

# TEXAS WATER WOES

## Finding the Balance Between Development and Mother Nature

BY BRANDI SMITH

The relationship between water and the state of Texas has always been a complicated one. Whether there's too much or too little, water is a much-discussed resource in the Lone Star state, especially as development here booms.

After a record drought that started in 2010 and brought massive, destructive wildfires, Texas has been hit by nearly two dozen flooding events, which have destroyed thousands of homes and crippled communities. However, it appears the push to build exceeds the challenges posed by Mother Nature.

### IT IS GETTING WORSE

Most recently, Houston was hit by the so-called "Tax Day Flood," which began with a storm on April 17. Harris County averaged 7.75" of rainfall, though some areas reported as much as 23.5" in 14.5 hours.

As a result of the torrential rain, the three creeks that fill Addicks Reservoir in northwest Harris County set new flow records. In fact, more than 49,000 cubic feet of water per second flowed into the reservoir April 18.

On April 23, the Addicks and Barker reservoirs peaked at 102.63' and 93.6', respectively. Flood waters filled more than 7,000 homes in Harris County, along with another 2,700 apartments. The flooding also impacted more than 400 homes in Waller County.

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Most experts agree that, in the face of overwhelming rainfall, the reservoirs performed as intended. Though they didn't keep all the water at bay, the Harris County Flood Control District credits them with preventing more significant damage downtown.

"The U.S. Army Corps of Engineers Addicks and Barker Reservoirs in western Harris County held back the Tax Day Flood runoff from the upstream watersheds and overflow from Cypress Creek," wrote Jeff Lidner in a report on the catastrophic flooding. "The reservoirs storage helped keep the water levels along Buffalo Bayou and downtown from reaching major damaging flood levels."

The devastation caused by the floods led many to question what is



Shoal Creek in Austin flooding on Memorial Day 2016 Photo Credit: Getty Images

being done to prevent similar damage in the future, especially after a 2006 FEMA-funded study revealed development in Harris County would exacerbate flood losses by an estimated 1,200 percent.

"It's definitely getting worse. Our data shows it is getting worse," says Dr. Samuel Brody, director of Texas A&M's Center for Texas Beaches and Shores. "We're subject to flooding from the sea and from the sky. We take that environment and we're putting more and more people, structures and pavement into those vulnerable areas. That's driving the spiraling cost of flooding and the loss of lives in this area."

Houston-area leaders knew decades ago that their low-lying city was prone to flooding due to powerful storms. As a result, the Army Corps of Engineers began purchasing property in the northwest part of Harris County, eventually creating the two reservoirs.

"When Congress authorized these projects, the goal was to reduce the potential for flooding along Buffalo Bayou and all the way to the ship channel," said Richard Long, natural resources manager for the U.S. Army Corps of Engineers for Galveston and Houston.

What those leaders failed to predict was the incredible growth in that area. The northwest part of Harris County that was hit hardest is also one of the most recently developed and, despite this setback, still growing rapidly.

"When we put concrete down, when we build drainage channels, we concentrate that water and dump it off the land where it used to be stored; we push it downstream on ourselves. That's been the story of Houston development," says Jim Blackburn, civil engineering professor at Rice University.

The issue isn't immediately resolvable; however, it can be mitigated for future development, according to Brody. He suggests any new building be elevated or relocated, especially those that lie in the floodplain.

Continued on page 29



Continued from page 14

Experts, including Rice University civil and environmental engineering professor Phil Bedient, say Houston-area leaders and developers have been smart to take note because more massive floods are undoubtedly on their way.

“There is no question. If you look at the last 15 years since Allison, we’ve had seven major floods in the Houston region,” he says. “That’s one every other year and that’s never happened.”

## PREVENTATIVE MEASURES

North Texas is also feeling the environmental impact of its building boom. Because the Dallas Metro is so overwhelmed by concrete and rooftops, the Trinity River receives a deluge of water with each storm. What poses a bigger issue is the lack of oversight when it comes to flooding on the river.

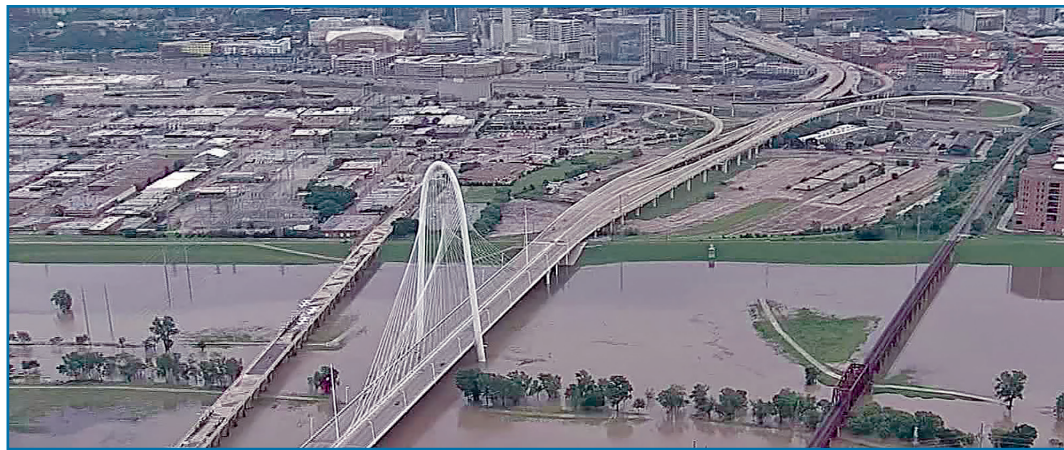
**“This growth has the potential to place residents at a greater risk for human and economic losses from floods.”**

The Corps of Engineers manages only a small part of property along the Trinity, due to the Corridor Development Certificate, or CDC, the result of an out-of-court settlement made with the City of Dallas in the 1980s.

“The CDC has no control over any potential changes in the rate at which runoff from other areas of the watershed reaches the Trinity,” the Corps said in a statement. “That leaves the vast remainder of the overall Trinity watershed up to the local governments and their ordinances for development permits to limit the effects of impervious surfaces created when projects are built within their jurisdiction.”

In layman’s terms: it is up to individual communities to develop plans that address the impact their development has on downstream neighbors.

The City of Dallas and Corps of Engineers plan to build new levees downstream from those already on the river. Called the Dallas Floodway Extension Project, the Corps of Engineers bills it as “a complex project in cooperation and partnership with multiple units of local, state and federal government. It addresses a number of regional concerns, although reducing flood



Trinity River flooding in Dallas, TX on Sunday, May 17, 2015

Photo Credit: NBC DFW

risk for the citizens of Dallas remains the cornerstone of this multi-faceted effort.”

One upstream water source that does have Corps oversight is Lewisville Lake. Billed as one of the riskiest dams in the nation, though, it provides little confidence for those living downstream of its 2 million acre-feet capacity.

The now 61-year-old dam sits 34 miles upstream from Dallas, so its potential failure would threaten more than 430,000 people. That’s why Congress approved up to \$200 million to fix it just this spring. Along with money, lawmakers also green lit a plan for an expedited repair schedule.

## NEW HOMES EVERY YEAR

Central Texas has also proven vulnerable to Mother Nature as development there rages on. Building has in some cases outpaced efforts to mitigate the threat of floods, as evidenced by the 2015 Memorial Day weekend flash flooding.

“The main challenge to rational planning for flood risk in the country is that private property rights trump even modest limitations

on floodplain development,” says Dr. Nicholas Pinter, chair of applied geosciences at UC Santa Barbara. “And that sentiment runs deep in Texas. The result is unchecked construction on flood-prone land, up to the present day and in some places even accelerating.”

Hays County, for example, boasted a 2015 population of 194,739 compared to 2010 when fewer than 98,000 people called it home. It’s also become known as Flash Flood Alley.

“This growth has the potential to place residents at a greater risk for human and economic losses from floods,” said Corps project manager Marie Vanderpool when announcing plans for a flood risk study focused on the area.

San Marcos, home to Texas State University, is now the fast-growing mid-sized city over 50,000 in America, and was one of the areas hardest hit by the Memorial Day flooding.

In the years to come, it’s clear developers will play a key role in the equity between expansion and flood mitigation as the state’s population is expected to continue its impressive growth. Next month, REDNews will profile how developers are working to find that balance. ●



A Wimberley, Texas home ruined by flooding from May 26, 2015.

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