

# WaterWeb

current water info for schools

A publication of the Southwest Water Management District in conjunction with the Charlotte Harbor Environmental Center, Inc.



## The WaterWeb Query

### QUESTION:

If the earth still has the same amount of water since the beginning of time, why are we worried about running out of water?

### ANSWER:

Approximately three-fourths of the earth is covered with water. Approximately 97 percent is salt water and 2 percent is fresh water frozen in ice caps. This leaves only 1 percent of the earth's water that is drinkable. It is very important that we have enough water when and where we need it. In many parts of the world, people are using water faster than it can be replaced. In Florida, our growing population and varying amounts of rain mean that the need to conserve is very important.



## Sustainability

### What does it mean?

Have you ever heard people talk about sustainability? What do you think it means? What comes to mind when you hear *sustainability*? Before we begin our discussion on sustainability, let's take a closer look at the history and meaning of the word. The word *sustain* comes from the Latin word *sustinere*, which means to hold up or support. *Webster's Dictionary* defines sustainability as having the characteristic of being able "to keep up, to carry or withstand," as in bearing a weight or pressure. Although this may seem like a difficult concept to understand, it is something that affects the entire world.

How can we understand the concept of sustainability?

Let's consider your home refrigerator as a closed environment. If the contents of the refrigerator are never replenished, sooner or later there will

be nothing left. The refrigerator will not be able to "sustain" the pressure of having things frequently removed from it. In order for the refrigerator contents to be sustained, the amount put in must be at least as much as the amount taken out over any given period of time. Think about your own life. Consider the resources that you depend on each day and the natural resources that are related to them. These resources most likely include clean air, drinkable water, fuel for the family car, energy to stay warm or keep cool. Other resources may include construction materials for building your home, fabrics used in clothing, CDs, books, etc. Don't forget about the food you eat. Or the water you drink. That's a lot of resources!

Now let's take a closer look at one of our most precious resources — WATER. The hydrologic cycle cleans and replenishes the earth's surface water bodies and aquifers. People are using water faster than we can replace it. With impacts caused

by the increasing population in west central Florida, the Southwest Florida Water Management District is very concerned about the issue of sustainability. The Southwest Florida Water Management District is charged with maintaining the balance between the water needs of current and future users while protecting and

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# Projected Demands Exceed Current Water Sources

Excerpted from *Water Management Monthly*, July 1998

A Publication of the Southwest Florida Water Management District

The results of a Districtwide Water Supply Assessment (DWSA) confirmed previous projections that three of the District's four planning regions' current water sources are not adequate to meet projected demands through the year 2020. These results assumed no changes in the rate of water usage and included only existing or reasonably anticipated future sources.

"There were no big surprises," said Lou Kavouras, District Conservation Projects manager. "We had previously designated the three planning regions with projected shortfalls as Water Use Caution Areas, so we knew there were critical water supply issues there."

The DWSA is an inventory of projected water needs and sources for the 16-county District. The DWSA built on the District Needs and Sources Plan to determine if there will be adequate water supplies until 2020.

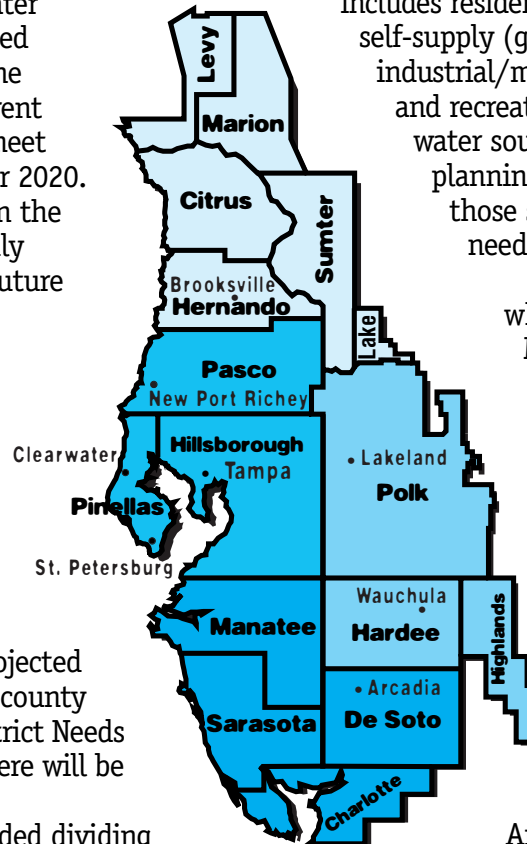
Development of the DWSA included dividing the District into four designated water supply planning regions. Each planning region has unique water supply and demand considerations. For each planning region, the District evaluated existing and anticipated water use in six categories. These categories included public supply (which

includes residential drinking water), domestic self-supply (generally home wells), commercial/industrial/mining, agriculture, power generation, and recreation. Existing and anticipated future water sources were inventoried for each planning region to assess the ability of those sources to meet projected water needs until 2020.

Only in the Northern Region, which includes Hernando, Citrus, Sumter, Marion, Levy and Lake counties, were water resources expected to be adequate to meet the projected demand out to the year 2020.

In the West-Central Planning Region, which includes Pasco, Hillsborough and Pinellas counties, water needs are expected to increase from 473.6 million gallons per day (mgd) in 1995 to 635.1 mgd in 2020.

The East-Central and Southern Planning Regions comprise most of the Southern Water Use Caution Area (SWUCA). East-Central includes Polk, Hardee, and Highlands counties, while the Southern Region includes Manatee, Sarasota, DeSoto and Charlotte. Water demand in East-Central is expected to jump from 456.3 mgd in 1995 to 758.4 mgd in 2020. In the Southern Region, water needs will rise from 388.8 mgd in 1995 to 669.5 mgd in 2020.



[See charts on page 3](#)

## STUDY QUESTIONS:

1. Study the charts on page 3. Which region used the most water in 1995? Which region used the least? Identify the region that is expected to use the most water in the year 2020 under drought and average conditions. Identify the region that is expected to use the least. Discuss your conclusions.
2. Use the map to identify the region in which you live. Study the different water use demand categories for your region. Which category represents the largest use of water in your region? Look at the expected use by these categories under drought conditions for the year 2020. Why would drought conditions cause a greater increase in a few categories but not others?
3. How will the increased demand affect sustainable development in the future? What choices could a community make to overcome this challenge?

[Answers on page 8](#)

**East-Central Water Supply Planning Region**

Water Use Demand Category	Water Use 1995	Average 2020	Drought 2020
Public Supply	57.8	106.5	107.1
Domestic Self-Supply	21.6	36.9	39.2
Industrial/Mining	96.4	75.9	75.9
Power Generation	1.9	26.5	26.5
Agriculture	264.5	332.0	487.1
Recreation	14.1	21.5	22.6
Regional Totals	456.3	599.3	758.4

**Northern Water Supply Planning Region**

Water Use Demand Category	Water Use 1995	Average 2020	Drought 2020
Public Supply	30.1	55.9	59.3
Domestic Self-Supply	25.3	45.5	48.3
Industrial/Mining	76.3	66.3	66.3
Power Generation	4.0	4.0	4.0
Agriculture	41.0	48.9	49.7
Recreation	9.7	17.6	18.5
Regional Totals	186.4	238.2	246.1

**West-Central Water Supply Planning Region**

Water Use Demand Category	Water Use 1995	Average 2020	Drought 2020
Public Supply	252.8	311.9	329.2
Domestic Self-Supply	33.0	45.3	48.0
Industrial/Mining	42.6	38.1	38.1
Power Generation	3.8	3.8	3.8
Agriculture	114.2	145.1	177.7
Recreation	27.2	36.5	38.3
Regional Totals	473.6	580.7	635.1

**Southern Water Supply Planning Region**

Water Use Demand Category	Water Use 1995	Average 2020	Drought 2020
Public Supply	87.4	135.2	142.4
Domestic Self-Supply	8.9	13.3	14.1
Industrial/Mining	11.5	15.7	15.7
Power Generation	0.5	27.5	27.5
Agriculture	265.0	326.0	440.0
Recreation	15.5	28.4	29.8
Regional Totals	388.8	546.1	669.5

Continued from page 1  
**What does it mean?**

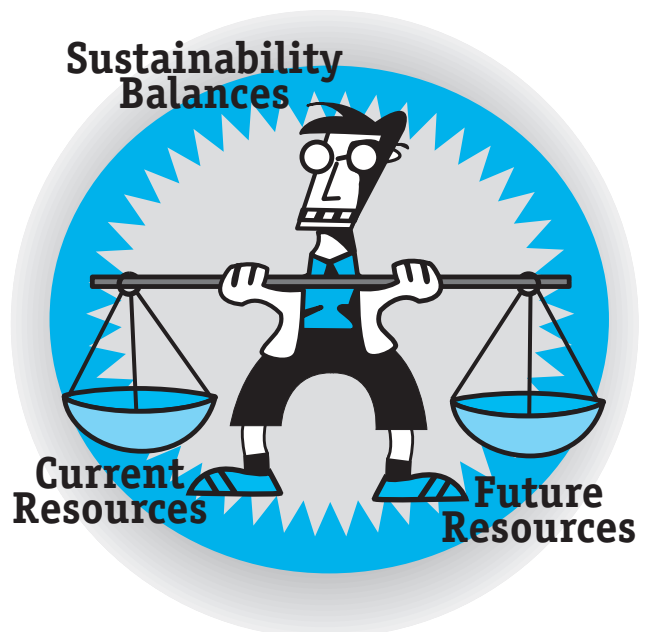
maintaining the natural systems which provide the District with its existing and future water supply.

As we think about sustainability in the next century, we need to focus on many issues related to our natural resources. People need to work together to balance all aspects of life in Florida, in other states, and throughout the world. Each of us plays an important role in meeting the challenges of sustaining our water resource.

There are three ways you can help.

- Take shorter showers.
- Turn the water off when you're washing your face or brushing your teeth.
- Check for leaks or drips in faucets or toilets.

Can you add to the list?



**Gerald Morrison, Ph.D.,  
Ecosystem Management Coordinator, Southwest District,  
Florida Department of Environmental Protection (DEP)**

**Q** Mr. Morrison, can you briefly describe your occupation for us?

**A** The Ecosystem Management program at DEP focuses on “big picture” issues, like the management of water quality in Florida’s largest lakes, river basins and estuaries. Our primary purpose is to work together with other resource management programs, such as the National Estuary Programs in Charlotte Harbor, Sarasota Bay, and Tampa Bay, and to develop goals for taking care of these large ecological systems.

**Q** The theme of this issue of *WaterWeb* is sustainability. Does your job relate to that concept for Floridians? If so, how?

**A** Yes, definitely. Ecosystem management will not succeed in Florida if we don’t practice sustainable development. A major purpose of our program is to help people in each watershed identify and carry out sustainable development practices in their local area. Making better choices today about the use of ground water, for example, can assure future generations that their lakes will be healthy.

**Q** What is your favorite aspect of your job?

**A** Two things come to mind. First, I enjoy having an opportunity to see and experience some of Florida’s natural areas, which are among the most beautiful

in the world. Second, I enjoy having an opportunity to work cooperatively with people from various backgrounds and points of view in order to help protect those areas.



**Q** If a student showed an interest in pursuing a career in ecosystem management, what advice would you give him or her?

**A** Students interested in water quality issues will need a strong background in chemistry and statistics, while those whose primary interests are in mathematics or computer science may want to focus on quantitative fields such as hydrology or certain areas of environmental engineering. People interested in the management of plant and animal populations often focus on biology and ecology. From areas outside the natural sciences, workers with backgrounds in planning,

public policy, and public administration can also make important contributions to ecosystem management programs. A bachelor’s degree would be a minimum requirement for most entry-level positions in these fields, although a master’s degree is very helpful.

**Q** Money is always an issue with graduating seniors. Can you tell us what an entry-level environmental scientist or engineer might expect to make annually?

**A** Most people don’t enter this field for monetary reasons. In general, however, private-sector positions (in consulting firms or industry) offer higher salaries than the public sector, and environmental engineers often receive higher salaries than environmental scientists. I’d guess that average starting salaries for entry-level positions range from \$20,000 to \$40,000 per year.

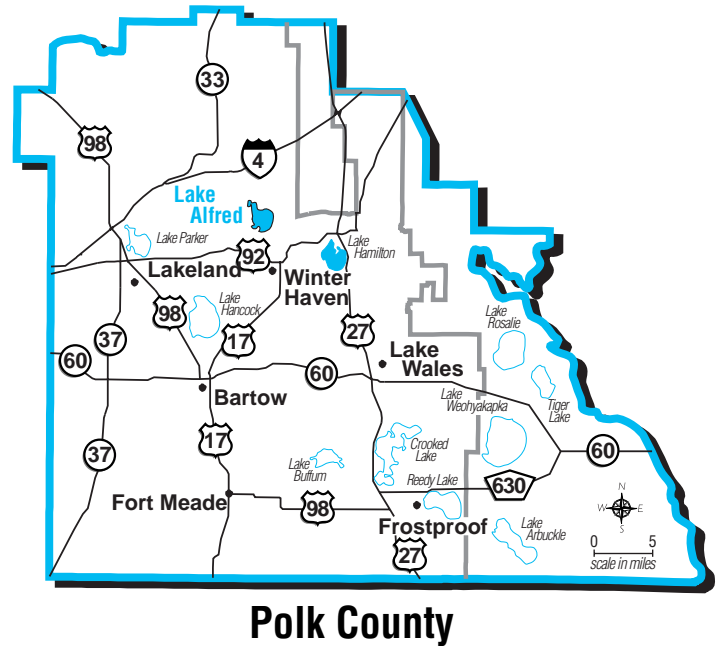
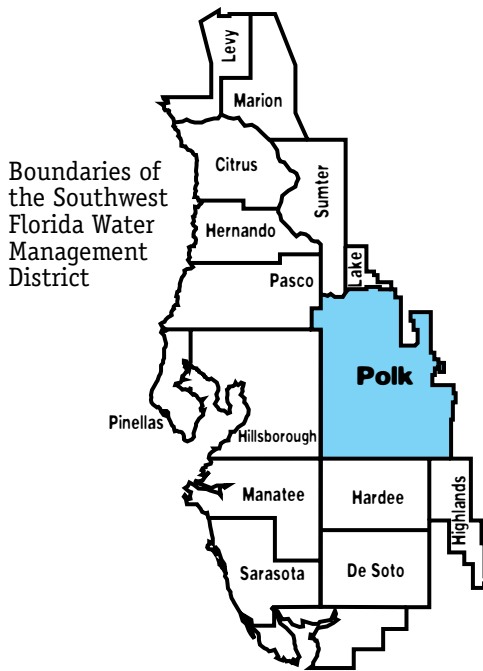
**Q** In closing, are there any words of wisdom that you would like to share with our readers?

**A** Regardless of the career you choose, please keep this in mind: The choices you make in your daily life will have important effects on the quality of the environment that will be experienced by your children and grandchildren.

# The Effects of Stormwater and Irrigation Run-off

## Lake Alfred Middle School

This mini-grant project was funded by the Peace River Basin Board of the Southwest Florida Water Management District. The primary focus of the study was a 1-acre retention pond located on the northwest corner of the school property. At the beginning of this study, the class knew little about the dynamics of that particular water system and any effects it might have on nearby Lake Alfred.



### Goals:

1. To determine the various means by which water enters and exits the basin.
2. To determine the seasonal changes in water quantity and quality at the study site.
3. To identify plants and animals at the site and to determine changes that occur within these communities.

### Methods:

1. Students periodically visited the study site, observing and recording the changing water depths and turbidity.
2. Students studied the movement of water into the retention pond during and immediately after varying amounts of rainfall.
3. Students periodically observed and identified the plant and animal species within the fenced pond site.
4. Students visited the Hillsborough River State Park where they observed a riverine system whose headwaters begin in western Polk County. The geology of the river basin and effects of contaminated inflow from a local dairy operation were discussed. Park rangers also discussed the plant and animal communities associated with the area.

The students involved in this project increased their understanding of the effect of surface water inflow to the study pond site and factual information about the properties of surface water.

For more information about this project and other mini-grant projects, contact the Southwest Florida Water Management District at 1-800-423-1476, extension 4757.

## Land Use My Way

The concept of sustainable development is very important when we think about the growth of a community. Groups within the community may have different views about future development and its effects on the environment. The purpose of this activity is to gain a better understanding of the complexities of sustainable development. This activity will require three class sessions.

### Session One

Use a large piece of paper the size of a wall mural, bulletin board, etc. As a class, draw a stream, wetlands, river, and estuary system (see sample drawing). Be creative. Show native plants and animals that could be found there. Cutouts from magazines may also be used.

### Session Two

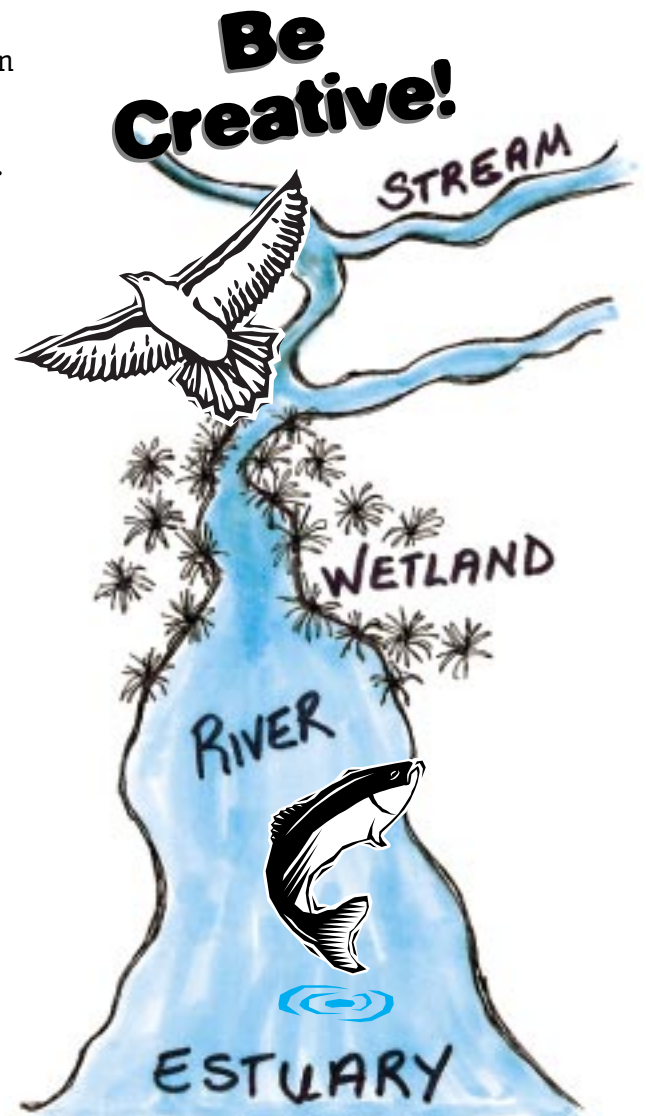
Divide into seven groups so that each group represents the interests of a different type of water user.

1. Residents (people who live in the area)
2. Agriculture (farmers)
3. Local business (maybe a mall, insurance or real estate company)
4. Transportation (Department of Transportation, bus, company, railroad)
5. Social services (hospitals or schools)
6. Parks and recreation
7. Manufacturing (shoe factory, soap company or other type of processing plant)

### Session Three

Combine all of the groups for a follow-up discussion. The representative from each group should present the plan. After all the positions have been presented, discuss the pros and cons of each plan. Groups that have conflicting interests may need to modify their positions based on what is best for the community. As a class, determine the best plan for developing the community. Complete the mural.

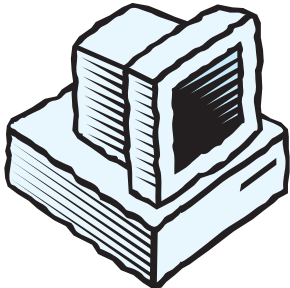
*For an expanded version of this activity, see "Waterful, FL," one of 11 relevant and fun activities in the Southwest Florida Water Management District's Splash! Water Resource Education packet. Request the Splash! packet free of charge by calling 1-800-423-1476, extension 4757, or download it from the District's Web site at: <http://www.swfwmd.state.fl.us>*



Sample Drawing for Session One



## Sites for WaterWeb Readers to Explore



Are you interested in learning more about sustainability? Check out these two sites to start your search engines!

### For Teachers:

The World Bank has created the Development Education Program, which offers learning modules for the classroom and other great resource links.

<http://www.worldbank.org/depweb>

### For Students:

This is a great site for research about sustainability, including media reprints, book reviews, a survey and chat room, and other links to the topic of sustainability.

<http://www.betterworld.com>

## Answers

### Study Questions on page 2

1. The West-Central Planning Region used the most water in 1995. The Northern Planning Region used the least. The East-Central Planning Region is expected to use the most water under drought conditions and average conditions in the year 2020. The Northern Supply Planning Region is expected to use the least amount of water under drought and average conditions in the year 2020.
2. Answers will vary according to water supply planning region.
3. Increased demand for water will affect sustainable development in a variety of ways. The choices a community makes will determine its future. Have students share their views on this topic.

### Activities on page 7



sustainability  
development  
community  
wetlands  
nature

### Word Scramble

e n v i r o n m e n t

## Credits



Protecting *Your*  
Water Resources

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