



# That Sinking Feeling

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The gulf coast area, possibly more than any other area in the United States, has been adversely affected by land subsidence. Extensive subsidence, caused mainly by groundwater pumping but also by oil and gas extraction, has increased the frequency of flooding, caused extensive damage to industrial and transportation infrastructure, motivated major investments in levees, reservoirs, and surface-water distribution facilities, and caused substantial loss of wetland habitat.

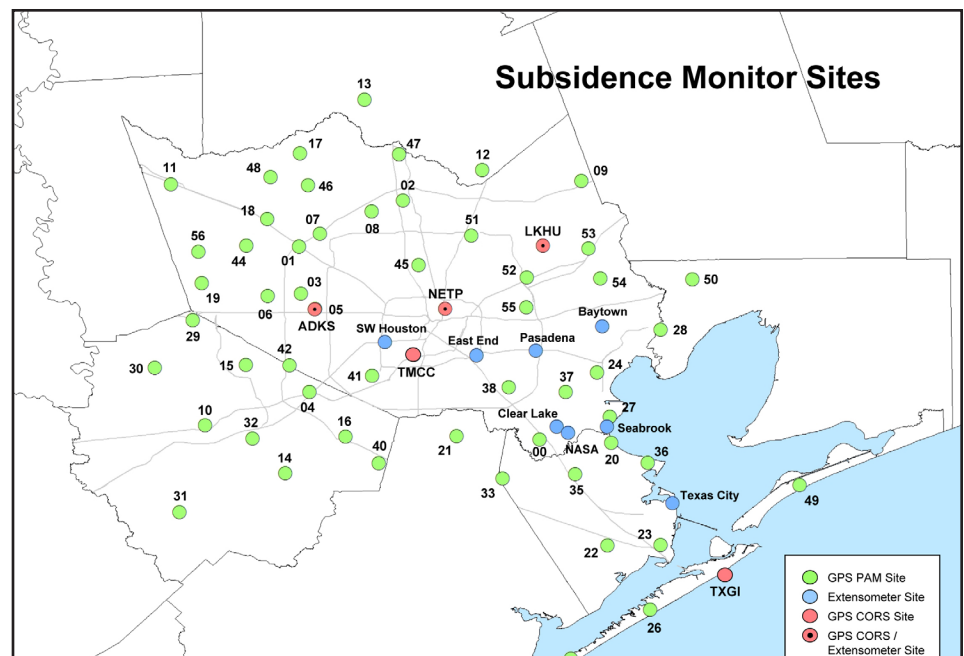
While there is a considerable volume of water in storage in the Gulf Coast aquifer, withdrawing water at a rate higher than the annual recharge rate will result in depleting the aquifer over time. Measurements from monitor wells already show declining water levels over most of Montgomery county. The Region H Water Plan indicates that water demand is expected to increase from 64,000 acre-feet in the year 2006 to over 150,000 acre-feet by the year 2040. If ground-

water withdrawals are allowed to increase at that rate, water levels will continue to decline accordingly.

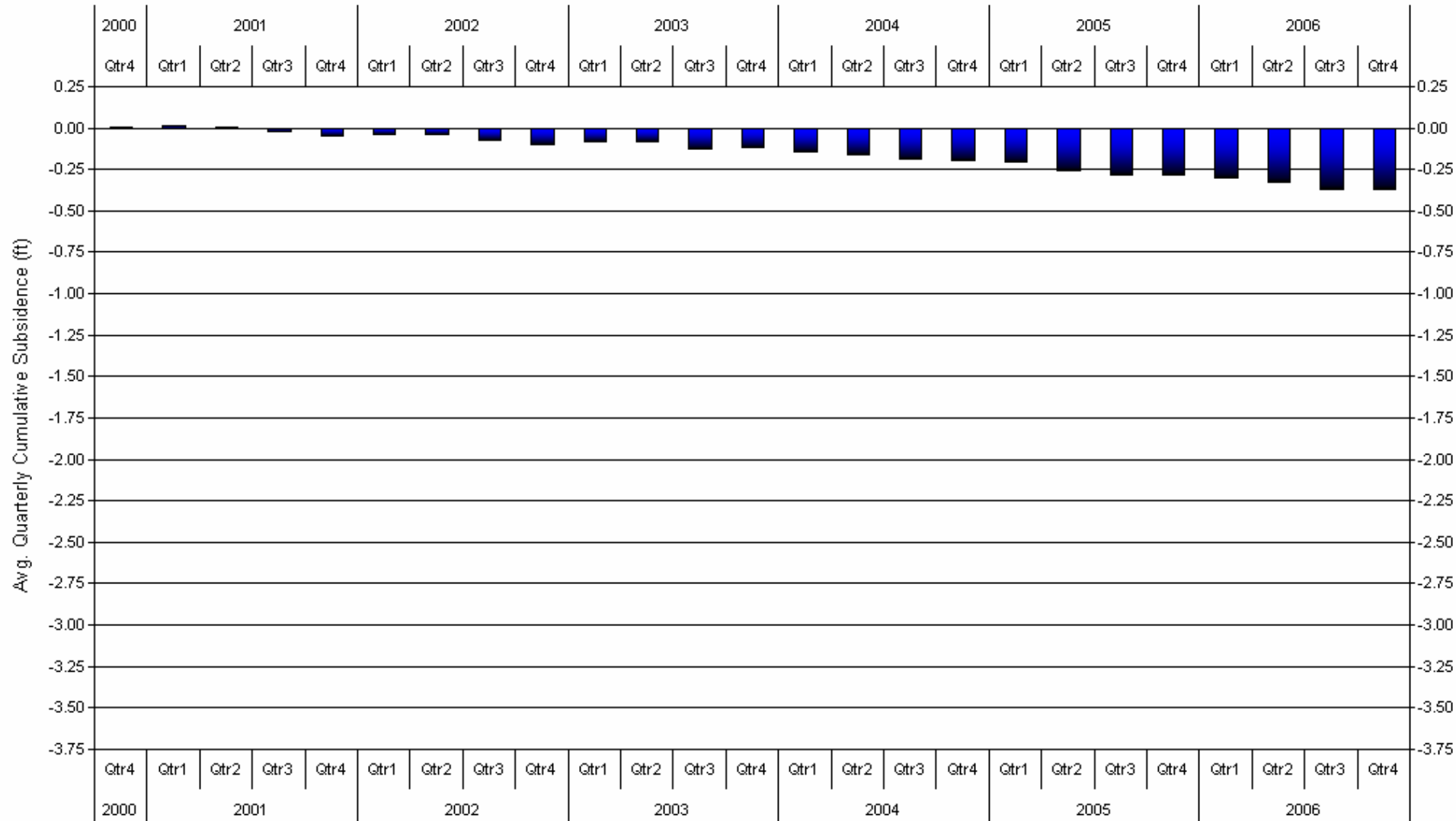
Although regional land subsidence is often subtle and difficult to detect, there are localities in and near Montgomery County where the effects are evident. The Harris-Galveston Subsidence District utilizes a combination of extensometers and Geographic Positioning System (GPS) Port-A-Measure (PAM) trailers to record land surface elevation changes. There are 11 extensometer sites located in Harris and Galveston Counties, and 55 GPS PAM sites located throughout Harris, Galveston, Fortbend,

Brazoria and Montgomery counties. Two PAM sites are located in southern Montgomery County. One is located in The Woodlands and the other is located in west Kingwood. These particular sites show vertical movement recorded from November 2000 to November 2006. The general trend of this data shows a downward movement of the landsurface.

It is difficult to predict, with limited information, the magnitude of land surface movement in the future due to increased groundwater withdrawals. We do know that in areas where groundwater pumping has caused subsidence, the subsidence has been stopped by switching from groundwater to surface-water supplies. If surface water is not available, then other means must be taken to reduce subsidence.



# HGSD PAM Site 13 – Woodlands – Montgomery County



# HGSD PAM Site 12 – West Kingwood – Montgomery County

