

Fresno's groundwater supply gives city some protection from the drought

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By Mark Grossi



Signs of the drought are obvious at Friant Dam at Millerton Lake, February 19, 2014. Fresno has enough groundwater reserves, that without rationing the city will have enough water.

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In arid Fresno where city folk sometimes use 200 million gallons of water on a summer day, this might look like the year for a drought panic.

Nature just dealt California the driest winter in decades. Fresno is near its lowest-ever recorded rainfall. And brutal, 100-degree heat is a way of life here in summer.

But this city of a half million -- the fifth largest in California and easily the warmest of the top five -- might be more drought-proof than any of the other four, which are Los Angeles, San Diego, San Jose and San Francisco.

Unlike Southern California or the Bay Area, Fresno's water reserve is underfoot, not behind a Sierra Nevada dam or in a river hundreds of miles away.

Fresno relies on water wells. So do many other cities in the 25,000-square-mile San Joaquin Valley -- Clovis, Bakersfield, Visalia, Hanford, Madera, Merced and Modesto.

It's not all good news. The Valley's underground water basins are overdrafted and shrinking, a decades-long source of concern throughout this region. But groundwater remains a deep and enormous supply that still withstands a crisis.

"It's a big resource," said Lisa Koehn, assistant public utilities director in Clovis. "We have landscape watering restrictions, but we're not going to change anything else. We believe we have enough water."

In contrast, lawns will turn brown, plants will die and authorities will cruise the streets this summer to enforce an outdoor watering ban in Orange Cove. The east Fresno County city is one of the few Valley communities relying on river water -- the San Joaquin River.

Outside of the Valley, Santa Cruz will begin water rationing May 1, limiting a four-person household to 249 gallons of water daily -- a little more than 60 gallons per person each day. It's Santa Cruz's first mandatory water cut in 25 years.

In another coastal city, Cambria, water rationing this year means only about 50 gallons of water per person each day.

Sacramento has ordered a mandatory 20% reduction of water with fines up to \$1,000, though many homes do not have water meters, so enforcement is difficult.

The Bay Area and Southern California are largely sticking to voluntary conservation for a 20% reduction in water use.

Fresno has had outdoor watering restrictions and fines for many years. Metering helped reduced water use by 17% in 2012. The city continues pushing residents to conserve, but there are no further mandatory reductions.

"Fresno is uniquely located at the outfall of two huge watersheds — the San Joaquin and Kings rivers," said Martin Querin, city water division manager. "Below the city is a giant alluvial fan, 500 to 600 feet deep, on soils that don't subside."

Which means nature stashes Sierra Nevada snowmelt underground here — billions of gallons of it. The city does not have an official estimate of how much water is underground, but it most likely would be many hundreds of thousands of acre-feet.

Each acre-foot is about 326,000 gallons of water, or enough for an average Valley family for 12 to 18 months.

The state has a startling estimate for groundwater volume beneath the 1.1 million acres of the Kings

Drought buffer

Fresno is located between the watersheds of two large rivers — the San Joaquin and the Kings. The city has deep reserves of groundwater to help residents through the driest winter in decades.



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River Conservation District, which includes Fresno -- 90 million acre-feet of water down to a depth of 1,000 feet.

That figure dwarfs California's largest reservoir --Shasta, which has a capacity of 4.55 million acre-feet in Northern California.

But underground water is not a bottomless resource, water leaders say. Fresno's water table dropped 80 feet over several decades in the past century due to pumping. The dip forms a "cone of depression" in this region that water leaders have been trying to manage.

The 245,000-acre Fresno Irrigation District, encompassing Fresno, Clovis and surrounding farm areas, has long practiced underground water recharge, allowing river water to soak into basins. The district tracks groundwater levels.

"The water table throughout the district averages about 70 feet deep," said general manager Gary Serrato. "We have the cone of depression in the Fresno-Clovis area at about 125 to 130 feet deep. But that's a whole lot better than some places in the Valley where you wind up drilling 1,500 feet or more for water."

The underground water table rises during wet times and drops during droughts. With urban expansion and farming needs, the water table has been declining for years in many places.

The lower depth causes concern because it requires more energy-- creating higher costs -- to pump the water.

Water quality also suffers. Querin said the lower depths contain uranium, radon, iron, manganese and salts.

Water conservation is important, he said. Since 2008, Fresno's water use has dropped from 308 gallons per person per day to 240 last year, the most noticeable reduction occurring after water meters were installed and metered rates began. Many leaders would like to see that usage drop below 200 gallons a day.

The use of area river water instead of wells also figures into Fresno's planning, Querin said. The city, which has access to both San Joaquin and Kings river water, already is sending river water through a northeast Fresno plant for residential use.

The plan is to add a \$227 million southeast water treatment plant to help provide up to 75% of the city's water needs by 2022.

Shutting off many of Fresno's 200-plus wells will allow the underground to recharge over time. It will prepare Fresno for growth and climate change, Querin said.

The city's water plan has been challenged by a local group opposing the doubling of rates to the public.

The group, led by former Fresno County Supervisor Doug Vagim, continues to collect signatures for a popular vote in November on the water upgrade project, which will total more than \$400 million after all the improvements are made.

Vagim said he does not oppose wise management of water, but says many of Fresno's lower income residents will be hurt by rate increases.

"We need a broader discussion to make this fair," he said.

Beyond the political fight, though, Fresno needs this plan as drought insurance, Querin said.

"Droughts are not a surprise in California," he said. "There will be more. We need to plan for a sustainable future."

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