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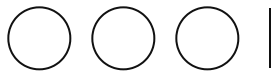
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## NEWS // LOCAL

# Scientists seek ways to help nature safeguard aquifer amid development

Elena Bruess, Staff writer

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Grasses grow along a berm built at the Edwards Aquifer Conservancy Field Research Park on Wednesday, Sept. 1, 2021.

Jerry Lara /San Antonio Express-News

On a four-wheeler at the edge of the Hill Country, geologist Mark Hamilton rolls and bumps across a 151-acre property at the Edwards Aquifer Conservancy Field Research Park.

He pulls up to the end of a steep hill and points out a sunken, marshy spot along the bottom. With several recently planted trees and bushes of native plants nearby, the spot is among many that Hamilton and his team have resculpted by hand.

But their work is about much more than landscaping. It's about water — developing natural methods and standards that communities can implement to accommodate growth while maintaining the health of the Edwards Aquifer, this region's most important water source.

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At the marshy spot where Hamilton stopped, he said water runoff from the top of the hill will be captured there instead of flowing into Cibolo Creek and seeping into the aquifer. The process slows the water and filters sediments and organic matter, resulting in healthier soil and cleaner water.

“It’s nothing fancy, and it’s incredibly low-tech,” said Hamilton, executive director of aquifer management services at the Edwards Aquifer Authority. “But it’s really impressive.”

As development in this region continues to rapidly expand, concerns for the environment and the aquifer grow with it. So Hamilton and others are seeking ways to change the current landscape — literally.

He and a team of environmental researchers, permaculturalists and scientists are creating a system of land management practices for conservation easements and developments that is native to the region. Since 2019, Hamilton spends a few days each week conducting research on the property, which the city of San Antonio bought under a conservation easement and gifted to the conservancy for research.

While there are several requirements for developing property over the aquifer that address issues such as water runoff, Hamilton and his team hope their work can offer more tools to manage growth.

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“Changes in Texas are coming no matter what,” Hamilton said. “But we believe we can try to restore the balance.”

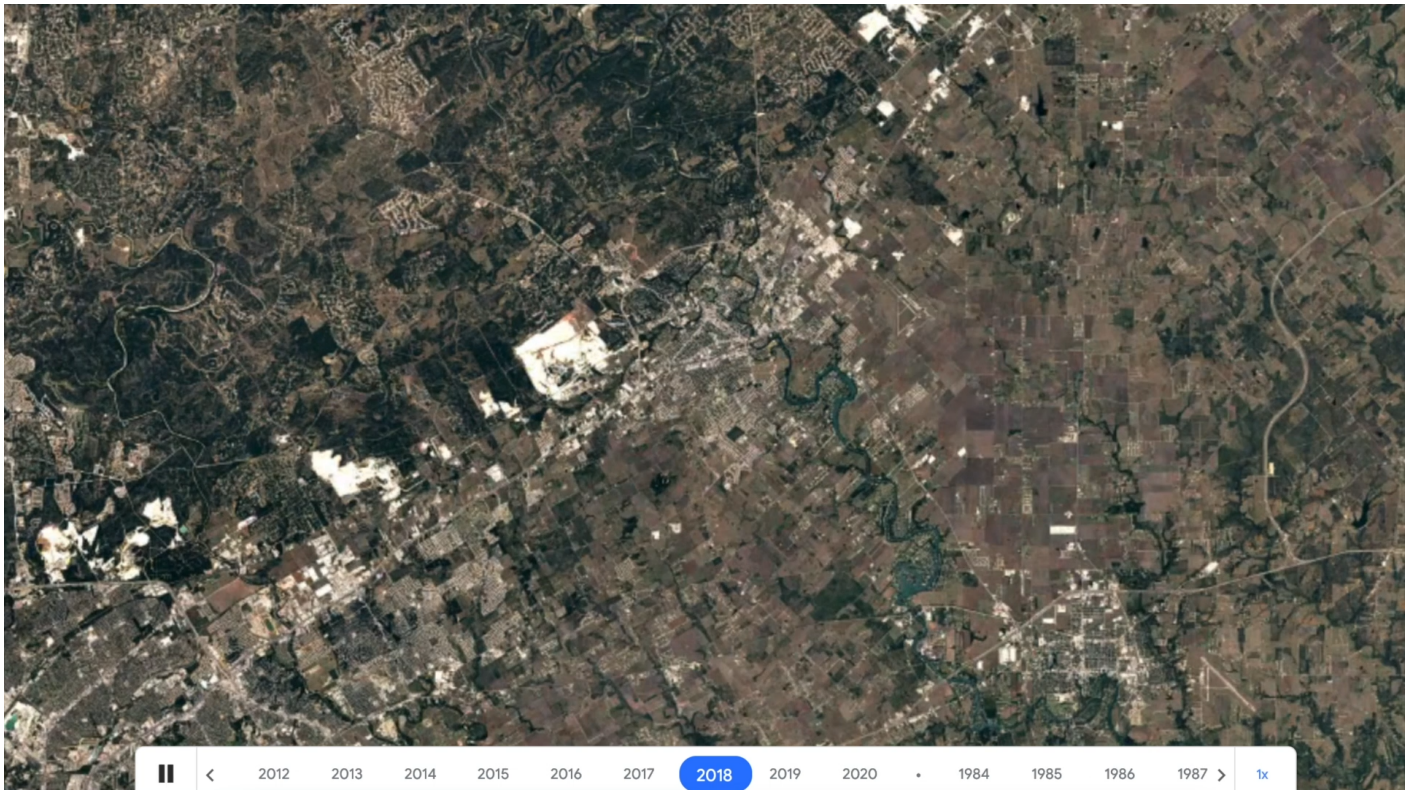
## A bang in development

New Braunfels is one of the focal points in the quest to safeguard the aquifer. The city and unincorporated parts of Comal County sit over the recharge zone, an area that collects water to refill the aquifer.

“We’ve been having conversations not only about the impact that growth would have on the general drinking water supply, but also the impact that growth will have on infrastructure, stormwater runoff and transportation,” Comal County Judge Sherman Krause said. “It’s been a much broader discussion that has been going on for a long time.”

From 2010 to 2019, New Braunfels’ population increased by 56.4 percent, from 57,676 to more than 90,000. Some of that growth moved north and west of the city into the recharge zone. Any development in the area must comply with requirements of the Texas Commission on Environmental Quality, and Comal County has additional regulations for developing subdivisions, including water availability plans and rules to contain water runoff.





Improperly controlled water runoff from impervious cover, such as streets and driveways, can drag oil, pesticides or other chemicals into the recharge zone.

“It’s definitely a balancing act between allowing growth and new homes and protection of the Edwards Aquifer,” said Mark Enders, the watershed program manager for New Braunfels.

The city inspects subdivisions over the recharge zone to ensure developers are complying with TCEQ requirements on such things as stormwater treatment systems.

Meanwhile, conservation activists such as Helen Ballew of the Comal County Conservation Alliance believe that development over the recharge zone is fraught with peril.

“New Braunfels is built on water. Its economy is built on water,” Ballew said. “Land protection has to go hand in glove with managing all the development. The

consequences of inaction are too great. Preserving some of what we love about this place is an imperative we can't ignore or put off another day.”

The Conservation Alliance has been looking for ways to work with officials to fund land protection in watersheds, an initiative that Krause said has been a consideration for some time in Comal County. Unlike Bexar County, Comal does not have a conservation easement program.

Recently, Comal County commissioners approved an application to the Texas Water Development Board for funding for water quality and habitat conservation.

“We’ve been talking about how we can better serve not only our property and the Hill Country character, but what we can do about loss of habitat here and around Comal County,” Krause said.

## The next generation





Grasses grow and organic matter gathers and turns to soil at a conservation terrace at the Edwards Aquifer Conservancy Field Research Park on Wednesday, Sept. 1, 2021. Berms direct rainwater from the top of a hill to the area.

Jerry Lara /San Antonio Express-News

Hamilton knows well the ongoing issues in Comal County and the need for conservation. As he rounds a corner on his four-wheeler, he points out another sunken spot with native plants — called a berm and swale system. The hope is that by slowing the runoff, the process will improve the quality of surface water and groundwater and will increase the quantity of water in the aquifer.

Eventually, if Hamilton's research is successful, these berm and swale systems could be implemented in established conservation easements, and if that goes well, the systems could be incorporated in new developments in the recharge zone — supplementing TCEQ requirements — or even in the aquifer drainage areas in Bandera and Kendall counties.

It's all very new though, Hamilton said. The work at the Field Research Park is on a small scale. And while the science is still underway, the methods being tested appear to work.

Through ground sensors, the team can analyze how healthy the soil is in areas that have been managed, compared with those that haven't. So far, data shows that the soil where Hamilton has put in his berm and swale system is stronger and healthier.

Deeper and healthier soils with more organic matter are able to filter more water and contribute more to the recharge zone.

"We're trying to restore this land to what it might've looked like 200 or 300 years ago," he said, "before any development or settlers, when the system could function on its own without our help."

By protecting the recharge zone and improving the quality and quantity of the water, this region can have fewer drought restrictions, higher spring flows at Comal Springs and San Marcos Springs, and more protection for endangered species — even as development and growth continue.

"It's like building something by 1,000 little steps," said Roland Ruiz, general manager of the Edwards Aquifer Authority. "It's not a silver bullet, not something we can do with one fell swoop, but we can start building, and maybe we can do something to preserve this resource."

To the Field Research Park team, it's not necessarily a choice between development or conservation. It's a matter of making sustainable natural resources that can lead to sustainable human development and — if done the right way — be part of the conservation cycle.



But Hamilton doesn't want to get too far ahead of himself. It's all observational at the research park; almost like watching one of his young native trees grow, it will take a while to have final results.

"That's the hard part, that it might take five, six, seven years. ... It might take a few million more dollars of funding to get there," he said. "But you know, we're going to continue to try."

*Elena Bruess writes for the Express-News through Report for America, a national service program that places journalists in local newsrooms. [ReportforAmerica.org](http://ReportforAmerica.org). [elena.bruess@express-news.net](mailto:elena.bruess@express-news.net)*

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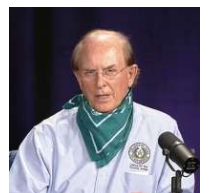
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