

Could those empty Valley reservoirs fill up in one winter?

By Mark Grossi

In mid-September 1977, the 326 billion-gallon Pine Flat Reservoir sat nearly empty -- holding 6% of capacity in a warm puddle.

The mountains above Pine Flat had just gone through the second-driest year on record. Across 1 million acres in the central San Joaquin Valley, farmers, city officials, industry leaders and everyone else waited desperately for winter.

Five months later, steady storm runoff from the Kings River filled the reservoir so quickly that the U.S. Corps of Engineers released water to prevent Pine Flat Dam from being overtopped. Winter storms had pounded the mountains around the state with twice the average rain and snow.

Today, Pine Flat is only a little larger puddle than it was in 1977 -- about 11% of capacity. The rest of the state's major reservoirs are down to 60% of average, the lowest they have been in more than a decade.

Long-range forecasters are predicting a dry October, November and December. But longtime California water experts say they're always hopeful that droughts could turn around quickly, and they cite 1977 as a prime example.

"It's feast or famine in this state," said Kings River Water Association watermaster Steve Haugen. "I'm not predicting anything, but sometimes a wet year just happens, especially here in the southern Sierra."

What is enough?

So if winter did turn wet, how much would be enough? How much would refill California's depleted reservoirs? And could a drought-busting winter suddenly turn into a flooding nightmare?

Haugen and the state Department of Water Resources say 150% of average runoff from snowmelt and rain would probably fill the state's big reservoirs without a lot of flooding. But 200% -- which has happened before -- and you're looking at a damaging mess, depending on the timing and location of the rain and snow, hydrologists say.

In 1977-78, winter storms hit the state regularly from late November through March. There wasn't a big one-time surge.

The story was a lot different in 1996. A thick December snowpack was doused by an unusually wet, warm storm over several days. The snow melted and widespread, raging floods followed.

The Merced River swamped Yosemite Valley, closing the tourist attraction for weeks. The San Joaquin River blasted through massive flood bypass channels, carving up farmland. The rest of the soggy state started counting up hundreds of millions of dollars in damage. Then, in a capricious California twist, the winter suddenly turned dry.

Springtime also can be tricky, said climatologist Mike Anderson of the Department of Water Resources. If temperatures climb too quickly in April and May, damtenders may need to release a lot of water to the ocean because reservoirs can't handle the runoff from melting Sierra snow.

"We'd like to see the water show up slowly over several months into the summer so we can slowly fill the reservoirs," said Anderson. "That happened in spring and early summer of 2011. The runoff came down at a nice pace."

There's a difference between storm precipitation and runoff, says professor Roger Bales, director of the Sierra Nevada Research Institute at the University of California, Merced. Runoff is what actually goes into the reservoirs.

So if rain and snow are 150% of average, it does not necessarily mean the runoff will be the same, he said. The last three years have left the ecosystem dry, and the ground will absorb a lot of water, Bales said.

"There is a large soil-moisture and groundwater deficit in the mountains that should hold some of that water," he said.

Winter outlook

How likely is it that California will see a big winter? Federal forecasters at NOAA's Climate Prediction Center say it looks warm and dry through the end of the year. But that accounts for only 40% of the wet season, and the forecast could change.

As part of the long-term forecast, meteorologists are tracking the temperature of shallow water in the Pacific Ocean along the equator. When the water warms up, they call it El Nino, which can mean wet weather in California. The water has warmed this year, but not enough for meteorologists to raise the odds much for rain this winter.

But sometimes stormy weather shows up regardless of the ocean temperature. In the big winter of 1977-78, there was a weak El Nino. The same was true in 2004-05, when Fresno's rainfall was 146% of average. Long-range prediction is less than an exact science.

"I have no faith in long-term forecasting," said meteorologist Jan Null, a Bay Area consultant. "It's not something that would make me reach into my pocket, pull out my own money and make a bet based on it."

Null, who has been following California weather for decades, said he started his meteorology career in the 1970s and remembers the intense drought years. He said many experts were predicting it would take three years to refill massive Northern California reservoirs, such as Shasta and Oroville.

"They were 50% lower at the end of that drought than they are today," he said. "But they filled in one year."

Welcoming rain

On the San Joaquin Valley's west side, farmer Dan Errotabere welcomes the idea. This year, he has been constantly running his eight wells on his 5,200-acre ranch, growing almonds, pistachios, garlic, tomatoes, onions and some cotton. As a Westlands Water District farmer, his federal allocation of Northern California river water this year was zero.

Errotabere uses water-stingy drip irrigation, but he says too much water is being pumped out of the groundwater table below. He worries that even if a wet winter refills reservoirs, he might not get all of the Northern California river water that he would like to buy.

A member of the Westlands governing board, Errotabere said the district received 80% of its water allotment in 2011, even though reservoir storage statewide was 125% of average. Environmental protections for dwindling fish species required cutbacks in water pumping at the Sacramento-San Joaquin River Delta -- and he questions whether the protections are working for the fish, which continue to decline.

At the same time, Errotabere wants the drought to go away this winter.

"If we have another dry year," he said, "it will be horrific next year."

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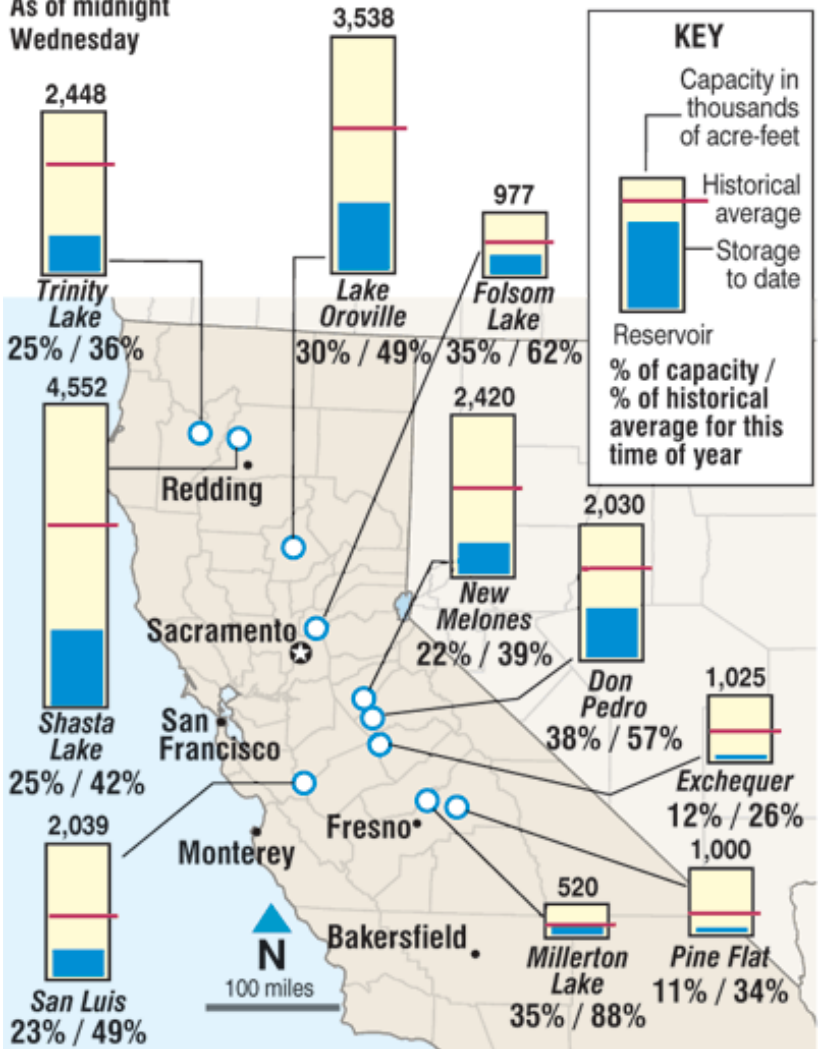
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Coming up short

Following three drought years, reservoirs around the state have dipped to the lowest levels in more than a decade.

As of midnight
 Wednesday



Source: California Department of Water Resources

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