

WaterWeb



current water info for grades 6-8

A publication of the Southwest Florida Water Management District



The WaterWeb Query

QUESTION:

What can I do to help meet Florida's increasing demand for water?

ANSWER:

Conserve water. There are so many easy ways to save water.

You will use less water if you:

- Turn off the water while washing your hands or brushing your teeth.
- Take shorter showers.
- Run only full loads in washing machines and dishwashers, or set the proper water level.
- Avoid using the toilet as a trash can.
- Install water-saving faucets and showerheads.

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Conservation and Our Water Supply What is the connection?

You probably already know that conservation means to use carefully or to use only what you need without wasting. But what does conservation have to do with Florida's water supply? Let's think about it...

All living things depend on clean, fresh water as part of their basic health and survival.

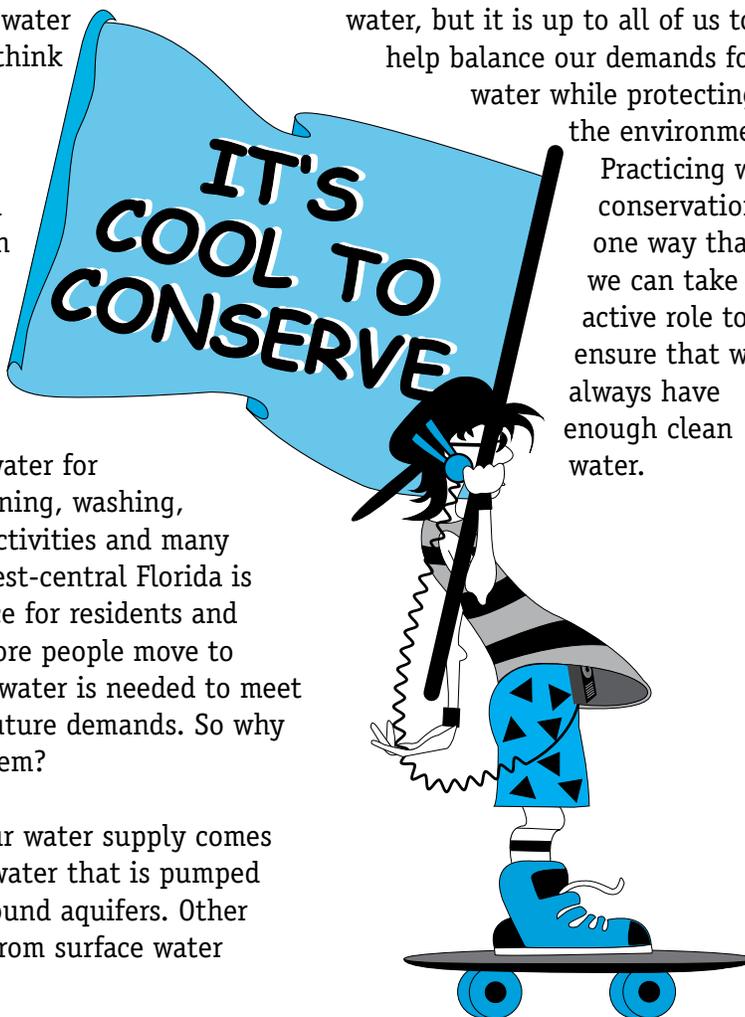
In addition, people need water for drinking, cleaning, washing, recreational activities and many other uses. West-central Florida is a popular place for residents and visitors. As more people move to Florida, more water is needed to meet current and future demands. So why is this a problem?

Most of our water supply comes from ground water that is pumped from underground aquifers. Other water comes from surface water

bodies such as lakes, streams and rivers. The increased demand for water causes additional stress on our water sources. Alternative sources will help to provide additional water, but it is up to all of us to help balance our demands for water while protecting

the environment.

Practicing water conservation is one way that we can take an active role to ensure that we always have enough clean water.



This issue of *WaterWeb* focuses on conservation and Florida's water supply. All articles and activities are designed to help you learn more about Florida's water supply sources and the importance of protecting this natural resource.

Water Supply

A goal of the Southwest Florida Water Management District (SWFWMD) is to ensure that there is an adequate supply of water resource for all reasonable and beneficial uses, now and in the future, while protecting and maintaining water and related resources.

The more people in an area, the more water they will need. That is the core of the water supply challenge in west-central Florida. Anticipated population growth clearly shows that demand for water will outstrip traditional supplies in many areas. In some areas it already has.

Approximately 80 percent of the fresh water used in the SWFWMD is ground water, mostly drawn from aquifers. The balance of what is used today comes from surface water — mainly from rivers, reclaimed water (for irrigation) and small brackish-water desalination facilities.

All of those sources, as well as repurified water, are expected to play a role in the future water supply, but ground water will remain the primary source.

Surface water use will probably expand, but that is limited. The reuse of treated wastewater will grow. Desalination will become a major new source of supply. The fastest, cheapest way to accommodate increasing demand is through conservation, but conservation alone won't be enough to meet future needs. Again, unfortunately, in some areas demand has already exceeded what nature can provide without causing unacceptable impacts to the environment.



Check Your Facts About Water Supply



Where does most of our drinking water come from?



Define “surface water” and give three examples of this water source.



Why is water conservation important for meeting our future water demands?

A Brief View of the SWFWMD's Water Supply Sources

Ground water

Underground water is commonly referred to as *ground water* because it is water that has seeped into the ground and is held in soil and rock. Ground water that is pumped from underground aquifers makes up approximately 80 percent of our water supply.

Surface water

The water on the land's surface in water bodies such as lakes, streams, rivers and oceans is called surface water. Surface water accounts for 20 percent of the SWFWMD's water supply. Rivers and creeks within the boundaries of the SWFWMD provide fresh water to the public in Tampa, Bradenton, Punta Gorda, Port Charlotte and North Port, as well as Hillsborough, Charlotte, Manatee and Sarasota counties.

Conservation and reuse

Reuse is taking water from a wastewater treatment facility and reclaiming it by treating it so it can be used for irrigation and uses. Water conservation is all about practices that use less water.

Alternative water sources

The SWFWMD's alternative water sources include reclaimed water, reuse, rehydration and desalination. The following information will help you better understand these alternative sources.



Reclaimed water is water that has received at least secondary treatment and is reused for outdoor irrigation after flowing out of a wastewater treatment plant. Reclaimed water is high quality and has no smell.



Reuse is the deliberate application of reclaimed water according to rules established by the Florida Department of Environmental Protection and the SWFWMD.



Rehydration is a process in which the amount of water going into the aquifer is increased by applying storm water or reclaimed water to the surface of well fields and wetlands.



Desalination is the process of removing salt and other minerals from water.

EXTENDED ACTIVITIES

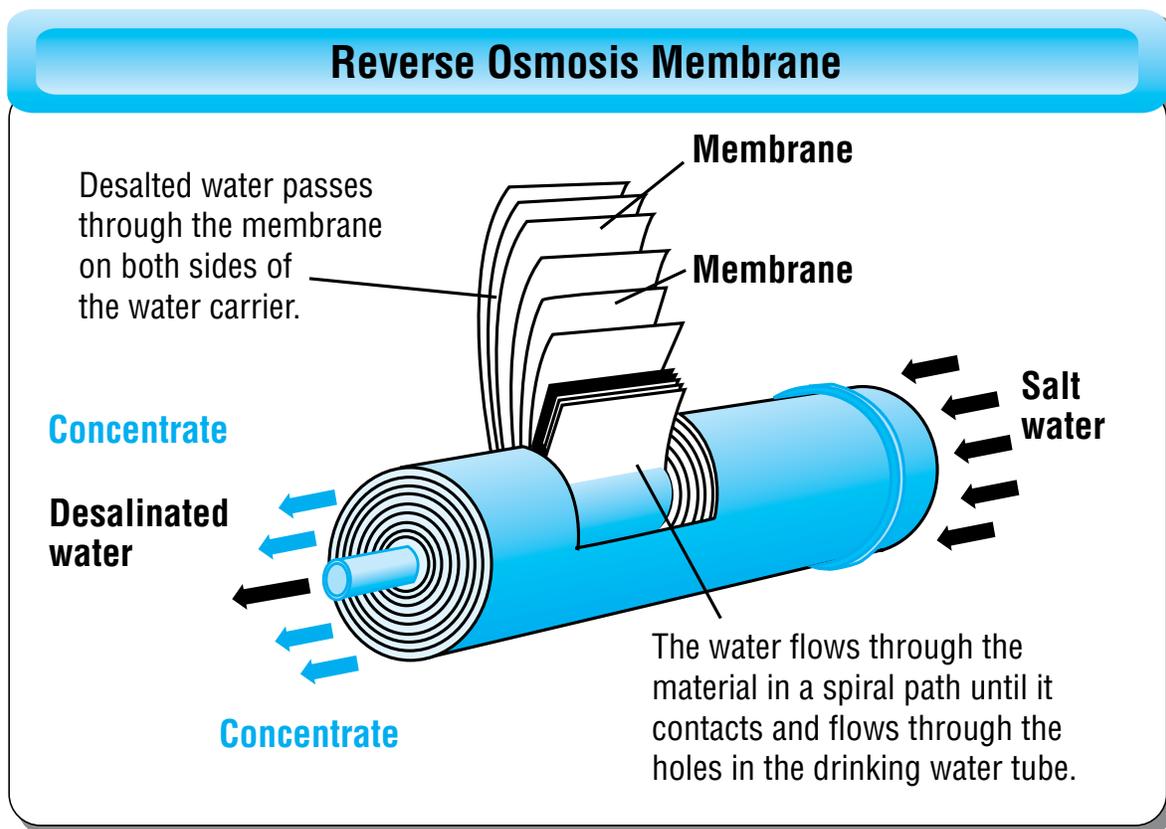
1. As you learned in this section, most of this region's water supply comes from ground water. But do you know where people living in other states get their drinking water? Using a search engine on the Internet, select three cities in other states and find out about their water supply sources.
2. Pretend that you live in a newly developed community that includes a golf course, park and recreation area, 200 homes and an apartment complex. Describe how reuse could help conserve water in the entire area. Also list several ways that residents could help to conserve water.

What is desalination?

Finding new sources of water to meet our area's increasing water needs is a challenge. One option to meet this challenge in the future is saltwater desalination. Basically, desalination is the process of removing salt and other minerals from water. Through the removal of these elements, we could develop a droughtproof water supply.

What technology is used for desalination?

The leading technology used in desalination of seawater is called reverse osmosis. This process uses high pressure to force salt water through long, tubelike membranes. Several layers of material located in the membranes remove salt as the water passes through, leaving behind only the salty concentrate.



The Gulf of Mexico will not dry up even during droughts, so seawater desalination is one possible solution to west-central Florida's need for water.

Classroom Activity

Not all people are in favor of seawater desalination. List three reasons that could be used to persuade people that desalination is a good way to provide an alternative drinking source. Create a classroom poster that promotes desalination as an alternative resource.

SWFWMD Water Demands

As more people move to our area, the demand for water will continue to increase. Estimates for water usage have been developed for a variety of water users through the year 2025. The demand for water throughout the Southwest Florida Water Management District (SWFWMD) is expected to increase from 1,188 million gallons per day (mgd) in 2005 to 1,358 mgd by the year 2025, which represents an increase of 14 percent. To learn more about our water demands, study the chart below and then quiz yourself.

Water Demands

Water Demands Throughout the SWFWMD

Type	2005	2025	% Change
• Public Supply Domestic Self Supply	539	713	up 32%
• Agriculture	470	433	down 8%
• Industrial/ Commercial Mining/Dewatering	117	126	up 8%
• Recreational/Aesthetic	62	86	up 39%
Totals	1,188	1,358	up 14%

**Figures are given as million-gallons-per-day averages*

Quiz Time

Circle Correct Answer Below

Study the information about projected water demands to decide whether each statement below is True or False.

T F
T F
T F
T F
T F

1. The total demand for water will increase by 14 mgd.
2. The only projected decrease in water demand will be in the area of commercial, industrial and mining.
3. The abbreviation for million gallons per day is mgd.
4. The smallest percent change is expected to be in the area of public supply.
5. Water used for recreational/aesthetic activities is expected to increase by more than 60 percent.

WaterWeb Contest

Taking an Active Role in Water Conservation

As more people move into communities within the SWFWMD, it is essential they realize the importance of water conservation. Pretend that you produce web pages to welcome newcomers to our area. Using one sheet of paper, create a page that informs new residents about our water supply and ways to practice water conservation. Or create it online with any software that may be available to you. Just remember to be creative! If we decide to use your material on the SWFWMD's web site or in any other materials, we'll send you a free gift!

Please return your entry and the form below to:

WaterWeb Contest
Communications Department
Youth Education
Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899
or email WaterEducation@WaterMatters.org

Entry Form (cut along dashed line and mail to above address)

Student's name: _____

Title of entry: _____

Home address: _____

School name: _____

Grade level: _____ Teacher's name: _____

Create Your Own Desalination Plant

After you have read about desalination on page 4, try this experiment.

Learning Goals

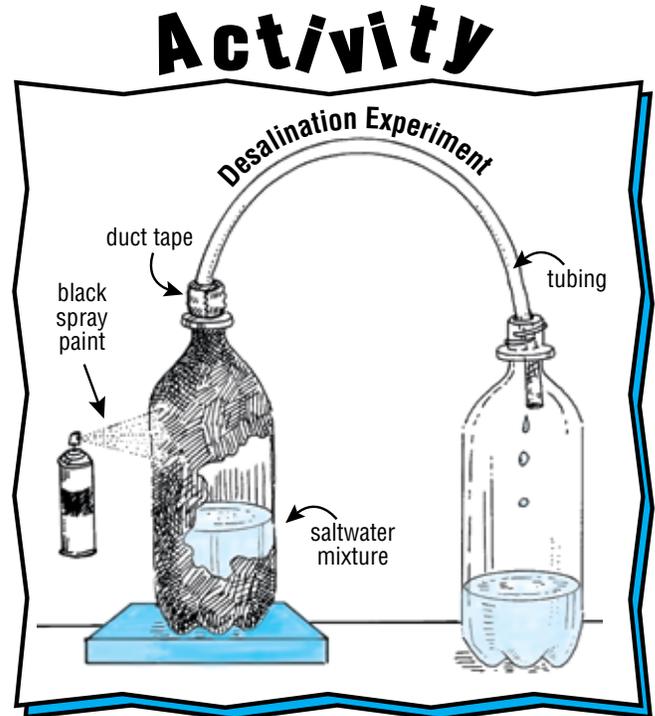
- To learn about desalination through an experiment
- To stimulate thought about alternative sources of drinking water

Activity

1. Spray paint one of the bottles black.
2. Pour 1 quart of water in a pitcher and stir in ½ cup salt.
3. Pour the saltwater mixture into the black bottle.
4. Attach tubing to both of the bottles and secure with duct tape.
5. Set both bottles in a sunny window. Be sure to place the black bottle higher than the clear bottle.
6. For the next few weeks, examine the bottles each day and record your observations. (See sample observation chart below.)
7. Discuss the results.

Materials

- two 2-liter bottles
- black spray paint
- duct tape
- one foot of ½" diameter clear plastic tubing
- water
- salt
- pitcher



Adapted from *The Water Sourcebook*

Desalination Experiment



Date	Weather Conditions	Observations

SAMPLE

Discussion Questions

1. How long did it take for water to begin moving through the tube and into the clear bottle? What conditions would have caused the water to move sooner?
2. How many days did it take for all of the water to move into the clear bottle? What substance remained in the black bottle?
3. What suggestions can you give to improve this experiment?

WaterWeb Crossword Puzzle

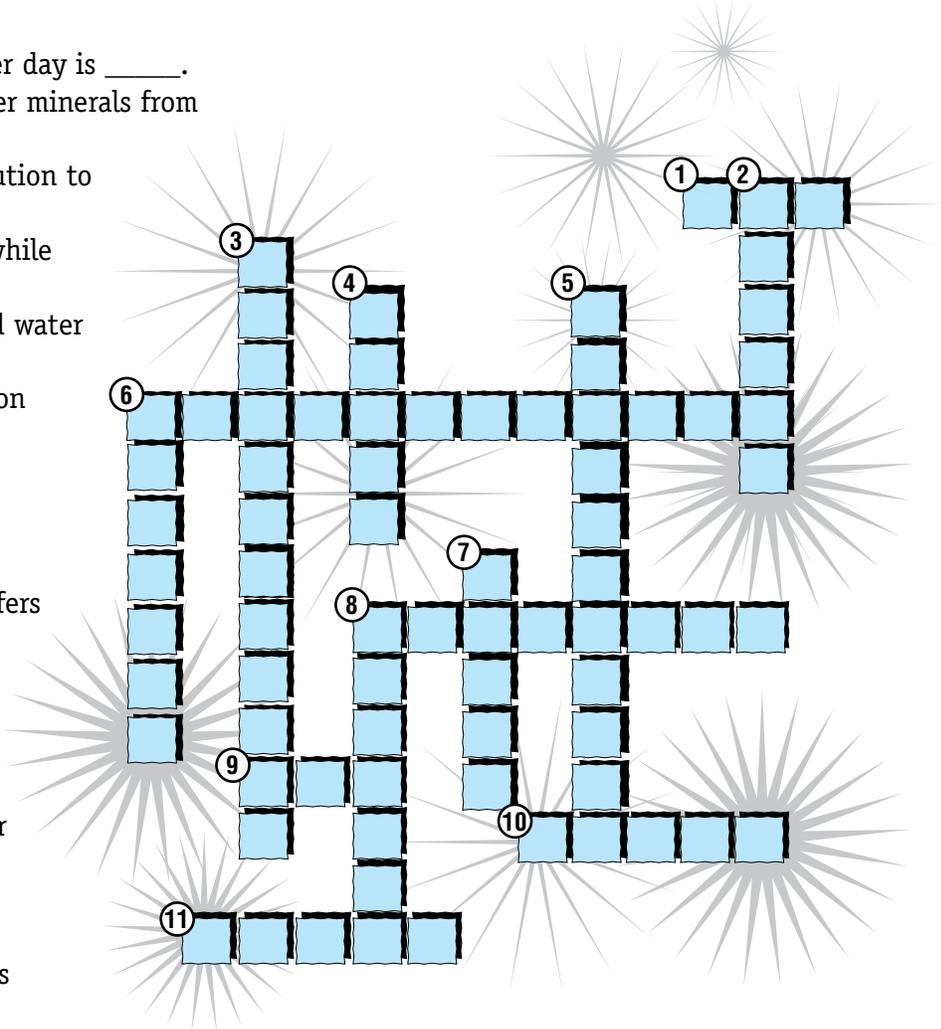
Sharpen your pencils. Complete each sentence with the correct word that fits in the puzzle.

Across:

- The abbreviation for million gallons per day is _____.
- The process that removes salt and other minerals from water is called _____.
- _____ desalination is one possible solution to west-central Florida's need for water.
- To save water, turn _____ the faucet while brushing your teeth.
- The deliberate application of reclaimed water according to rules established by the Department of Environmental Protection and the SWFWMD is called _____.
- As more people move to our area, the demand for _____ will increase.

Down:

- Water pumped from underground aquifers is called _____ water.
- Water _____ is all about practices that use less water.
- The water in the Gulf of Mexico tastes _____.
- Water sources other than ground water may be called _____ water sources.
- A time when there is little rain and very dry weather is called a _____.
- Streams, rivers and _____ are examples of surface water.
- Water contained in water bodies on the land's surface is called _____ water.



WaterWeb Scramble

Unscramble the letters to form words. Then use these words to complete the paragraph.

V A E S _____

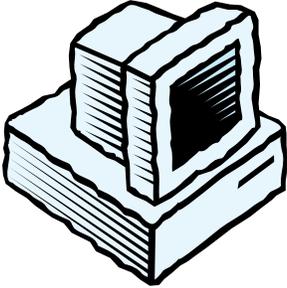
S O U R E E R C S _____

V E R S I O N N O C T A _____

T R E F U U _____

Practice simple _____ habits and you can play an important role in meeting the _____ demands for our water supply. By encouraging others to _____ water, you will help to ensure that we always have an adequate supply of the water _____.

Sites for *WaterWeb* Readers to Explore



There is a lot of information about water conservation and water supply available on the Internet. Go online to find out more about these topics. Following are a few key words to get you started on your search for information. You may want to combine "Florida" with these words to narrow the scope of your search.

- Desalination
- Water conservation
- Alternative water sources
- Water-saving devices
- Water-saving tips

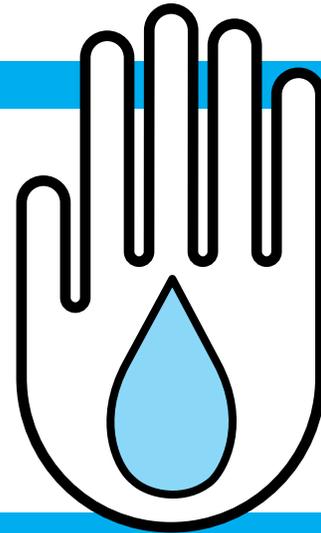
Also, don't forget to visit the Southwest Florida Water Management District's web site:

www.WaterMatters.org

Project

Take the Classroom Challenge!

Log on to WaterMatters.org/classchallenge/ and pledge to conserve water and implement an action project. Send us your results and we might feature you on our web site!



Credits

Southwest Florida
Water Management District



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