

## WaterWise Program

The Harris-Galveston Subsidence District understands the importance of protecting and preserving our area's water resources. We also realize that part of ensuring a long-term water supply means educating our children, early in life, to conserve in simple yet effective ways.



For years, the HGSD has partnered with local cities, municipal utility districts and other water industry professionals to bring a specially tailored version of the National Waterwise Program's innovative classroom experience to our local 4th and 5th grade students. The Waterwise program provides children with interactive, in-class water conservation demonstrations, along with sponsor-donated Waterwise "kits". The kits -- which include everything from quality high-efficiency showerheads and bathroom and kitchen aerators to toilet leak detector tablets -- allow students to implement water conservation techniques and change water use behaviors in their own homes, yards and gardens.

## How we accomplish our Mission...

- ◆ **Perform technical research to determine and project the extent of subsidence and available groundwater supply**
- ◆ **Prepare regulatory and management plans based on best available science**
- ◆ **Issue permits for groundwater withdrawal in amounts consistent with District plans**
- ◆ **Pursue enforcement actions when needed**
- ◆ **Work collaboratively with water suppliers, other districts, regions and local governments**
- ◆ **Encourage water conservation**



Visit our website for additional information on the topics you've seen here plus many other useful resources including: meeting notices, downloadable forms, online permitting forms, FAQ brochures, links to important documents, and online GIS maps and data.



**Harris-Galveston  
Subsidence District**  
1660 West Bay Area Blvd  
Friendswood, TX 77546  
281-486-1105  
[www.subsidence.org](http://www.subsidence.org)



**Harris-Galveston  
Subsidence District**

[www.subsidence.org](http://www.subsidence.org)

## Introducing...

The Harris-Galveston Subsidence District has focused on one basic objective -- preventing land subsidence by bringing together cutting-edge GPS surveying technology, proven aquifer monitoring and modeling techniques, and industry-leading, stakeholder-driven groundwater management.

By doing so, we help minimize the threat of flooding, water well failure, water quality problems, and other property damage issues, while also protecting and preserving adequate future supplies of water for our communities.

## How it is done...

The District accomplishes its objective of preventing subsidence by regulating the amount of groundwater that may be withdrawn from aquifers, which means converting some portion of the groundwater demand within the District over to surface water supplies.

The goal is to ensure that groundwater and surface water are used conjunctively in a manner that won't deplete the aquifers, and it is implemented through a water well permitting program.

The need for data and the accuracy of that data is key to the Subsidence District's regulatory program. As early as 1906, surveys were conducted throughout the Houston area to establish permanent benchmarks (some of



which are still used today). Over the years, subsidence measurement methods have evolved from manual site measurement of benchmarks to satellite-based technology.

All land measurement systems used by the Subsidence District have been developed and controlled by the U.S. National Geodetic Survey. From the creation of the HGSD to the present day, the NGS has been an integral partner... serving as counselor, setting standards, studying and housing data, and much more.

Here are some basic descriptions of the measuring systems we use. For more detailed information, please visit our website, [www.subsidence.org](http://www.subsidence.org).

### Conventional Measurement

Also known as "differential leveling," this method consists of constructing permanent benchmarks and then establishing precise elevations, latitudes, and longitudes for each point using traditional or GPS surveying techniques. The District has conducted five previous relevelings, and has another planned for 2010.

### Borehole Extensometers

Originally designed and installed by the United States Geological Survey, borehole extensometers are specially-constructed benchmarks anchored at depths below our water-producing aquifers - often 1,500 to 3,000 feet below the surface. Although these devices provide extremely accurate measurements of subsidence, they are very expensive to construct, and the District currently operates only 13 of them.

### Global Positioning System

The Subsidence District began incorporating satellite-based GPS technology into its measuring program as far back as 1987 as part of its benchmark relevelings. Now GPS technology is a core component in all of the District's elevation monitoring efforts.

The benefit of GPS is that it delivers reliable, continuous data at a fraction of the cost. A single GPS receiver can collect data on a benchmark every 30 seconds, whereas traditional survey methods might only relevel a benchmark once every 10 or 20 years at a very high cost.

## Technologies of the Future

GPS technology continues to be refined and improved, and the District is also monitoring the development of entirely new methods for measuring land elevations such as LIDAR and INSAR, which use light waves and radar to derive changes in elevation.

## Conservation...

Another major component in our mission is teaching and implementing water conservation throughout our communities, neighborhoods, businesses, and households... all the way down to the youngest family members.

As we look to the future, we realize that stewardship of our most precious natural resource will become even more important. We will continue to expand our efforts through collaboration with our partners and outreach through educational programs that underscore important conservation messages in the community.

