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ENVIRONMENT

These Houston suburbs are sinking faster than any other big city in the U.S. Can anything stop it?



Construction continues on the West Harris County Regional Water Authority Central Pump Station in Katy, Tuesday, Oct. 28, 2025. Officials hope a pipeline from Lake Houston will reduce demand on the aquifer and slow the rate of subsidence, or sinking ground, in the Katy area.

Brett Coomer/Houston Chronicle

By **Rebekah F. Ward**, Staff writer

Nov 13, 2025



The sprawling master-planned community of Tamarron west of Houston features lush lawns, fountains, pools and man-made lakes – but few signs that heavy groundwater extraction is slowly causing the area to sink.

Measurements by local officials show that Tamarron’s fenced-off homes between Katy and Fulshear sit next to the fastest-sinking ground in the Houston area. A nearby sensor indicates the ground is dropping over 3 centimeters per year through a phenomenon known as subsidence.

Newcomers to the newly constructed suburban utopia haven’t had time to notice the changes or the risks to their homes. It’s more obvious to those familiar with the ranches and rice fields that once dominated the landscape, who have seen the rising demands on the aquifer.

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“A lot of the farms and ranches that we’ve bought so far certainly have experienced, over the years, a change in their well water levels,” said Mary Anne Piacentini, who leads the Coastal Prairie Conservancy. “They have to work harder to pump the same amount of water.”

This aquifer depletion is causing parts of the Houston area to sink faster than any other big city in the U.S. Largely irreversible compaction of the subsurface is triggered by residents, companies and public utilities extracting huge amounts of underground water, oil or gas.

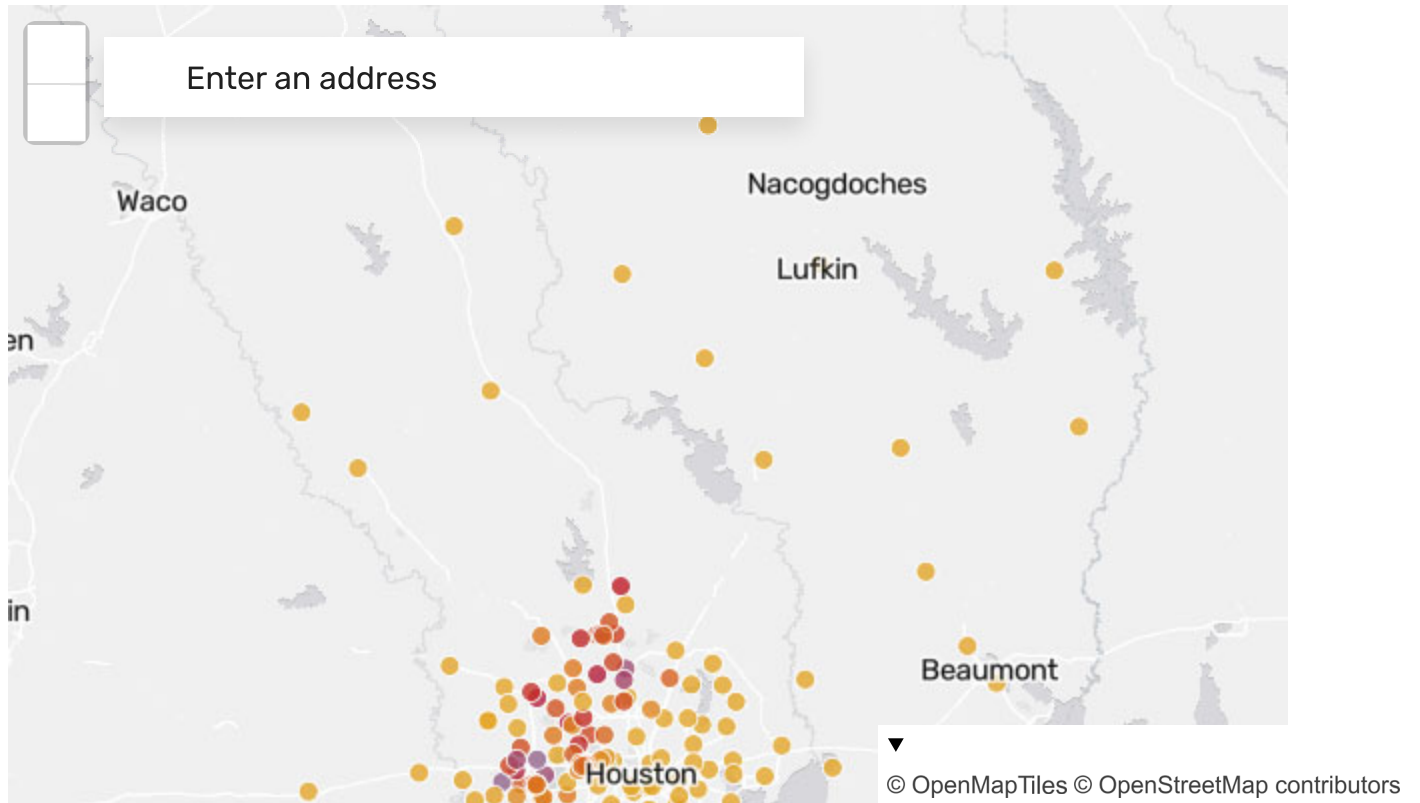
The ground is sinking in Houston's suburbs. View our map to check your neighborhood.

From 2020 to 2024, developments in the Katy area sank the fastest.

Annual sinkage rate, in centimeters:

-3

0



Data illustrate annual vertical rate of change 2020-2024 using subsurface reference points. Source: Harris-Galveston Subsidence District
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The sinking ground has not slowed the population boom west of Houston. Tamarron, a D.R. Horton community, [topped a 2021 list](#) of the most active building spots in the region, and new developments are springing up nearby at the nexus of Harris, Fort Bend and Waller counties.

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D.R. Horton did not answer the Chronicle's questions about the decision to construct on subsiding ground. They are one of many Texas developers with a stake in selling new homes as part of the city's increasingly valuable western expansion.

"One of the driving factors of subsidence in the Katy area is this construction and development," said Ozzy Tirmizi, a geologist whose family moved to the area in 2011 when he was in high school. Tirmizi went on to focus his doctoral research on the phenomenon of subsidence. His work showing sinking rates with remote LiDAR scans served as a complement to data used by officials that rely on underground reference points to pinpoint elevation changes.

If the ground keeps sinking, Tirmizi said homeowners could see foundation cracks or more water pooling during floods. Because so many homes are new, those problems

might not be visible yet, he said.

The only way to stop subsidence is to reduce the strain on the aquifer. Residents have been paying fees since the early 2000s to two state-established authorities charged with building a surface-water system to slow the sinkage. But elected officials in communities like the city of Katy have recently raised concerns about the extra costs on utility bills.

“We have a lot of residents who are really upset about this,” said Katy Council Member Rory Robertson during a council meeting in mid-October. His concern was echoed around the dais.

Still, the area’s sinkage rate seems to be getting worse. In just three and a half years, the land at the worst measurement spot near Tamarron’s master-planned homes dropped more than 10 centimeters, and many locations nearby tell a similar story.



Construction continues on the West Harris County Regional Water Authority Central Pump Station in Katy, Tuesday, Oct. 28, 2025. Officials hope a pipeline from Lake Houston will reduce demand on the aquifer and slow the rate of subsidence, or sinking ground, in the Katy area.

Brett Coomer/Houston Chronicle

A surface water solution?

While the Houston area's subsidence now appears concentrated in its northern and western suburbs, local history shows the whole region faces similar risks.

"Houston has faced a subsidence problem for more than a century," said Shuhab Khan, a University of Houston geologist and one of the issue's leading researchers. "The reason for the more substantial subsidence is because we have soft sediments in our area, and we rely heavily on groundwater."

Scientists and officials realized this phenomenon caused Brownwood — a Baytown-area subdivision — to slowly sink into the sea over the course of decades, beginning in the 1940s. In response, the Harris-Galveston Subsidence District was created by the state legislature in 1975 to restrict groundwater withdrawals, followed by the Fort Bend Subsidence District in 1989.



Michael Turco, general manager for the Harris-Galveston Subsidence District, shares some thoughts during the presentation at the Baytown Nature Center, which is the site of the former Brownwood subdivision on Wednesday, Dec. 6, 2023 in Baytown.

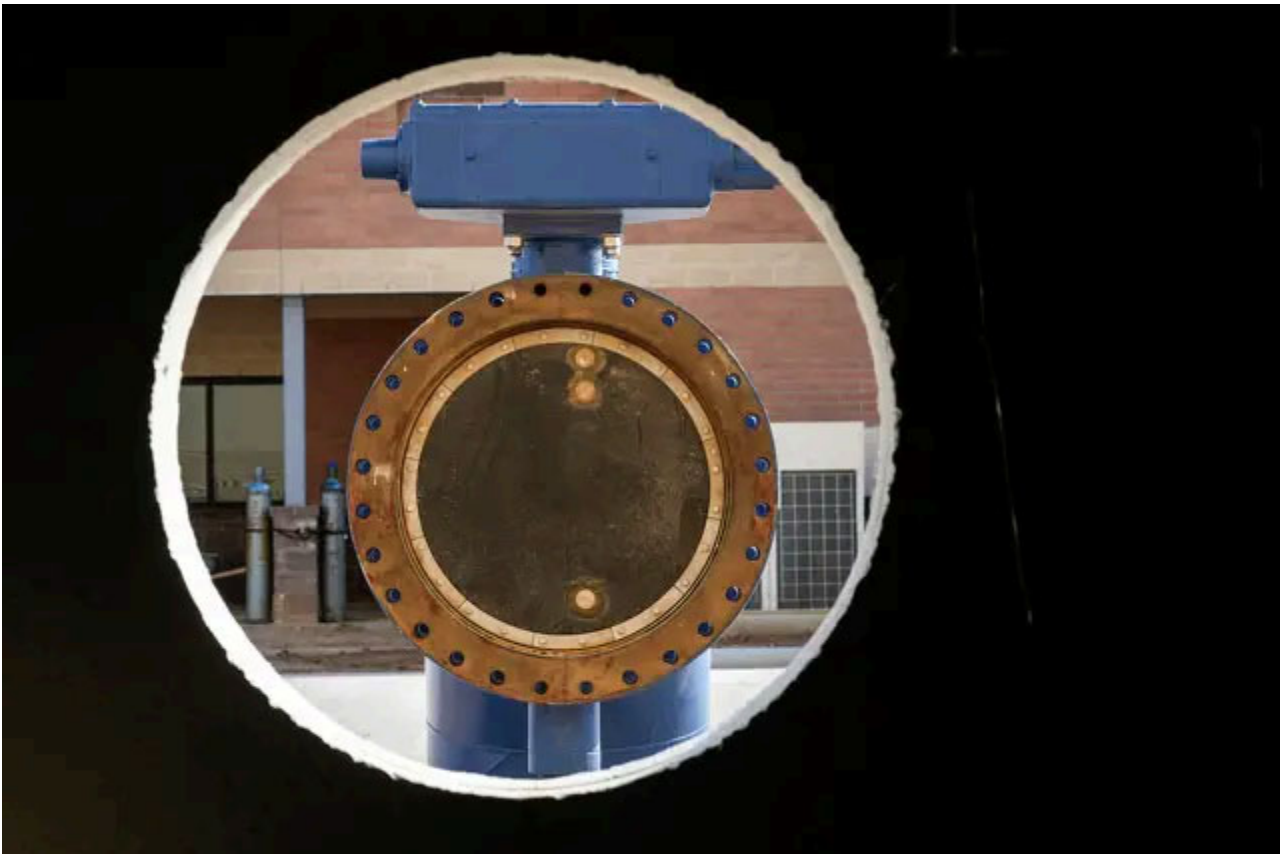
Mike Turco, the Harris-Galveston Subsidence District's general manager, said that the strategy had proven effective so far. The southeast portion of the region closest to the coast is now only allowed to use groundwater for 10% of total water demand, and it typically uses much less.

"The subsidence rates have come down in areas that have historically seen upwards of 10 feet of subsidence occur," Turco said, attributing the change to the region's switch away from groundwater.

RECENT: Houston is sinking faster than any other big city in the U.S.

The district's northwestern section – including its intersection point with the Fort Bend Subsidence District, right around Katy – was given more time to bring in other sources of water. State records show its municipal utility districts are still largely dependent on groundwater, including the one supplying water for Tamarron's fountains and lakes.

A plan to treat and pipe water from Lake Houston, known as the Surface Water Supply Project, should change that for the communities leading out to Katy and Fulshear. Contractors are currently laying massive pipes and pump infrastructure between Beltway 8 and the top of Houston's inner loop to push more water west.



Pipes to be connected to the pump house are shown during construction of the West Harris County Regional Water Authority Central Pump Station in Katy, Tuesday, Oct. 28, 2025.

Brett Coomer / Houston Chronicle

Compliance won't come cheap: The pipeline project's total estimated cost is at least \$1.2 billion. That price tag has been largely shouldered by residents living within both the Fort Bend and Harris-Galveston subsidence districts, through fees to two different water authorities set up to supply surface water to all utility districts in the heavily subsiding, groundwater-dependent areas.

Subsidence districts in the Houston region impose restrictions on aquifer usage, and local water authorities implement those mandates.

Amiah Williams, spokeswoman for the water authority in West Harris County, said the pipeline project will help the authority meet the Harris-Galveston Subsidence District's mandate to convert 60% of the area's water supply to surface water. The district required the switch by 2025, while the pipeline is expected to be up and running in mid-2026.

Their partner water authority in Fort Bend that covers the portion of the subsidence hotspot right across the county border, around Katy and Fulshear, has until 2027 to achieve its own 60% surface water requirement via the pipeline.

Officials at the North Fort Bend Water Authority say they're racing to meet the requirements and restrict groundwater pumping.

The population in its jurisdiction has more than doubled since 2010, and water usage followed. But Matt Froehlich, the authority's engineer, said that the amount of surface water supplied to the area has not changed in the past decade. This has meant the demands on the aquifer are growing, leading to higher rates of subsidence.

"Surface water now accounts for approximately 35% of the North Fort Bend Water Authority's water usage," Froehlich said. A decade ago, it could cover half of all

demand.

A pricey expansion either way

As dense suburbs balloon across former Katy Prairie land, the rising costs to deal with subsidence have sparked criticism from residents and city officials.

At the city of Katy's October council meeting, a water authority representative confirmed concerns that on top of construction costs for the new pipeline, the Lake Houston water would be more expensive for consumers than the groundwater currently on their bills, though its exact price is still unknown.

"I feel like these years of promise have been a moving target," said Council Member Gina Hicks, who raised concerns about rising costs alongside Robertson. But the council still voted to receive water from the nearly completed pipeline, acknowledging that the region would face fines if it blew past the subsidence districts' goals.



The remains of a boat dock that had sunk due to subsidence, on Crystal Bay at the Baytown Nature Center, which is the site of the former Brownwood subdivision on Wednesday, Dec. 6, 2023 in Baytown. Elizabeth Conley/Staff Photographer

The legacy of areas like Brownwood offers a glimpse into the potential human cost of extreme subsidence, beyond fees from regulators.

The Baytown-area subdivision was built to be a Houston suburb near the coast with large homes and a tight community feel. By the time Christina Butcher's family moved in, it had already sunk so deeply that the homes had mostly converted to rental homes for struggling tenants.

Then Hurricane Alicia struck the region. Brownwood never recovered.

BROWNWOOD: [A look back at the Houston suburb that sank](#)

“We had about 10 feet of water in our home,” said Butcher, who now works at the Baytown Nature Center that enveloped the former subdivision’s remains. “There wasn’t really anything my mom could salvage.”



Items found on the Baytown Nature Center grounds are on display in the visitor center on Wednesday, Dec. 6, 2023 in Baytown. The nature center is at the location of the former Brownwood Neighborhood, which was destroyed by subsidence and storms.

While pockets of the former Katy Prairie do flood heavily during storms, the area does not sit along a coastline that could swallow it whole. This regional difference has left many locals skeptical of whether they face similar subsidence risks.

Hiding in plain sight

Katy isn't the only suburb that has struggled with subsidence. In the Houston area's most heavily subsiding area to the north, The Woodlands, residents like Mark Meinrath have been flagging more obvious signs of the sinking land for years.

Meinrath discovered he lives on a fault line after subsidence made the ground under his home drop unevenly. He's had to prop up half of his house and watched cracks splinter the surrounding neighborhood. A group of his neighbors sued developers over their own property damage from subsidence. Another neighbor, Laura Norton, has been vocal about the issue as a member of her local water board.



Mark Meinrath talks about how land around his home has subsided, exposing much of his home's slab, Tuesday, Jan. 4, 2022, at his home in The Woodlands. He said he had to lift his home to keep it level as the land under part of it subsided up to half an inch per year, until Montgomery County water officials switched to using surface water. He also said he had to construct an extra step to his front door, which he is sitting on, because the sidewalk dropped away.

Jon Shapley / Houston Chronicle

"The consequences are bad here," Norton said.

According to past studies by the Texas Water Development Board, per-household water use in Houston's suburbs is high. A large share of water – well over one-third in Katy – is used to water lawns.

"We love our lawns, that will continue," said H.C. Clark, a retired Rice University geologist. But he added that demand for the picture-perfect yard is one factor slowly causing subsidence over time.

Subsidence does not occur evenly. It creates sunken pockets in a community, which can change drainage patterns during heavy rains.

“If your area is pretty flat, and you tilt that just a little bit, then you have affected drainage,” Clark said. “That’s the ultimate fear.”

Katy could also suffer foundation-splitting fault lines like residents have seen in The Woodlands if the problem worsens, according to 2022 research published by Khan and Tirmizi, along with other collaborators.

But residents might not realize subsidence is causing the ground to shift since they are used to the area’s clay-heavy surface soil, which swells and compacts depending on how much moisture is in the ground. That’s an entirely different problem.

Cracked foundations from clay are “a story as old as time” in the area, according to Sasha Cox, who runs operations for Katy Responds – a nonprofit that grew out of Hurricane Harvey and helps repair dozens of homes a year in the tri-county area.



Sasha Cox is photographed at the Offices of Katy Responds in Katy on Friday, Oct. 24, 2025.
Raquel Natalicchio

“After these flooding events, we’re left with this clay, and as it absorbs water it pushes up foundations, but then we have extreme heat and it’ll shrivel. You’ll actually see the cracks within our community,” Cox said, explaining that longtime residents watered their lawns heavily to avoid foundation problems.

These common foundation issues could keep even longtime residents in the dark on subsidence impacts they might otherwise notice, said Jim Blackburn, an environmental lawyer at Rice University.

Homeowners might assume that clay in the soil is causing a foundation problem when it could be caused by subsidence — or a combination of both.