

FLOOD MITIGATION for redevelopment

Challenge

Older sites built before flood detention requirements were introduced in 1974 lack detention facilities of any kind, and the runoff from these sites can contribute to downstream flooding and erosion. Current code requires development projects to demonstrate they will not result in additional flooding on other properties. Because the focus is on additional flooding impacts, redevelopment projects that are not increasing impervious cover or changing drainage patterns are generally not required to provide flood mitigation—even if significant downstream flooding exists. As Austin grows and many of these older sites are redeveloped, key opportunities for improvement are being missed in areas that already experience flooding.

Older sites built before modern drainage regulations lack detention facilities and are often highly impervious. Impervious cover includes roofs, parking lots, streets, driveways, and other areas where the landscape cannot absorb rainfall. Impervious cover increases peak runoff from a site, which means the volume and velocity of water running off the site is higher than would run off undeveloped land. Thus, these highly-impervious sites can contribute to downstream flooding problems.

At the same time, new development in Austin's central core has put even greater pressure on the existing drainage infrastructure, which is often aging and undersized. Localized flooding occurs when rainfall overwhelms smaller drainage systems, such as inlets, storm drain pipes, and small open channels.

Roughly 19% of Austin's entire drainage system was built before the City adopted the first Drainage Criteria Manual in 1977. Storm drains constructed prior to this date are often undersized. WPD estimates that the cost to upgrade all undersized and aged storm drains is at least \$1 billion.

Austin is located in an area known as "Flash Flood Alley." Its unique combination of intense rainstorms, steep slopes, and slow-draining soils make it especially prone to severe creek flooding conditions. Creek flooding occurs when the water rises in a creek and starts flowing out of its banks. Approximately 2,500 structures in Austin are at risk of inundation during a 1% annual chance storm event (100-year storm).

There are over 700 roadways that cross creek systems in Austin, with almost 400 crossings at risk of inundation in a 1% annual chance storm (100-year storm) and many more at risk during smaller storms. This is a critical safety consideration, as approximately 75% of flood fatalities in Texas occur in vehicles.

Proposed Code Changes

Imagine Austin sets a goal of reducing the threats flooding poses to public safety and private property. To implement this goal, the new code will require redevelopment to mitigate its fair share of downstream flooding. Specifically, sites and subdivisions must reduce the peak runoff generated to match the peak runoff that would be generated by an undeveloped site—as is currently required for new projects on undeveloped land. Tools for mitigating flood impacts and reducing peak runoff include on-site detention, off-site detention, off-site conveyance improvements, or participation in the Regional Stormwater Management Program.

Detention

Detention facilities temporarily store and then slowly release floodwaters, offsetting increases in peak runoff to protect downstream properties. Sites can construct detention facilities on-site or off-site within the same contributing drainage area.



Subsurface Detention



Surface Detention



Parking Lot Detention

Off-site Conveyance Improvements

WPD maintains over 1,000 miles of storm drain pipes and over 800 miles of channels that convey stormwater away from roads and structures. Off-site stormwater conveyance improvements install or upgrade stormwater conveyance infrastructure downstream from the site being developed. Improvements may include storm drain upgrades, channel improvements, or culvert upgrades.



Regional Stormwater Management Program

The Regional Stormwater Management Program (RSMP) provides developers an alternative way to comply with on-site detention regulations, if certain criteria are met. If approved for participation in the RSMP, the developer has additional options to comply by providing regional drainage improvements, dedicating land or easements for drainage improvements, providing an equivalent alternative to detention, and/or payment-in-lieu of detention. WPD then uses these funds towards regional flood mitigation solutions within the same watershed as the project. To participate in the program, the project must demonstrate that it has no adverse impact from flood or erosion potential and adequate downstream flood conveyance capacity.



Scenic Brook Regional
Detention Pond



Oak Springs Regional
Detention Pond



Upper Shoal Regional
Detention Pond

Help us get it right.

Austin's Land Development Code is getting its most significant update in thirty years. As we work toward adoption of the new code, we invite you to review and comment on the draft code document, ask questions, and stay connected.

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