

New report warns: No groundwater refills after underground layers collapse

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By Mark Grossi

Farm water pumping in this dramatic drought is causing the west San Joaquin Valley floor to sink, but forget about refilling those underground spaces when wet years return.

There is no going back after a clay-laced underground collapses, [says a new report](#) warning California of irreparable harm from excessive pumping.

"There are very costly consequences of land subsidence as we've discovered in the past," said Andrew Fahlund, deputy director of the nonprofit California Water Foundation. "And subsidence is threatening again."

The Sacramento-based foundation on Monday will release a report detailing the west side's troubled past, including \$1.3 billion in damages. The foundation suggests more precise monitoring and better management of groundwater.

The Water Foundation recommends new state rules and local management of groundwater basins, saying that the drought has added urgency.

The drought has forced west Valley farmers on millions of acres to pump more underground water this year. The federal Central Valley Project this year is not delivering Northern California river water in many places.

In Westlands Water District, based in Fresno County, officials estimate a record 670,000 acre-feet will be pumped so farmers won't lose hundreds of millions of dollars in crops, such as almonds.

In the midst of the crisis, the Water Foundation is putting out a series of reports intended for water leaders all over the state. The Water Foundation is funded by two San Francisco-based foundations focused on promoting environmental stewardship, the S.D. Bechtel Jr. Foundation and the Pisces Foundation.

Groundwater is a big emphasis of the Water Foundation.

Earlier this year, the foundation issued a general report on California groundwater. Soon, the groundwater problems of California's Central Coast will take center stage.

The San Joaquin Valley, by far, has California's biggest store of underground water, which helps support the nation's most productive farming belt.

In its Valley groundwater report, the Water Foundation cites U.S. Geological Survey research, saying the ground sank nearly 30 feet near Mendota during a 50-year period ending in the 1970s.

Damages -- \$1.3 billion in 2013 dollars -- were spread throughout the west side in canals, wells, buildings and roads. Lowered levees left some areas vulnerable to flooding.

Later, deliveries of Northern California river water allowed farmers to greatly reduce pumping, which largely stopped the sinking land.

But now the three-year drought and expansion of farming in areas with no access to river water have accelerated the sinking.

Scientists have identified increased sinking in two "bowls" -- one in Merced and Madera counties and a much larger one in the Tulare Lake Basin southwest of Tulare.

USGS hydrologist Michelle Sneed, who has studied the Valley for the past two decades, said the sinking land actually is happening faster now than it did before.

The sinking is not easy for most people to see. In the Merced County area, farm water leaders realized the land was sinking when they couldn't store as much water behind Sack Dam along the San Joaquin River.

Normally, the dam sticks up a foot and a half above the water, but not now.

"Last year, it was an inch and a half," said Chase Hurley, general manager of San Luis Canal Co., which owns the dam. "You can't physically see the land sinking. But we noticed it a couple of years ago because we couldn't get as much water through here."

Hurley wants to save the dam in his century-old, 45,000-acre district, which is spread between the cities of Dos Palos and Los Banos. He estimates that if the land sinking continues, it will require a \$10 million pump project to lift water out of the river into his water system.

In addition, farmers in surrounding areas are discovering their \$200,000 wells have stopped working because the sinking land twisted the shafts and prevented water from passing through. Repairs are expensive, and sometimes wells have to be abandoned.

In many places, once the ground collapses and compresses several feet, the underground loses the capacity to trap water because of clay in the soil, scientists say.

Many parts of the west side have underground clay layers, remnants of an ancient lake bottom. Once the water is squeezed out of these areas, they no longer hold water, scientists say.

Scientists, farmers and others on the west side need to learn a lot more about the underground water table, said Fahlund of the California Water Foundation.

California is one of the few states that does not yet have comprehensive rules and data collection for underground water.

Fahlund said the water crisis is an opportunity to establish the rules -- which have been a hot-button issue among landowners who do not want regulators on their property.

"I think regulation gets a bad name," he said. "It's a chance for planning and management of the groundwater."

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