

3. PEER CITIES – Evaluating best practices in peer cities with similar climate and flood issues.

AUSTIN:	2014 Population	912,791
	Square miles	271.8

The following cities have similar climate and flood issues as Austin and have experienced major flood events and implemented flood mitigation solutions that may be of interest and benefit to the City of Austin,

1. **TULSA:**

	2014 Population	399,682
	Square miles	196.8

Tulsa has a similar flood history as Austin with frequent flooding, rapid growth and a general denial of the possibility that floods could reoccur until their “year of the floods” in 1974 and 1984 Memorial Day flood, which killed 14, injured 288, damaged or destroyed nearly 7,000 buildings and did \$180 million in damages. Following that flood, Tulsa appears to have taken the initiative to prevent future flooding and relocation of people through a series of policies and ongoing actions.

Actions taken included:

1. 1984 flood caused relocation of 300 flooded homeowners & a mobile home park and damaged or destroyed 7,000 buildings;
2. Introduced a total capital program for flood control and master drainage plans.
3. **City Commissioners enacted a floodplain building moratorium following the 1976 flood.**
4. Created Dept. of Storm water Management to centralize flood, drainage and storm water programs and funded by the City budget.
5. **Storm water utility fee created to be utilized exclusively for maintenance of storm water detention facilities, stream channels, pumping stations, culverts, ditches and other drainage facilities. The current fee is \$5.43 per month, based on cost of clearing 2,650 square feet of property.**
6. **Storm drainage management is now part of the Streets and Storm water Dept.**
7. **After storms & when needed, crews clear the streams and detention sites also utilizing storm water fees.** On average, they clean more than 22 miles of ditches and clear about 5 miles of drainage pipe each year.
8. Phased implementation programs for large capital projects are funded by storm water fees, sales tax revenues or bond issues and utilized for acquisition of lands & construction of large water retention facilities, major drainage basin improvements and other related projects.

9. Building parks in the floodplains, sports fields in storm water detention locations and greenway trails on creek banks.
- 10. "In Tulsa, growth is welcomed – so long as it will not flood or cause flooding elsewhere."**
11. Tulsa now has the lowest flood insurance rates in the U.S. (40% discount) due to their initiatives.
12. Tulsa has installed over 80 sirens in the city, each audible up to one mile. They have three types of sounds:
 - a. a three-minute "steady" tone to warn of impending tornadoes and of chemical releases.
 - b. A three-minute "wavering" tone to warn of nuclear attacks
 - c. Three-minute "high-low" tone to warn of impending flooding.

2. EL PASO:

2015 population	877,248
Square miles	256.3

In 2006, El Paso suffered record flooding which continued over an extended period in late July into early August. Recognizing the magnitude of the task and the logistical difficulties due to it's location on the New Mexico and Mexican borders, and under the sponsorship of Congressman Silvestre Reyes, a Federal Flood Assessment Conference was convened to discuss levels of coordination between federal agencies.

What is relevant here is that El Paso recognized the need to bring all interested parties together to develop a joint solution for their flooding problems. Representatives from El Paso, New Mexico and Mexico joined together.

Included in the conference were:

- NOAA, National Weather Service
- U.S. Geological Survey
- U.S. International Boundary and River Commission
- U.S. Army Corps of Engineers
- U.S. Bureau of Reclamation
- El Paso County Water Improvement District
- Elephant Butte (New Mexico) Irrigation District
- Department of Homeland Security
- Federal Emergency Management Agency
- Texas Department of Transportation
- U.S. Environmental Protection Agency

Major recommendations made by the Conference included:

1. Clean trash, debris & vegetation & remove sediment from the Rio Grande floodplain/ channel

2. Create a Drainage District
3. Establish an Early Warning System
4. Restore the Rio Grande flood capacity to original design
5. Modify the channel
6. Increase the number of flood gauges
7. Survey the drain system

3. LOUISVILLE:

2015 population	597,337
Square miles	399

Located on the Ohio River, Louisville is highly susceptible to river flooding as well as flash flooding from interior streams and overloaded storm systems. In 1986, they created a Storm Water Drainage Authority under the Louisville Metropolitan Sewer District. The MSD Floodplain Board is responsible for approving any variance requests via public hearings.

Major improvements they have implemented include:

1. **Their 2016 Drainage Capital Budget is \$187 million (\$179m existing/ \$8.8m new projects) as a part of a long term plan of over \$1 billion.**
2. To combat the river flooding, Louisville utilizes floodwalls, levees, major pumping stations, roadway gate closures and sandbag street closures.
3. An outdoor early warning system is in place, in addition to the emergency broadcast system, for impending disasters. The system is tested the second Tuesday of each month. Public education is also in place through classroom and nursing home presentations, utility inserts, booths at area events and brochures to ensure everyone knows what to do in the event of an emergency.
4. For drainage, they have developed a Neighborhood Maintenance Program where they have divided the city into 50 distinct neighborhoods. Service requests and maintenance are grouped by neighborhood and scheduled on a yearly basis.
5. **Any development or redevelopment within the floodplain must create detention facilities within the same watershed, either on the same property or an alternate site, if approved.**
6. Floodplain permits can be issued for residences if the lowest level of the structure is at least one foot above the 100 year floodplain. Austin requires a minimum of 2 feet above the floodplain.
7. A natural vegetation buffer strip at least 25 ft. wide on each side of the stream bank is also required.

Louisville's flood insurance discount rate is 35%, one of the highest in the country, and well ahead of Austin's current 20% discount.