, and wetlands to make way for new strip malls, office spaces, schools, gas stations, and communities,

some the size of cities. In so doing, they are not only destroying habitat, but also disfiguring the state's hydrology—that is, the state's natural plumbing and water cycle.

Floridians, of course, are just a small fraction of the seven billion human beings on the planet who find themselves on the threshold of a new epoch—one defined by runaway technology, global trade, and transportation, along with the rapacious water demands of a growing human population and the unfolding impact of climate change.

But what is so jaw-dropping about Florida is that severe water shortages are emerging in a state that ought to be otherwise saturated. All Floridians are never far from a coast, river, or lake. Wetlands, marshes, swamps, bogs, water retention ponds, canals, and a galaxy of swimming pools are everywhere. The very ground underneath your feet may have been wet and mushy, even underwater, not too long ago—that is, before a developer filled it in with sand and muck from a nearby river or wetland. In fact, if not for a breathtakingly bold, vast, effective, and destructive engineering assault on the state to drain its water, much of the Sunshine State would still be water soaked and uninhabitable. Even if you live in Florida during a drought, which hits the state on average at least once every ten years or so, you will still be in a wetter place than most of the nation's arid southwest.

Rain falls a lot in Florida, averaging 52 inches every year. A lot of it accompanies hurricanes that appear in late summer and early fall, soaking Florida's flattish landscape, recharging—sometimes overcharging—the natural water supply. Florida receives more of these destructive storms than any other state.

Even the air is thick with water. In fact, Florida is the most humid state in the country. With the seas creeping inland and up from below, and an ever-warming climate, you can expect the future to be even more humid.

The state is dotted by more than seven thousand freshwater lakes, including the biggest lake in the South—Lake Okeechobee. More than seventeen hundred streams and rivers flow across the state, the largest of which is the troubled, lumbering, polluted, diverted Everglades.

North Florida boasts the world's greatest cache of freshwater springs, more than nine hundred at last count. Its estuaries—those coastal areas where fresh water and salt water merge to provide aquatic habitat—are among the most productive in North America.

Water is vital to Florida's economy: tourism, agriculture, fishing, industry, military, government, aerospace, transportation, commercial, and other sectors all rely on it.

Florida's flora, fauna, and fragile ecosystem depend on a rich supply of fresh, clean water.

Water is also central to a true Floridian's identity. Millions of residents and tourists alike recreate in the state by fishing, swimming, surfing, kayaking, skiing, and taking part in a host of other water-based pastimes.

Today, however, Florida water is under siege. And it's no secret. Travel across the state, and you'll discover a growing array of water seminars, conferences, and forums attended by legions of water managers, consultants, government officials, scientists, researchers, engineers, political figures, environmental activists, urban planners, journalists, agriculturalists, business leaders, and worried citizens who are well aware that their state has persistent, worsening, and growing problems.

But they don't agree on the causes, nor the solutions. For instance, many of Florida's stakeholders prefer to stick with the status quo—that is, altering natural systems and landscapes to accommodate the increasing water needs of humans. Others prefer a much newer and radically “bluer” approach.

But will any of these approaches work as long as Florida remains a state whose powerful leaders continue to welcome runaway population growth, development, and sprawl even at the expense of the environment?

Water disputes have already occurred in Florida, and new ones keep popping up all the time. During the past half century hundreds of lawsuits have been filed over issues related to consumptive water permits, water pollution, wetlands protection, and stormwater and wastewater management. There are also never-ending disputes over water usage, storage, restoration, distribution, and pricing.

Some of these quarrels have evolved into so-called water wars at both the regional and interstate levels. Meanwhile, water battles elsewhere in the world have prompted military and security experts to warn of a global disorder if water isn't fairly allocated among all parties.

Once you delve into Florida's water issues, you quickly find that there's much to think about. For example: How did these prickly issues come about? How should they be resolved? Who is entitled to water?

How much should they pay? Who decides how much anybody gets? What should it cost? Should private companies or the government be in charge of water resources? What are the best ways to protect, conserve, and use water?

The overriding goal of this book is to shed light on many of the biggest and most vexing of Florida's mounting water problems and what is being done—and not being done—about them. The author's hope is that such information will help readers become water-literate enough to take part in the discussions and actions that will determine the fate of their share of the most precious substance on earth. It's much too important an issue to be left solely in the hands of politicians, the business community, developers, farmers, and engineers.

It's true that Florida's water supplies may not be literally "drying up." But they are being squandered and polluted to such a high degree that there may not be enough to go around to satisfy the needs of all.

It's not too soon to begin to act. Some water experts, in fact, argue that Florida is fast approaching a tipping point concerning the well-being of its water resources. Others think it's too late, and the state is already in big trouble. A few, however, insist there's endless water in Florida's aquifers, and there's no emergency. Denial, however, invites disaster. Just because water has always been there doesn't mean it always will be. Just ask the people of Cedar Key.