

# **Non-Structural Storm Mitigation Assessment and Enhancement Plan**

City of Gretna

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Monica Teets Farris, Ph.D  
Carrie Beth Lasley, MUP  
Corey Miller



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# Gretna

*Gretna was chosen as a test community, because as a community with levees and rain-event flooding problems, it possessed both the support of levee protection from coastal events possessed by residents of St. Bernard and the regular flood events experienced by Delcambre, the pilot communities for this study.*

## History

Gretna was founded in 1836 as Mechaniksham, and was home to a German settlement that centered on transportation with a train station and ferries to New Orleans (Gretna 2010). Gretna is an incorporated city in Jefferson Parish, and is a suburb of New Orleans. While home to 900 businesses along zoned business corridors, Gretna is primarily a residential community, marketing itself within the New Orleans Metropolitan Area as offering a small-town feel and high quality of life with excellent recreational opportunities in its parks (Gretna 2010).

Gretna is located along the Mississippi River and is protected from river flooding by federal levees along the Mississippi River, and by coastal storm flooding by the Greater New Orleans Storm Damage Risk Reduction System currently under construction by the U.S. Army Corps of Engineers and scheduled for completion in 2011 (U.S. Army Corps of Engineers 2010). Additionally a number of open drainage canals exist in Gretna. In the past rain events have triggered flooding along these canals.

## The Setting

Low-lying and flat, Gretna is an incorporated city on the West Bank of the Mississippi River and is within the coastal zone. It is within Jefferson Parish and the New Orleans Metropolitan region and has structural mitigation activities provided by the Mississippi River levees and the Greater New Orleans Storm Damage Risk Reduction System, which reduces flood risk from the Harvey and Algiers Canals (Solutient, Inc. 2007). Due to flat terrain, levees and urban development, Gretna is dependent on pumps to drain precipitation from the city. Pumps can handle up to nine inches over 24 hours (Solutient, Inc. 2007).

## Settlement Pattern

Gretna essentially began as a transportation-centered suburb across the river from New Orleans Central Business District. While ferry and train initiated settlement, the Greater New Orleans Bridge, or Crescent City Connection, spawned an influx of suburban development after its opening in 1958 (Louisiana Department of Transportation and Development 2010). Gretna was home to 17,423 residents at the 2000 Census (U.S. Census Bureau 2010). The population is diverse (56 percent White, 36 percent Black or African-American 3.1 percent Asia and 6.3 percent Hispanic (of any race). In particular, there is a strong Vietnamese community (429 residents) (U.S. Census Bureau 2010), and large Palestinian and Sudanese communities (Onboard Informatics 2010). It is nearly evenly split among owner-occupied housing (50.4 percent) and renter-occupied units (49.6 percent) (U.S. Census Bureau 2010).

### Community Vulnerability

Low elevation, dependency on levees from coastal storms and on pumping for drainage, Gretna has a large number of homes and businesses in the federally regulated A flood zone subject to a 1-percent chance of annual flooding. From 1970-2005, \$37,920,510 in flood insurance claims have been paid to Gretna residents (Solutient, Inc. 2007). Not all flooded residents have been in the regulatory flood zones. In addition, 426 properties are listed with FEMA as Repetitive Flood-Loss properties; 156 have been mitigated (Solutient, Inc. 2007). These RL properties are scattered throughout the community, including a few outside of the regulatory flood zone. Concentrations exist along the Hero Canal, in the Suburban Racetrack neighborhood and near the Westbank expressway (Solutient, Inc. 2007).

Recognizing a problem, the City of Gretna is an active participant in the Community Rating System. As one activity in the program designed to reduce flood risk, Gretna has developed a Flood Mitigation Plan. The plan recognizes the threat from rain as well as the threat from levee breach whether during a storm or as an isolated incident. However, the community regularly suffers flood losses from heavy rain events and has identified key areas where mitigation could reduce future losses in the Suburban Racetrack neighborhood and the Hero-Claire area (Gorrondonna and Wesley 2010).

### Effects of Katrina and Rita

Because of the angle of the storm and the success of the Harvey Canal, Gretna was spared from coastal inundation from Hurricanes Katrina and Rita in 2005 (Gorrondonna and Wesley 2010). Rain from the storms overwhelmed the pumping stations, and flooding due to rain was widespread and diverse, with claims in all areas of the city reaching almost \$20 million paid in flood insurance claims (Solutient, Inc. 2007). With 67,182 estimated migrants moving to Jefferson Parish after the hurricanes (Louisiana Recovery Authority 2006), Gretna likely faces an upsurge in residents at risk of flooding within the community and development pressure, as well as evidence that the federal levees are not a guaranteed safety net.

### Non-Structural Assessment

#### Snap-Assessment Process

UNO-CHART met with Gretna City Officials to discuss existing mitigation needs and desires, as well to identify community needs and problem areas. These city officials included Danika Gorrondonna, Building Inspector, who also serves as the floodplain administrator for Gretna; and Michael Wesley, CFM, IT Manager. During the meeting, three areas of interest were identified from existing flood data. The Suburban Racetrack neighborhood in northeast Gretna, the Hero -Claire neighborhood between Gretna Blvd and the West Bank Expressway and the newly annexed neighborhood of Timberlane, were identified as target areas of concentration. Additional community resources were researched through existing documents and resources to conduct the assessment.

#### Windshield Survey Results

In a snap-application of methods used by UL-Lafayette researchers to determine how people were rebuilding in Delcambre. The UNO-CHART concentrated on the three neighborhoods identified by Gorrondonna and Wesley. Here is what was found.

### Timberlane

Timberlane was selected because as a newly annexed neighborhood, Gretna officials, much like those in Delcambre, had a new area and not a good idea of what the flooding issues were in the area. Timberlane is a neighborhood built around a golf course and is in the southwestern part of Gretna. The photos below are characteristic of typical homes.



Timberlane lots are large, and homes are typically built on a raised lot that sloped toward the street to encourage drainage to the street. Homes are all rather large for the area, relatively recent and appearances lead researchers to conclude that a decision to elevate or adopt any other mitigation measure is an economic-preference decision for Timberlane residents. Elevations, largely with fill, did not appear to exceed 3 feet.

### Suburban Race Track

This neighborhood near the border with Algiers is a historic district near the base of the GNO bridge in northeastern Gretna. This neighborhood includes several older 2-to-4 bedroom homes in an approximately 16-block grid, some of which are dual-family housing. Despite being near the Mississippi River Levee, and thus in relatively high ground for the community, there are a number of repetitive-loss properties and regular problems during flood events. The photos below are of typical homes in the area.



Homes in the Suburban Race Track neighborhood are older and many appear to need maintenance. Sporadic vacant lots and abandoned structures exist. It appears as though there is some re-investment in the neighborhood, as well as a number of residents working on homes from previous flood events. For these reasons, it may be a good time to promote mitigation to new residents. Most of the homes are wood-frame and already elevated modestly (1-4 feet), and would be relatively inexpensive to elevate to a higher elevation. A few houses in the neighborhood have undergone additional mitigation, including the ones on the next page.

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The home on the left was raised to approximately 8 feet above ground, and the area below appears to be used for boat storage. The home on the right was elevated to approximately 4 feet off the ground; the home directly next door was elevated to approximately the same height. Both of these homes appeared to be elevated in recent years and may serve as excellent examples to other residents. Obstacles to a better-mitigated neighborhood are likely lower-income residents and owner-disinterest in rental properties.

### Hero-Claire

Hero and Claire streets run from Hwy. 90 to a few blocks past Gretna Boulevard on the west side of Gretna, parallel to a drainage ditch that marks the back property lines of one side of Hero Street. When the ditch drainage capacity is exceeded, water easily floods the yards and homes of these two flat streets. To further complicate the problem, it appears that all of the homes on these streets were originally built as slab on grade. There are a number of cleared properties some of which appear to have homes rebuilt later upon them. In addition to single-family housing there is a 4-unit multi-family complex and three mobile home parks. Overall, the neighborhood includes small “starter” homes and working-class residences and rentals. Below are examples of typical homes in the Hero-Claire neighborhood.



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Gretna tracks flood insurance claim events connected to major flooding events, and this neighborhood had the most regular flooding. The slab-on-grade homes were a mix of brick and wood construction; and it represented about three-quarters of the structures. While the original foundation is an impediment by increasing the cost of elevating, the smaller house size, and uncomplicated floor plans may make it affordable to some residents. Some homes had modest elevations, ranging from 6 inches to 3 feet. Especially in these cases, elevation may be affordable for structures qualifying for ICC and/or FEMA funding.

Several homes in the neighborhood have been recently elevated, and two homes are being elevated at the time of the study. In addition, storm shutters were observed on at least one house. A range of elevation options are observed in the small number of homes that have been elevated.



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These small-scale mitigations bring the structures off the ground on short piers, keeping minor-flood events, such as a street flooding from entering the home. However, in the event of a levee breach or a major coastal storm, these homes would likely be subject to flooding. The third home uses storm shutters on external windows, protecting the home from wind-tossed debris, but is ineffective against waters. Below, the newest elevation in the neighborhood is the highest. At about 8 feet, this home on Hero Drive is high enough to avoid most of the flooding it will face. Mid-range elevations of 3-5 feet are more typical. The next two examples show a raised concrete crawl-space addition with two different types of flood vents. The first house chose traditional metal ovals, while below, the home integrated the flood vents into the design of the concrete. Next door, a similar slab-on-grade design demonstrates the difference in vertical scale of a home raised about 4 feet next to a similar-sized home still at grade.



### Community Factors

**Risk Communication:** Gretna makes evacuation and flood mitigation information available to residents and easily accessible on the City of Gretna website (Gretna 2010). Not only was it easily discovered, it had redundant links and several entry points. Easily accessed are photos of past years' floods, contact information for the floodplain administrator, the 2007 Gretna Flood Mitigation Plan and relevant links and documents from other sources such as the state, FEMA and the National Flood Insurance Program.

### Efficient Buildings:

Most of Gretna is built at grade. Elevated foundations are present but they are scattered and disperse. While there were observed examples of storm shutters, it was not a pervasive adaptation.



**Critical Facilities and Infrastructure:** The Gretna Flood Hazard Mitigation Plan identified 24 critical facilities in the AE Flood Zone. These include utilities, schools, police and fire stations, many of which are at grade (Solutient, Inc. 2007). Critical infrastructure appeared to be equally at risk. Electric substations were at grade, fenced, but in a manner that would not keep water from entering. Pump stations appeared to be vulnerable, lacking retrofitting mitigation measures. Stormwater ditches and canals are located in the middle of streets and very near residents' back yards. Given the level topography of the area, these ditches and canals often have a low rise onto flat yards. Some in-street drainage ditches have hard bottoms, reducing the amount of water that can be absorbed into the ground.

**Community Rating System and Mitigation Plans:** Gretna participates in the Community Rating System and is currently being reclassified by the Insurance Services Office (Gorrondonna and Wesley 2010). Gretna also developed the Gretna Flood Mitigation Plan (Gretna 2010).

**Land Use:** Gretna uses comprehensive zoning, and has largely zoned high-density development and polluting and large industries out of the A Zone. Additionally, Gretna maintains a large amount of open space, largely in the A Zone (Gorrondonna and Wesley 2010).

## Opportunities for improvement

### Risk Communication

One system is to use existing community groups to promote and educate about mitigation activities and opportunities. Identified community groups in Gretna include: American Legion, Elks, Carnival Krewe, the Gretna Community Association, the Gretna Economic Development Association, the Martin Luther King Taskforce, Gretna Historical Society, Timberland Property Owners Association and the German Heritage Association and Cultural Center.

City officials may target community gathering areas for offering mitigation and flood insurance information. These may include churches, the Gretna Senior Center, libraries and schools.

The community distributes a biennial Gretna Community Guide that provides useful information about the community to residents. Although it currently does not provide information about mitigation, including information about flood risk and mitigation may encourage at-risk home and business owners to adopt protective measures.

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Gretna has large Vietnamese, Palestinian and Sudanese communities. Reaching these communities may provide special challenges. The city may want to identify local contacts within these groups to seek information about the most effective ways to reach these groups.

Gretna Fest, Farmers Market and other outdoor community activities provide an opportunity for city officials to promote mitigation activities and opportunities through tabling at these events.

Gretna conducts a Spring Tour of Houses. This tour occurs just ahead of hurricane season and during the season of heaviest rain. Providing a Spring Tour of Mitigation or a Mitigation Scavenger Hunt at the same time can help reach residents and make them more aware of the mitigation activities taken by the city and their neighbors.

Gretna provides photos of historic flooding in the city on its Web site. However, no such reminders exist on the ground. Providing markers of historic flood heights or events around town will increase risk awareness. In addition, markers promoting existing mitigation measures can make residents more aware of what their risk is. For example, signs describing how drainage ditches and open space help reduce flooding can not only make residents aware but can address concerns such as dumping in drainage ditches.

### **Efficient Buildings**

Increasing promotion of not just mitigation activities, but mitigation programs such as Increased Cost of Compliance and the Hazard Mitigation Grant Program's elevation program can help residents connect to existing opportunities. Since Gretna has identified target areas, directed mailings or community-based information sessions may help increase mitigation in areas most at risk.

With the FEMA Temporary Recovery Office located nearby, Gretna officials should invite FEMA flood insurance experts to educate insurance and real estate agents in the community about flood insurance. This could be done in a group or one-on-one manner.

When HMGP funds for elevation are going to be made available to Gretna, city officials should reach out to residents in the target areas early to encourage residents to take advantage of the opportunity.

### **Critical Facilities and Infrastructure**

With a number of critical facilities located in the special flood hazard area, Gretna should scope and apply for other funding to have these facilities raised, relocated or otherwise mitigated.

As for unmitigated critical facilities, it should be determined whether or not these facilities have targeted emergency plans that include the possibility that the facility has ceased to be accessible.

### **Plans**

Gretna has an existing Flood Hazard Mitigation Plan. This plan should be updated regularly and plans of action made to achieve unmet goals.

### **Land Use**

FEMA is rendering updated Digital Flood Insurance Rate Maps for the City of Gretna. When these maps become available, existing zoning should be reviewed with the goal of reducing development pressure in areas at higher risk of flooding.

Performance zoning or other more highly regulated standards that require on-site stormwater management should be considered for commercial developments in Gretna. Since urbanization has been identified as a threat to flooding (Solutient, Inc. 2007), zoning requirements should strive to achieve control over the negative effects of additional development, without stifling growth.

### **Retrofitting**

The Gretna Economic Development Association may be a resource to the city to promote wet and dry floodproofing activities.

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### Small Measures

Gretna has at least two active gardening clubs. The City of Gretna can help connect these groups to the LSU AgCenter to help increase knowledge about rain gardens.

To help reduce reliance on local ditches for drainage, the City of Gretna might consider promoting, building, selling or distributing rain barrels to reduce runoff from roofs and into drainage ditches prone to flooding.