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Why California's largest reservoir in nearly 50 years may be derailed by water shortages

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The rural community of Sites in Colusa County is shown in an aerial photograph on Aug. 9. An independent water authority is working to build a larger reservoir here and deliver supplies across California.
Carlos Avila Gonzalez/The Chronicle

SITES, Colusa County — Deep in California's farm country, this dusty valley ringed by brown hills and sunny skies is seen by many as the [state's answer to drought](#).

Here, about 70 miles north of Sacramento, a coalition of water agencies is setting out to build the first major reservoir in California in nearly half a century. The \$4 billion plan calls for flooding miles of ranchlands with flows from the nearby Sacramento River and sending the water to cities and irrigation districts as far away as the Bay Area and Los Angeles.

Much of the money is already lined up, and as state water shortages have intensified, the project has won increasing bipartisan support, including from Gov. Gavin Newsom.

But there's a problem: There may not be enough water to fill the new reservoir.

In a letter sent out by state regulators on Friday, project officials were told that their application for a water right is incomplete because they failed to show that there's sufficient flow to draw from in the Sacramento River. The Sites Project Authority, the agency formed by the water suppliers to get the reservoir built, has 60 days to strengthen the application.

The opinion of the State Water Resources Control Board is not only a setback for the reservoir, it underscores the challenge that California faces in sustaining water supplies for 39 million people and a nearly \$50 billion farming industry. Most of the state's rivers and creeks are already overdrawn, and in some spots the natural environment, including fish and wildlife, is degraded because of too little water.

The situation will only worsen as things get hotter and dryer with climate change.

The Sites Project Authority says it's undeterred by the state's letter. Project officials hope to address the concerns, and they remain confident in their application for a water right, which is probably the biggest hurdle and most important step to getting the reservoir off the ground.

"I didn't hear any hard-stop issues," Jerry Brown, the project authority's executive director told *The Chronicle*. Brown, who is not related to the governor with the same name, said his staff would get right to work on amending the application.



Kevin Spesert, a manager at the Sites Project Authority, describes where one of the dams would be built, in the notch near the tree-spotted ridge, under a plan to build a new off-stream reservoir in the community of Sites (Colusa County). Carlos Avila Gonzalez/*The Chronicle*

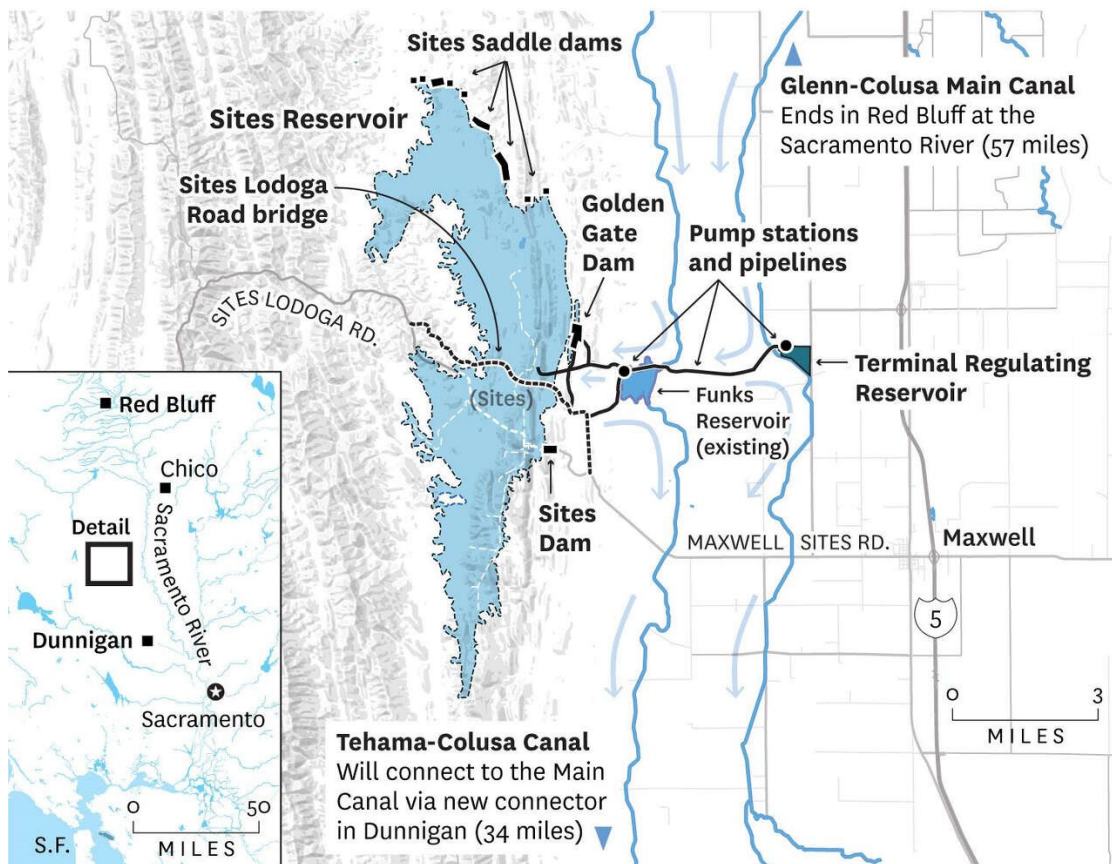
On a recent afternoon, Kevin Spesert, the on-site manager for the Sites Project Authority, made the short drive from the rural town of Maxwell along Interstate 5, where he has an office, to the community of Sites, basically a cluster of homes and trailers surrounded by cattle ranches.

"This would all be underwater," Spesert said as he steered his white pick-up over a small notch between hills and into the valley where the reservoir is proposed.

For decades, this site has been eyed for water storage. Except for a few gaps in the surrounding ridgeline, the area is naturally a near-perfect bowl, about 13 miles long and 4½ miles wide at its broadest, making it ideal for holding water.

Sites Reservoir plan

A coalition of water agencies is working to build a large reservoir in the Colusa County community of Sites that would collect and store water conveyed by canal from the Sacramento River.



Graphic: John Blanchard / The Chronicle

Source: Sites Project Authority

The plan is to plug the low points in the ridge with dams: two major ones, about 300 feet tall, and a handful of smaller ones. Pumping plants and pipelines would then be constructed to fill the basin with water from the Sacramento River through a network of existing irrigation canals.

Unlike most older reservoirs which were built on top of rivers, the proposed "off-stream" facility has the advantage of not damming a major waterway and directly interfering with river currents or fish. Proponents say the project could even benefit fish by releasing water when they need it.

The reservoir would offer 1.5 million acre feet of storage, officials say. That's about enough water for 3 million households for a year. It would be the eighth largest reservoir in California, and the first one built with more than a million acre feet of capacity since New Melones Lake was constructed by the federal government in the late 1970s.

"I remember my dad talking to me about how he watched the building of Oroville Dam," Spesert said in a nod to the nostalgia of the West's dam-building frenzy of the mid-20th century. "Looking at this (valley) now and thinking that it will also become a big reservoir... it's something that will benefit all of California."

Once filled, the new reservoir would release water similarly to how it came in, mostly through the infrastructure of local irrigation districts. After it's back in the Sacramento River, the water would flow south to the Sacramento-San Joaquin River Delta, where giant pumping stations could push it through pipelines and aqueducts across the state.

The roughly 30 urban and agricultural water agencies investing in the project would have first dibs on the new supply. In the Bay Area, the reservoir's backers include Santa Clara County's Valley Water, the Tri-Valley's Zone 7 Water Agency and the city of American Canyon, which combined serve about 2.3 million people.

Project officials say they hope to finalize the environmental review for the reservoir this year, begin site preparation in 2024 and start delivering water at the end of the decade.

Before any construction can begin, the project needs several local, state and federal approvals. None are as fundamental as the water right.

In May, the Sites Project Authority applied for a permit to take water from the Sacramento River, south of Shasta Lake. Because there are already so many water rights holders on the river, project officials are seeking permission to draw only during the

wetter months — not summer — and only after the needs of other water users and fish, namely salmon, are met.



Kevin Spesert, with the Sites Project Authority, explains how water would be piped into the proposed Sites Reservoir at his office in the town of Maxwell (Colusa County).
Carlos Avila Gonzalez/The Chronicle

Project officials say that even with these limitations, wet years and big storms during dry years will provide enough water to fill the reservoir. Furthermore, they say because climate change is prompting bigger, more intense bouts of rain as well as reducing the snowpack that's historically acted as a reservoir by holding water until the dry summer months, there's greater need now for new storage.

Friday's letter from the State Water Board, however, says that the Sites Project Authority's water analysis is missing key details on Sacramento River flows and doesn't consider all the factors it should. The omissions include how much water is being taken from the river by senior water holders and the state's Bay-Delta Plan, which seeks to increase flows cumulatively in California's rivers. Both of these items could affect the amount of water available for the reservoir.

While the letter says the project's water right application is officially accepted, the state will only move forward with formal proceedings if and when project officials make their case for sufficient water.

"It has been this administration's priority to move more quickly on regulatory permitting," said Erik Ekdahl, a deputy director[] who oversees water rights for the State Water Board. "At the same time, this is a big investment, and that means we should really take the time up front to make sure we have the technical details right."

Critics of the proposal have long questioned the wisdom of building more reservoirs. The opponents, who include environmentalists, fishermen and Native American

communities, cite California's chronically low rivers and creeks and the fact that the state already has nearly 1,500 reservoirs capturing flows.

"They're not creating any more water with this project," said Caleen Sisk, chief of the Winnemem Wintu Tribe, which historically lived across much of the Sacramento Valley. "It's not like there's a groundswell of new water, a river developed or something. They're just trying to take out more."

Sisk worries that a lack of water will leave the reservoir's supplies sparse and subject to becoming warm under the hot sun and filled with harmful algal blooms, which could move into the river when water is released there. It's a concern that's been echoed in comments by the U.S. Environmental Protection Agency. During droughts, cyanobacteria is common in shallow lakes and reservoirs.

Opponents of the proposed reservoir, in general, prefer alternative means of acquiring and storing water in California, such as building desalination plants, recharging aquifers and doing more water recycling — areas that Newsom's administration is also supporting, as reflected in a [state water plan released in August](#).



A farm sits near the location of land once owned by John Sites, the namesake of the community where Sites Reservoir is proposed. The area would be submerged under the reservoir plan. Carlos Avila Gonzalez/The Chronicle

Perhaps the biggest criticism of Sites Reservoir is the harm it could pose for fish, notably chinook salmon. Though the facility would not directly cut off fish passage and could

send more water into the river when it suits salmon, critics say taking more water from the Sacramento River, on balance, will hamper fish migration.

Salmon in Northern California already are struggling from diminished flows. The Sacramento River's fall run, which drives the commercial salmon industry, has declined in recent decades while the endangered winter run remains on the verge of extinction. Drought years have been particularly difficult for the fish.

"The big fight at the water board is going to be how much water will be taken and when," said Doug Obegi, a senior attorney at the Natural Resources Defense Council, who believes the diversions proposed by the Sites Project Authority are too high to ensure adequate fish protection. "There's general agreement that we should take more water in wet periods and less in dry periods, but no one agrees on what constitutes a big gulp, a little sip and when it's wet and when it's dry."

In Maxwell, the nearest community to Sites with gas and groceries, most residents appear eager for the reservoir and the water to fill it.

The small town's ag-based economy has been hit hard by drought. Much of the surrounding farmland has descended into weed-dotted dirt and grim earth-tone hues. About 90% of Colusa County's rice fields, which typically dominate the region, were fallowed this year because of the water shortage, according to the local farm bureau.

"It's no different than a tornado coming through and taking out a town in the Midwest," said Cy Hawkins, a hog farmer who runs an insurance agency on Maxwell's two-block-long main strip. "It's a catastrophe here. And it's a terrible failure on the part of the state and federal government that they haven't built any new water storage."

This year, Hawkins is on track to provide more payouts for crop insurance than any time in his 35 years in the business.

Outside of town, Jim Traynham runs cows on rangeland that would be submerged by the project, and still he wants to see the reservoir built. Project officials count about 70 parcels in and around Sites that will need to be acquired to move forward with the facility. Owners are mixed about whether they want to move out.

"It's tough, but you got to do what's right," Traynham said. "Our community is suffering desperately. We are entirely dependent on agriculture, and we need more water."

Local water agencies, including the Glenn-Colusa Irrigation District, are investors in the project and stand to have more water to provide area growers.



Waterfowl are visible in Funks Reservoir outside the town of Maxwell (Colusa County) on Aug. 9. The small reservoir would be used to help convey water from the Sacramento River to the proposed Sites Reservoir. Carlos Avila Gonzalez/The Chronicle

The project's biggest backer is the Metropolitan Water District of Southern California, which serves Los Angeles and the nearby counties. The agency lays claim to 30% of the reservoir's future water. The allocations are based on the level of investment.

The Zone 7 Water Agency is the largest investor in the Bay Area, poised for 6% of the reservoir water. The wholesaler, which supplies about 266,000 people in Pleasanton, Livermore, Dublin and San Ramon, has contributed \$2.45 million to the project since 2016 and expects to put up another \$4 million through 2024.

The total cost of the reservoir, which is estimated at just under \$4 billion, will be partly covered by \$875 million in voter-approved bonds and a yet-to-be-determined outlay by the federal Bureau of Reclamation. Additionally, the U.S. Environmental Protection Agency has preapproved a \$2.2 billion loan. But the outstanding balance as well as the debt payments would remain the responsibility of the participating water agencies.

"Even before this drought and before climate change, we knew we needed to invest in additional water supplies," said Valerie Pryor, general manager of the Zone 7 Water Agency. "Right now, we are living off of our storage, and that will last us another few years. But we can't live off this forever."

*Kurtis Alexander (he/him) is a San Francisco Chronicle staff writer.
Email: kalexander@sfchronicle.com Twitter: @kurtisalexander*

<https://www.sfchronicle.com/climate/article/California-s-largest-reservoir-in-nearly-50-17400937.php>

FOR addendum: In illustrating the storage capacity of the proposed reservoir, the article makes the common mistake of confusing the storage capacity (empty space) of a reservoir and the amount of water that a reservoir might make available for consumptive uses in metrics such as “dependable yield” or “average annual yield.” New average annual deliveries expected from the reservoir have been estimated by the Sites Project Authority as somewhat more than 200,000, a relatively small fraction of a 1.5 million acre-foot reservoir. The article does imply that hydrologies of the future may not be as kind to the project.