

below
the
surface
an in-depth
look at...



Water: A Precious Commodity!

ON THE INSIDE

- Why South Florida has a Water Shortage Plan
- Water-Use Restrictions during a Water Shortage
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Subtropical South Florida depends solely on rainfall for its water supply. It gets an abundance of rain – 55-60 inches a year, falling mostly in the summer months. Winters are delightfully warm with little rain. Balancing the extremes of flood and drought while providing water for 6 million residents, 30 million tourists, a thriving agriculture industry, and the natural environment is the challenge of the South Florida Water Management District.

In South Florida, rainfall varies greatly from region to region and from year to year. Residents like to say, "If you don't like the weather, wait a minute – or, cross the street." Our weather extremes are underscored when serious droughts often end with heavy rains and widespread flooding.

Although the region receives about 55-60 inches of rainfall a year, not all the water is available for use. The combination of evaporation and transpiration (the process of plants absorbing water through their roots and returning it to the atmosphere as water vapor through their leaves) results in a loss of 45 inches of rain annually.





The major source of fresh water for South Florida cities, businesses, and agriculture comes from a less visible source – ground water. Water is stored naturally underground in layers of rock and sand, called aquifers, that are replenished by rainwater soaking down through the soil.

Droughts bring prolonged dry spells that result in significant reductions of stored water. Reduced storage is seen in lakes, ponds, rivers and canals, and is most acutely visible in Lake Okeechobee, the hub of most of South Florida's water-supply.

However, the major source of fresh water for South Florida cities, businesses, and agriculture comes from a less visible source – ground water. Water is stored naturally underground in layers of rock and sand, called aquifers, that are replenished by rainwater soaking down through the soil.

During a drought, reduced rainfall means less water reaching the underground aquifers, making them vulnerable to the movement of saltwater pushing inland from the ocean or gulf. This saltwater intrusion makes well water undrinkable.

Droughts, therefore, require careful management of remaining water supplies for two critical reasons:

- **The amount of water available for all needs becomes critically low.**
- **Saltwater intrusion can damage the quality in the underground supply, making it unusable.**

The South Florida Water Management District issues permits to keep groundwater withdrawals and drainage plans consistent with the best interests of the public. The District also provides technical assistance to local governments to coordinate land-use and water-resource issues.

How Water Managers Check for Signs of Stress in the Region's Water Supply

District experts keep a year-round vigil on the water supply, following global predictions and tracking weather and water conditions from Orlando to the Keys. They monitor the following:

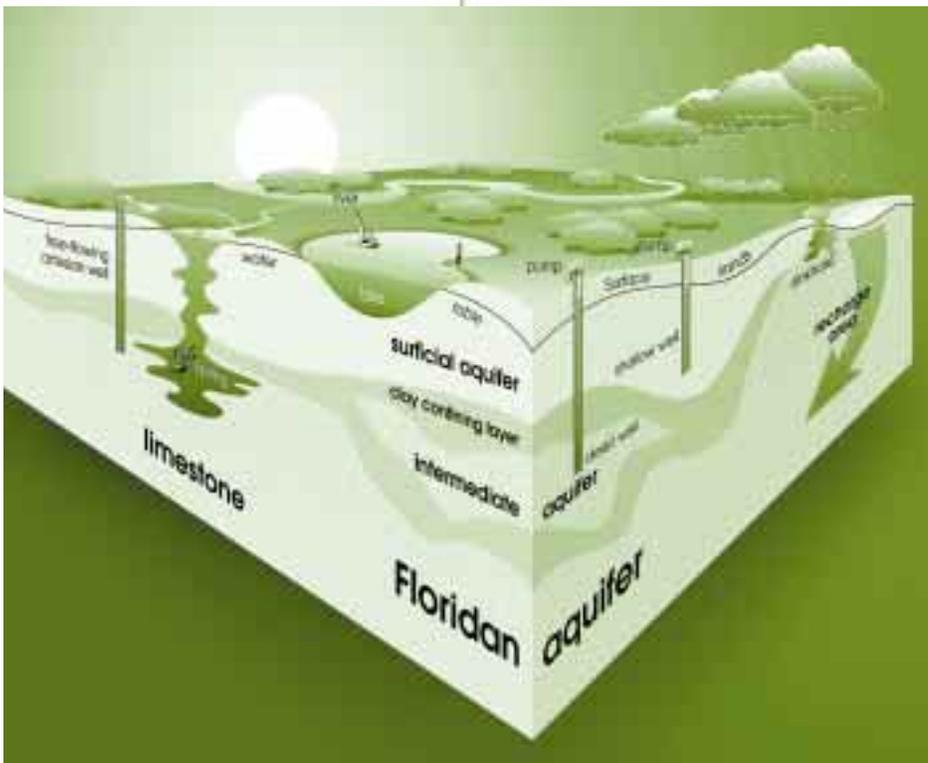
- The level of water stored in surface water bodies such as Lake Okeechobee and the water conservation areas;
- Water levels in the underground storage areas (aquifers);
- Rising chloride levels in the ground water (a sign of saltwater intrusion);
- Predicted rainfall;
- Predicted water needs for urban uses and agricultural irrigation; and
- The amount of water being used compared to the "norm" for the time of year.

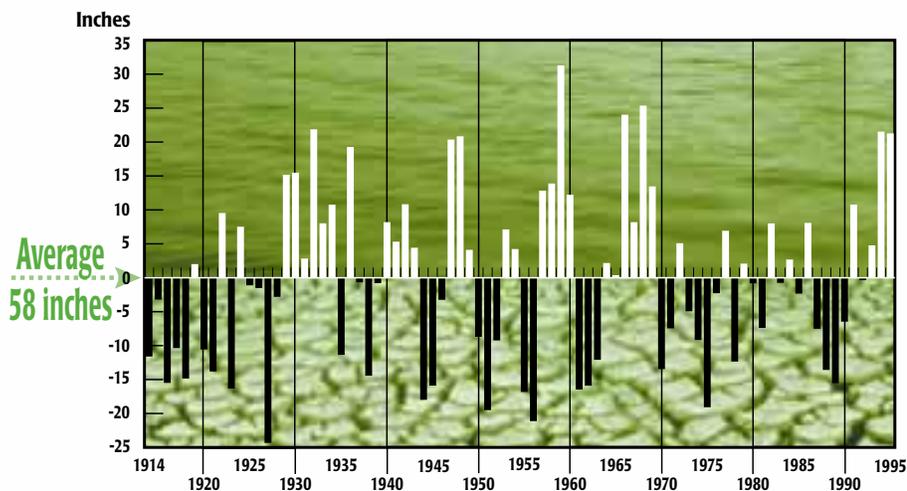
The Water Shortage Plan

To deal with water shortages effectively and in an equitable manner, the South Florida Water Management District has drafted the Water Shortage Plan – a set of legal guidelines to limit water use during times of short supply. The rules are designed to protect water resources from harm such as saltwater contamination and to ensure a fair distribution of available supplies.

Under the plan, restrictions affect all users – businesses, industries, agriculture, residents, and tourists. Restrictions apply to people using private wells, lakes, and canals as well as to those who get their water from water utilities.

Including everyone in the plan assures an equitable method of distributing limited water during a shortage. Since water conditions can vary throughout the 16-county





South Florida fluctuates between being very wet and very dry. It is not unusual for a drought to follow a year of flooding. The above graph depicts variation from the average annual rainfall at Miami Airport and Miami City Stations.

The District's major surface waters are the Upper Kissimmee Chain of Lakes, Kissimmee River, Lake Okeechobee, Caloosahatchee and St. Lucie rivers, and the Everglades – plus associated lakes, ponds, wetlands, and canals. The Atlantic Ocean and the Gulf of Mexico surround the peninsula and interconnect with the estuaries, bays, and inlets.

region, different levels of restrictions may be in place within the District. The level of restriction matches the degree of the shortage. As outlined in the District's Water Shortage Plan, restrictions range from Phase I (moderate shortage), to Phase II (severe shortage), Phase III (extreme shortage), and Phase IV (critical shortage). Each phase is correlated to the overall percentage of water-use reduction needed.

Water-Use Restrictions

Communication is vital during a water shortage. Before the District imposes water-use restrictions, two preliminary stages usually exist:

Watch: The District alerts local water suppliers in the affected area to conditions that may lead to a shortage.

Warning: The District alerts the public and large water users to encourage voluntary water-conservation measures. If water-supply conditions continue to deteriorate, the District initiates mandatory restrictions.

The news media play a vital role during the early "watch" and "warning" stages of a water shortage. Local authorities receive advisories as to water conditions and the District publishes legal notices in newspapers with the precise wording of the

declaration. The District also communicates with the news media in the affected areas, primarily via news releases also posted on www.sfwmd.gov.

The Four Phases of Water Restrictions in the Water Shortage Plan

- **Phase I:** Lawn and landscape irrigation for tracts under five acres is limited to three specific time periods a week.

Odd addresses: Mondays, Wednesdays and Saturdays from 4-8 a.m.
Even addresses: Tuesdays, Thursdays and Sundays from 4-8 a.m.

- **Phase II:** Watering is limited to two days a week.

Odd addresses: Wednesdays and Saturdays from 4-8 a.m.
Even addresses: Thursdays and Sundays from 4-8 a.m.

- **Phase III:** Watering is limited to a three-hour period once a week.

Odd addresses: Saturdays from 4-7 a.m.
Even addresses: Sundays from 4-7 a.m.

- **Phase IV:** Watering is limited to one hour per week.

Odd addresses: Saturdays from 6-7 a.m.
Even addresses: Sundays from 6-7 a.m.



Under each phase, non-commercial car washing is allowed during watering hours. The water must drain to a non-paved area such as a lawn.

Tracts under five acres with no address follow the same schedule as even-numbered addresses.

All users have similar phased cutbacks. Golf courses, for example, are limited to nighttime watering three days a week on fairways during Phase I. They can water one day per week at night in Phase IV.

The District may prohibit all outside water use if the shortage becomes critical.

Enforcing the Water Restrictions

Experience has shown that most people in South Florida do their part by following water-use restrictions. However, provisions are in place to enforce restrictions for people who violate the rules.

During a declared water shortage, all law-enforcement officials throughout the District are empowered to issue citations for water-use violations. Violations are considered misdemeanors and violators get one warning. Then, they are subject to fines and other penalties.

Many communities have passed ordinances that adopt the restrictions as local law, enabling area police and sheriffs' officers to enforce them at the local level by issuing tickets and allowing residents to avoid criminal penalties.

The South Florida Water Management District is a regional, governmental agency that oversees the water resources in the southern half of the state. It is the oldest and largest of the state's five water management districts.

Our Mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems, and water supply.

This "Below the Surface" publication on Water Conservation directly supports our mission of water supply.



Water Utility Permits Require Conservation

Water conservation should be a way of life year around for South Floridians. Awareness of water as a precious commodity is becoming part of the sub-tropical lifestyle. The South Florida Water Management District incorporates the following points into the permit conditions when a utility is allowed to supply water to its customers:

- 1) Limiting hours for lawn irrigation to cut down on evaporation and water waste.
- 2) Promoting landscape codes that save water (Xeriscape principles – see *Did You Know?*).
- 3) Requiring ultra-low-volume plumbing fixtures in new construction.
- 4) Requiring utilities to charge more for excessive water use.
- 5) Implementing leak-detection programs.
- 6) Requiring water utilities to inform residents about conservation.
- 7) Adopting ordinances to require rain-sensor switches.
- 8) Requiring studies on water reuse (using minimally treated waste water for landscape watering).

– FOR WATER CONSERVATION
INFORMATION & MATERIALS –
Contact the SFWMD at 1-800-662-8876.
This publication is also available on our
Water Shortage web site at
<http://www.sfwmd.gov/curre/watshort/index2.html>

DID YOU KNOW?

- Alligators are nature's water conservationists. They use their powerful tails to excavate water holes and to deepen existing sinkholes already filled with water. These "gator holes" become community centers for wildlife during a drought. Often the only water in an area, "gator holes" serve an important function in Everglades ecology.
- It is estimated that half of the water consumed in South Florida is used for landscapes. Although all water uses inside and outside the home are covered under the Water Shortage Plan, inside measures are voluntary. The typical homeowner is most affected by restrictions on outside water use.
- It is possible to create an attractive yard that requires little water and embraces the conservation ethic. The District promotes long-term conservation measures through landscaping practices known as **Xeriscape**. Xeriscape comes from a Greek word (*xeris*) meaning "dry."
- Presently, in South Florida, 1.7 billion gallons of excess water drain to the ocean daily. The Comprehensive Everglades Restoration Plan is now under way to restore the Everglades and provide water for urban and agricultural needs for a 50-year population projection.



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