



The 2015 Memorial Day Flood in Austin.

Catching the Rain

How Green Infrastructure Can Reduce Flooding and Improve Water Quality in Texas

Flooding and stormwater pollution have been persistent threats in Austin and throughout Texas in recent years. Green stormwater infrastructure – installations that mimic the natural environment and absorb rainfall – has the potential to help reduce flooding, improve water quality and add beauty to local neighborhoods.

The Benefits of Green Stormwater Infrastructure

Green stormwater infrastructure (GSI) refers to the man-made systems that absorb and filter rain and runoff in ways that incorporate or replicate nature. Common examples include rain gardens, permeable pavement and rainwater harvesting.

Because these systems absorb rain where it falls, they can limit flooding. Studies have found that most GSI systems can absorb between 50 and 90 percent of rainfall and have the potential to fully prevent flooding from less severe storms.

GSI can improve the local community beyond contributing to stormwater management. Other benefits of these systems include:

- **Improving water quality.** Stormwater systems can trap between 45 and 99 percent of solid pollutants.
- **Beautifying the landscape.** Many green stormwater management installations can be incorporated into new or existing public parks, further benefiting the community.
- **Removing greenhouse gases from the atmosphere.** Trees and green roofs can capture hundreds of pounds of carbon dioxide over their lifetimes.



Permeable pavement allows water to soak through, absorbing more than 80 percent of rainfall.



Beyond absorbing and filtering stormwater, rain gardens add natural beauty to developed areas.

Austin Is at Risk for Flooding

Heavy rains have increased 67 percent in the city of Austin since 1950. Texas has lost more lives to floods than any other state over the last 20 years, and Austin has been hit particularly hard. Onion Creek has flooded twice since 2013, and the area is vulnerable enough to future flooding that the city has started buying out at-risk homes.



Stormwater mixed with automotive fluids at a service station during the 2015 Memorial Day flood in Austin.

Stormwater Pollutes Our Waterways

Stormwater carries pollutants from roads, construction sites and parking lots into the water supply. In 2008, more than 430 miles of rivers and streams across the state were found to be impacted by stormwater runoff. On its city government website, Austin warns local residents to “refrain from swimming after flooding or heavy rains” because stormwater has been known to transport manure and hazardous waste to local streams. Green stormwater infrastructure, which both filters and absorbs stormwater, can help address these concerns.

Citations:

¹ William J. Taylor; Taylor Aquatic Science and Policy, White Paper for Stormwater Management Program Effectiveness Literature Review: Low Impact Development Techniques, April 2013.

² Ibid.

³ Center for Neighborhood Technology, The Value of Green Infrastructure: A Guide to Recognizing Its Economic, Environmental and Social Benefits, 2010.

⁴ Climate Central, Across U.S., Heaviest Downpours on the Rise, 27 May 2015, available at www.climatecentral.org/news/across-us-heaviest-downpours-on-the-rise-18989.

⁵ National Weather Service, Flood Fatalities by State and Location (dataset), 1995-2015, available at www.nws.noaa.gov/om/hazstats.

⁶ Texas Commission on Environmental Quality, Texas Nonpoint Source Management Program, May 2012, 2.

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GSI Is Growing in the Austin Area

Local examples of green stormwater infrastructure policies and installations showcase opportunities for further expansion of GSI.

- The city of Austin offers rebates of up to \$500 for installing stormwater management systems – including permeable pavement, rain gardens and bioswales – in homes or schools.
- The Dell Medical School at the University of Texas at Austin installed a green roof in July 2016, with native plants that don't require irrigation.

Austin Should Expand Green Stormwater Infrastructure

Austin has an opening to improve stormwater management through CodeNEXT, a new city initiative that will lead to a massive overhaul of the city's development code. The city should use the CodeNEXT process as a jumping-off point for improved public policy to expand use of green stormwater infrastructure. Specific steps that Austin can take include:

- Requiring all new developments to incorporate green infrastructure elements such as permeable paving, rain gardens and green roofs.
- Identifying obstacles to the expansion of green infrastructure by reviewing, revising and updating its building codes and zoning ordinances.
- Adopting a citywide GSI plan that would measure the amount of stormwater handled by existing infrastructure, set a target for increasing this amount, and implement policies to achieve this target.

*For more information and the full report,
please visit www.EnvironmentTexasCenter.org*



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