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USGS to define sustainable level of groundwater pumping for Santa Barbara

Study will help city manage groundwater, balance it with other sources of water

The city of Santa Barbara, CA, has asked the U.S. Geological Survey to study the city's groundwater basins, develop new tools to provide the city with updated information on its groundwater supplies, and identify optimal water-resource management strategies that balance groundwater with other sources of water.

Santa Barbara formerly relied solely on local surface water and groundwater; however, pumping of groundwater resulted in seawater intrusion in one of its basins. Since 1997, State Water Project deliveries have reduced the demand for groundwater. Now, future urban growth, limits on the supply of imported water, and the decreased storage capacity of Gibraltar Reservoir due to sedimentation will increase the future demand for groundwater, especially during times of drought.

"Groundwater is a relatively small but very important part of the city's water supply," said Rebecca Bjork, Water Resources Manager for the city of Santa Barbara. "We depend on it during drought and other water supply interruptions. It's important that we understand how our local supplies can be best managed."

The three main study objectives are to:

- Understand the sustainability of the groundwater system – that is, how much groundwater can be pumped without causing unacceptable water-level declines or seawater intrusion.
- Develop tools that will allow the city to estimate its sustainable groundwater supply.
- Identify optimal water-resource management strategies – how to best balance groundwater with supplies from the State Water Project and local reservoirs.

Dr. Tracy Nishikawa, the USGS lead scientist, said one of the most important aspects of the study will be the development of a basin-scale seawater intrusion model. Seawater intrusion occurs when freshwater is pumped out of a basin and seawater from the coast moves in. Seawater intrusion can threaten the water quality of the basin.

"Seawater intrusion is a problem in many California coastal basins, including Los Angeles, Ventura and Santa Barbara," he said. "This will be one of the first studies the USGS has developed in Southern California that utilizes a basin-scale seawater intrusion model in conjunction with optimization techniques to identify water-management strategies to best use available surface-water and groundwater resources."

The city is paying about 70 percent of the cost for the three-year, $546,000 study and the USGS is paying the balance.

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