# IN FLORIDA'S COUNTIES

### Full Report Written by Graham Civic Scholar and third-year Philosophy major, Ariella Klein. Pages 2-9

Floridan Aquifer System A diagram of the Floridan Aquifer System, illustrating discharge and recharge. Page 10 Recognition A list of Graham Civic Scholars, as well as other contributors to the program. Page 11

#### **Further Reading**

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A list of resources to continue to explore the important issue of water supply in Florida. Page 12

# Sitting at the same latitude as the Sahara Desert

Florida is surrounded by water on three sides and enjoys lush vegetation year round. Florida draws water from various sources, but its main water resource is the Floridan Aquifer. The aquifer extends throughout the state of Florida and parts of Georgia, Alabama, South Carolina, and Mississippi and relies on certain weather patterns to recharge (St. Johns River Water Management District), underlying an area of about 100,000 square miles. The state has five water management districts that work daily to promote a balance in water needs for people and nature alike. These districts include: St. Johns River, South Florida, Southwest Florida,



Suwannee River, and Northwest Florida. The Bob Graham Center for Public Service at the University of Florida (UF) seeks opportunities to explore critical policy issues that affect Florida's citizens. Recently, the Center recognized the need for research on the issue of ensuring adequate fresh water for Florida's



At a Glance

14 counties cited water pollution as a top issue

Of those 14, 7 specified saltwater intrusion

4 counties noted overconsumption

Officials from all 44 counties that were studied cited a lack of funding ever growing population and, to that effect, sponsored undergraduate students in the spring of 2013 to conduct research on this critical issue. Approximately 50 UF students were selected as Graham Civic Scholars. Each was assigned a county in Florida to study issues related to water supply and report their findings. Their detailed reports included information gleaned from interviews with countywide professionals and revealed the frightening fact that the seemingly elusive, changing, and challenging water supply issues far outweigh concrete solutions.

There were several recurring issues across the Civic Scholars' report. They are presented below as the top problems related to water supply in Florida—lack of public awareness, overconsumption, insufficient regulatory laws and management plans, and overdevelopment and pollution—alongside proposed solutions for mitigating those problems. For all of these problems and more, educating the public was proposed as the most promising solution. With Florida facing the beginning of a water crisis, and most people unaware of the imminent threat, there is little that water management and county officials believe they can do unless the public realizes there is a problem.

#### **Top Problems and Proposed Solutions**

#### Lack of Public Awareness

Most people believe that their actions do not influence the overall water supply picture in Florida. Many of the county officials challenged this perception by encouraging people to look at the numbers. Quick calculations reveal that, if Florida's nearly 19 million residents saved just one gallon of water a day, they would collectively save 6.9 billion gallons of water per year. This would significantly reduce their water footprint and allow the aquifer to retain more water for future use.

It seems that most Floridians do not realize the severe water shortage issues that the state faces. This is due in part to the fact that the state sees over 50 inches of rain on average and is surrounded by water. Most people are unaware that nearly 73 percent of all the rainwater that falls in the state does nothing to recharge the aquifer. Instead, most of it ends up running out to the ocean through rivers as storm runoff. The current water ethic seems to teach people that it is alright to leave the tap running, though with a little thought, one realizes that this is not true. It may seem puzzling to imagine a lack of concern for these issues but it is not entirely the fault of an uniformed public. Some people are under the illusion that we are "water rich". For this reason, Cynthia Barnett (2011) proposes a new water ethic for Florida: "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" (p. 6).

The research shows that the average water consumption per capita is approximately 158 gallons per day (USGS, 2008). As such, enacting more robust and enthusiastic water conservation efforts was a top proposal among scholars. Conservation can be enacted immediately without any outside influences or regulation, but people must be made aware of this option in order to put it in place. There are many steps an educated public can take to conserve water. One solution is for homeowners to participate in the *Florida Water Star Program* (sjrwmd.com/floridawaterstar/), which is offered by all of the water management districts in the state. The program sends inspectors out to analyze current water usage in the residence and make suggestions on how to decrease it. It encourages citizens to install low flow toilets and showerheads with maximum flow rates at about 2 gallons a minute. It also teaches citizens how to ideally update their landscape to be water-friendly and to minimize irrigation water use.

The *Florida Water Star Program* is not the only education measure counties have in place. Many counties in Florida reported having some type of program in place to educate their consumers of water shortages and ways that they can reduce usage of this resource. For some counties, this means

that water restrictions are in place year round, while others actively work with the local utility company to track and visit high water use neighborhoods.

#### Overconsumption

The Floridan Aquifer was discovered by a geologist in 1936 and has since served as the main water resource for the growing state. According to Chris Bird Director of the Environmental Protection Department of Alachua County, a historical look at Florida provides a glimpse into water usage increases by illustrating a rainfall flat line since World War II but an increase in population growth during the same period. After the end of the war, there was an increase in the desire to live the suburban lifestyle, which meant big houses and even bigger lawns. Fast forward roughly 68 years and one will find that irrigation accounts for the majority of all public supply water use. The desire to live a lifestyle where irrigation accounted for a dramatic increase in water usage spawned much of the water dilemma we face today.

The simple fact is that there is a fixed amount of water to allocate in order to maximize water supply. Floridians cannot control how much rainwater is replenishing the aquifer, but they can control how much is being withdrawn. One of the county officials drew a comparison between water resources and a bank account, demonstrating that water supply runs on a system of checks and balances. Many of the biggest water users, such as agriculture and agribusiness, are not accurately accounted for with solid numbers, so the bank account can become overdrawn at any moment. Water managers cannot do much about it because of a lack of regulatory laws and enforcement structure.

Some of the Civic Scholars made the argument that Florida needs tougher regulatory laws in the state. Regulatory laws are an excellent suggestion as a long-term solution, but they often take years to pass through the state legislature and they require enforcement—another burden for already overworked and understaffed water management districts and counties. For a variety of reasons, it appears that conserving water is the cheapest way to prolong the life of the aquifer. In addition, Civic Scholars

proposed reusing storm runoff for irrigation purposes, since the water does not have to be potable. That would free up fresh water for potable uses and decrease the demand on the aquifer. Still, as the next section will show, a few wise regulations are in order.

#### Insufficient Regulatory Laws and Management Plans

Some of the county officials cited a lack of effective laws to regulate water usage in Florida. There are some laws in the Florida Constitution, such as Chapter 2010-205, that address water supply on the surface by stating that it "requires the Department of Environmental Protection to develop a water supply plan." The legislation, however, does not provide any type of provision for they ways in which water management districts should go about designing such a plan. While there is an understanding that districts are working with limited resources that cannot be created—only controlled—the lack of regulatory laws allows for massive water waste. This perpetuates a wasteful cycle that permeates Florida agricultural industries, private well owners, and other high water use businesses, such as golf courses. The priority must be to create laws that conserve as much water as possible because this is the cheapest option in keeping water costs low to consumers and businesses alike.

Civic Scholars also looked to the results from past legislation. One legal component that emerged from their research was in regards to Florida Senate Bill 2080 which passed on June 30, 2009. The bill is more commonly referred to as the Florida Friendly Landscape Bill and specifies that "local government ordinances or private HOA's cannot prohibit property owners from implementing Florida-friendly landscaping on his or her land." (Senate Bill 2080). Though the law was well-intended, there was inadequate enforcement, since there is no specific agency in place to enforce its provisions. The Civic Scholars concluded that this, along with meager funding, made the law largely ineffective. The only ways to combat the funding issue is to have the state legislature authorizing more money to the water management districts.

Officials often reminded the Civic Scholars of their counties' unique challenges, and the need for the solutions to be tailored to each. Some gave a word of caution on blanket environmental laws saying that they can actually have a detrimental effect on counties that do not have the funds, resources, or infrastructure to comply with mandated changes.

One solution is to initiate collaboration between state leaders and water managers so that they can develop tailored laws to suit water management plans for each unique district. The Civic Scholars noted the importance of creating plans that effectively function within the integrity of the counties' current means in terms of infrastructure, funds, and resources they already have in place. The twin aspect to creating effective laws and water management plans is also allotting more funds to projects that will assist counties in staying on track once a water management plan is adopted and put in place.

#### **Overdevelopment and Pollution**

Ditching and draining of existing water capture sites to dry out land and make way for modern development have wreaked havoc on Florida's water resources. About half of the Everglades wetlands have been lost to modern development since draining began in the late 1800's. Canals that were built to make way for development have since sent a dramatic amount of valuable fresh water out to the ocean. This practice is still in use today, and though it is regulated, projects like this go under the radar and are not properly tracked for water capture and statistical data purposes.

Pollution is a significant issue with water supply. Nitrate pollution in the water supply can be attributed to overuse of fertilizers on residential lawns and farmland, septic tank systems, and wastewater treatment run off. It is best to work toward reducing the amount of pollutants from the beginning because it takes more energy resources to filter and process polluted water to make it potable for consumer use. When that is not possible, it is important to raise consumer awareness so pollutants can be minimized. Other pollutants include animal waste, trash, oil, and grease. A final "pollutant" many of the Civic Scholars explored was that of salt-water intrusion. This pollutant is a concern for water managers because as sea levels continue to rise, there is a greater chance of salt water infringing upon the fresh water reserves. Further, as populations continue to grow, inland counties will continue to see more consumers moving into their regions. The lack of existing infrastructure means that these areas may struggle to support the water supply needs and delivery to consumers.

Some of the Civic Scholars proposed state allotment of funds for land acquisition. By acquiring land for the purpose of leaving it intact and undeveloped, the hope is that water will have time to penetrate the ground and seep back into the aquifer. If this is not accomplished, that water will go into storm run off drains and eventually go back out into the ocean without ever reaching the aquifer. In addition, the Civic Scholars discovered that overdevelopment has led to an increase in the introduction of pollutants to the water supply, but by regulating the way pollutants are discarded, they felt that the change would offset pollutants that made their way into the water supply. Further solutions included mandating that agricultural users develop their own means for treating wastewater on site and decreasing pesticide use by encouraging natural alternatives instead.

Even with these proposed solutions, issues abound. The process of desalinating water, for example, comes at the high cost of the fluctuating fossil fuel market and leaves a greater carbon footprint, which has its own negative impact on the environment.

#### Conclusion

During this research, I was reminded of a childhood public service announcement about water conservation that used to play during children's programs on television. The announcement would depict a child running the faucet while brushing their teeth. It would be featured on a split screen and simultaneously show a fish swimming in a pond of depleting water. The announcement sent a powerful message about the far reach of water choices on natural ecosystems, animals, plants, and even human

life. Further, the illustration exemplifies the critical nature of a raised public awareness so that each citizen can take a proactive approach to conserving as much water as possible. Together we can make a difference that will last generations to come.

The Graham Civic Scholars identified key issues related to Florida water supply and proposed solutions for each. To be sure, their county-specific reports cover many issues that were not addressed or fully explored in this cumulative report. If you are interested in reading a county specific report, please email Dr. Emma Humphries, Assistant in Citizenship at the Bob Graham Center for Public Service at <u>ekhumphries@ufl.edu</u>. She will gladly send you an electronic version of the report.

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© 2013 St. Johns River Water Management District <<u>http://www.sjrwmd.com/watersupply/</u> <u>droughtproofwell.html</u>>

# BOB GRAHAM CENTER

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## Spring 2013 Graham Civic Scholars

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A special thanks to Dr. Wendy Graham, Director of the UF Water Institute (pictured left) and Stacie Greco, Water Conservation Coordinator for the Alachua County Environmental Protection Department (pictured right), for graciously sharing their time, knowledge, and experiences with the Graham Civic Scholars by coming to speak at the Informational Assembly and Roundtable events that were held at the Bob Graham Center for Public Service.



#### **Special Contributors**

- Ariella Klein, author of this cumulative report
- James O'Connell, creator of content spreadsheet for the interactive map
- Ian Elsner, digital designer and creator of the interactive map



We suggest the following Web resources to enhance your understanding of water-related issues in Florida:

#### www.dep.state.fl.us/water/waterpolicy/rwsp.htm

The 2011 Regional Water Supply Planning Report, which can be found on the FL State Department of Environmental Protection

#### http://www.dep.state.fl.us/water/default.htm

Website of the Florida Department of Environmental Projection (DEP), which houses a wealth of information related to various water issues in Florida including waste, storm, ground, and drinking water management; protecting beaches, wetlands, springs, and the Everglades; and mining and minerals regulation.

#### http://www.protectingourwater.org/florida\_water\_story/channel/

View the 7.5-minute "Florida's Water Story" video, as well as other videos and slide shows, to gain a general overview of water in Florida.

#### http://www.dep.state.fl.us/secretary/watman/

Provides an overview of Florida's water management districts as well as links to district sites.