SJV WATER

Fresno State study examines how water recharge could help or harm disadvantaged communities on a regional scale

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A study examining the benefits and drawbacks of building groundwater recharge basins near rural communities is underway in Merced, Madera, Tulare and Fresno counties.

The two-year study is a spinoff of an earlier feasibility study focused solely on Fresno County, and both are spearheaded by the California Water Institute at Fresno State University.

“Floodplains and groundwater recharge do not know geographic boundaries,” the institute’s interim director Laura Ramos wrote in an email. “Sometimes the best recharge area for Madera County might be in Merced County. So it was important to us to look at a larger geographical area.” Key to this regional study is the use of surface water moved via the Friant-Kern and Madera canals, and researchers hope to identify the best locations for groundwater recharge near disadvantaged

communities, where residents often face lower water tables due to agricultural overpumping. This often results in poor water quality or worse, no water at all because community wells are not deep enough.

Institute staff, and university faculty and students will collaborate with Tulare Irrigation District, North Kings Groundwater Sustainability Agency, Madera County and the nonprofit Self-Help Enterprises, with the goal of improving water quality and accessibility for residents dependent on shallow domestic wells or small water systems.

The $500,000 study is funded by the state Office of Planning and Research, which promotes collaboration in land use, planning and economic development between state and local partners. Ramos said initial plans called for including Kings and Kern counties but limited funding narrowed the focus. The institute hopes to study those counties in the future.

Ramos said leveraging strengths brought by other organizations will translate into better projects for San Joaquin Valley residents.

For example, the institute will use a data system known as GRAT, or Groundwater Recharge Assessment Tool, developed by Sustainable Conservation, which helps irrigation districts and groundwater agencies create recharge scenarios. The tool enables water managers to evaluate where, when, and how much water can be recharged, based on best available hydrologic, agronomic and geologic science across a 20-year period. Importantly, the tool also brings to light unintended environmental and social impacts.

This is also where Self-Help Enterprises' experience and relationships in local communities comes in handy.

"Groundwater recharge basins will start popping up all over the San Joaquin Valley," Ramos said. "Community members in disadvantaged communities might not know what they are, how they can benefit them or what concerns they should have."

Sue Ruiz, education coordinator at Self-Help Enterprises, pointed to the newly-inaugurated Okieville Recharge Basin near Tulare as an example of a project helping a down-gradient community reduce nitrate levels in the groundwater while raising the water table for shallow wells.

But she encourages more data collection.

"When we play with sand and water, we have to think about the way particles move," she said. "We think they are beneficial to communities with nitrate issues, but if the water is going to pass between a basin and a community where a dairy once stood, will that push nitrate into downgradient water system?"

She also challenged researchers to think long-term: Once a basin is in place, who is in charge of upkeep, and how will that be funded, she asked.

"The operations and maintenance of basins needs to be analyzed carefully," she said. "Those are the kinds of questions that Self-Help will bring up, to get the community's perspective on all these things so we don't get stuck with unintended consequences. We have to think ahead and be a little bit of a pessimist."

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