

## **Estimating underground water**

### ***Groundwater district officials say new computer model is inaccurate***

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A just-released computer model designed to estimate the amount of underground water available for planned water projects in Victoria and surrounding counties is drawing criticism from officials charged with protecting area aquifers.

The Texas Water Development Board's new groundwater availability model, or GAM, "is very worrisome because it appears to overestimate the amount of groundwater that's available in this area," said Art Dohmann, president of the Goliad County Groundwater Conservation District.

Dohmann and his colleagues in the South Central Texas Regional Groundwater Alliance, which represents groundwater interests in DeWitt, Refugio, Goliad, Bee, Karnes and Victoria counties, are now preparing a letter to the state water development board expressing the alliance's concerns.

Alliance members are worried that overestimating the amount of groundwater available could result in too much water being pumped by planned groundwater-export projects such as the Lower Guadalupe Water Supply Project, which would pipe billions of gallons of water annually from Victoria, Goliad and Refugio counties to San Antonio beginning in about 2012.

Excess groundwater pumping, the alliance believes, could result in existing domestic and agricultural wells going dry, a decline in water quality, reduced flows in creeks and rivers, even the lack of sufficient groundwater to meet the city of Victoria's drinking water needs during drought.

The water development board this week announced the release of the new GAM for the central portion of the Gulf Coast Aquifer. The region examined in the GAM stretches from the Wharton area in the north to the Kingsville area in the south.

In order to develop the model, state scientists and consultants compiled information on the aquifer's geology, water-table levels, water-recharge rates, pumping and other factors to create a cyberspace aquifer that can be used to predict how the real aquifer might respond to such things as increased pumping or drought.

The state GAM is designed for use by regional water planners laying the groundwork for the Lower Guadalupe Water Supply Project and other water-supply projects - and by groundwater conservation districts, which need scientifically based guidelines to help them manage groundwater supplies.

In Austin, Robert Mace, director of the groundwater resources division for the Texas Water Development Board, pointed out that it takes more than just a GAM to determine groundwater availability.

"Groundwater availability is defined first by the policy or management philosophy of the policymaker and second by the tools, i.e., the model, used to quantify the (availability) number," said Mace. "It is difficult to assess one way or the other if the model over- or underestimates groundwater availability without knowledge of the management philosophy."

In Goliad, Dohmann said several alliance districts have adopted a management philosophy that calls for the "sustainability" of the aquifers they manage.

Sustainability is a "do-no-harm" policy, he explained, which caps the amount of water that can be pumped from an aquifer at the amount that is replaced annually through rainfall and other means.

But Dohmann and other alliance members are concerned that local groundwater districts could lose control over the establishment of management philosophies for their aquifers.

He said groundwater district officials across Texas expect a fight in the Legislature over whether local districts or the state's regional water planners will be given the final say over the management of local groundwater supplies.

"This is an issue yet to be resolved," he said.

For alliance members, the question of whether regional planners or local groundwater officials will have final authority over aquifers dovetails with their concerns about the new state GAM.

Because there is actually very little groundwater in the alliance area available for new water projects, Dohmann said, if regional water planners expect to procure enough groundwater for their projects, they are going to have to "contest the sustainability component in our management plans or raise the availability number, which is what we see in the (new) GAM."

Professor Venkatesh Uddameri of Texas A&M University Kingsville, a consultant for the South Central Texas Regional Groundwater Alliance, said the state GAM underestimates base flow - the amount of water in a river or stream sustained by groundwater discharges - in the San Antonio and Guadalupe rivers.

Underestimating base flow, he said, means the GAM's estimates of groundwater availability are too high.

"If they stick to (base flow estimates), they're overestimating the amount of water that's in the aquifer in this six-county area," said Uddameri.

TWDB's Mace questioned tying base flow to groundwater availability. "Underestimating base flow does not necessarily mean the model overestimates availability," Mace said.

Another key concern of the area alliance is that the state GAM's groundwater availability estimates are based on data gathered mostly from the Jackson County and Kingsville areas, not from the six-county alliance area.

"They have very little data in the six-county area that's of interest to us," said Uddameri.

There is hardly any data used from Refugio County, where major water supply projects have been proposed, the professor said.

Using data from out of the area isn't the best way to model the area's groundwater supplies, the alliance contends.

The alliance has hired Uddameri to develop a more precise GAM for the six-county area, one based on local, site-specific data. They say the local GAM will more accurately represent the geology and hydrology of the Victoria area - as well as be a better predictor of groundwater availability in this area.

Alliance members hope they'll be allowed, when making their management rules and policies, to use the Uddameri GAM, projected to be completed as early as year's end, to enhance the science in the new state GAM.

Mace said Texas law allows locally generated GAMS, as long as they are deemed acceptable to state officials, to be used by groundwater districts in conjunction with a state GAM.

"In other words, there is an opportunity to use other information in their groundwater management plans. Our ultimate goal is that the best available information is used," said Mace.

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