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Central Valley subsidence and flooding are the next threat to high-speed rail

Marc Joffe

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This year's rainy season has raised a new threat to the California high-speed rail project's construction schedule: flooding.

The California High Speed Rail Authority's March 2023 Project Update set back the date for Central Valley service to late 2030 at the earliest—a stark contrast to the original projection of 2020 for service along the entire Phase I line connecting San Francisco to Los Angeles and Anaheim.

But shortly after the Authority released its update, several work sites near Corcoran flooded, halting construction. The flooding prompted discussion of a rebirth of Lake Tulare, once the largest lake West of the Mississippi. If the lake were to become a permanent feature, it could leave a portion of the high-speed rail right of way under water.

More recently, the floodwaters have started to recede. Area resident Curt Rowe surveyed construction sites near Corcoran on June 14 and found that only one location remained underwater: an area adjacent to CA-43 in Angiola, CA. An Authority spokesperson told me that construction was restarting this month at most suspended sites, and that all remaining sites were expected to be in operation by September.

It remains to be seen whether contractors can make up for lost time. We probably won't know until the Authority issues its 2024 Business Plan Update. Regardless of whether this incident results in a schedule setback, it may not be the last time weather deals a blow to the project.

The area around Corcoran has been suffering from subsidence, a gradual reduction in the land's elevation. In 2021, The New York Times reported parts of city had sunk 11.5 feet over a period of fourteen years. The relatively high degree of subsidence in the area is the result of agricultural interests pumping out ground water due to the inability to obtain sufficient reservoir water for their crops.

A 2017 subsidence study commissioned by the High-Speed Rail Authority found that land sinkage would exacerbate flooding in the Corcoran area. Engineers conducting the study concluded that three flood zones in the vicinity would likely merge and that “the resulting flood depth along the

HSR Alignment could potentially be more than 16 feet and the length of the HSR Alignment within the modified flood zone could potentially be more than 20 miles.”

So, this year’s floods may not be the last to occur during construction, and flooding could also impact HSR operations once service begins. The parallel Amtrak San Joaquins service suffered track washouts and train cancellations at the height of the flooding back in March. And, although the Authority is designing its guideway to be two feet above the maximum water level during a 100-year storm event, the definition of 100-year flood levels may change as subsidence continues.

Flooding is unlikely to be the only remaining factor impeding the start of operations. Once the first 171-miles of track are laid and electrified, it is possible that the project will get stuck in an extended cycle of testing and remediation. Recent U.S. rail projects, including Honolulu HART, the San Francisco Central Subway, and the DC Metro Silver Line extension have stalled for multiple years in the testing phase as construction errors and design flaws came to light. A 171-mile system using technology never before deployed in the United States could face a much longer shakedown process.

With an unprecedented 220 mph running speed, safety challenges for the new system will be much greater than any rail system U.S. regulators have ever seen, and they will have an understandable incentive to impede the start of revenue service until their many concerns are satisfied.

Meanwhile, the state legislature should ask Authority leadership how it plans to address the heightened flood risk around Corcoran and other Central Valley locations impacted by subsidence. It should also prioritize more water storage projects so that agricultural water supplies become more reliable and the need to pump groundwater is reduced.

Marc Joffe is a federalism and state policy analyst at the Cato Institute.