

Draft Tiered Site-Specific Environmental Assessment

# City of Mercedes Community Safe Room

Mercedes, Hidalgo County, Texas

HMGP DR-1791-TX PROJECT #330

*August 2012*



**FEMA**

**Federal Emergency Management Agency**  
**Department of Homeland Security**  
500 C Street, SW  
Washington, DC 20472

## **I. Background**

In accordance with 44 Code of Federal Regulations (CFR) for the Federal Emergency Management Agency (FEMA), Subpart B, Agency Implementing Procedures, Part 10.9, a Programmatic Environmental Assessment (PEA) for Hazard Mitigation Safe Room Construction was prepared and a Finding of No Significant Impact (FONSI) was issued in on June 2, 2011, pursuant to Section 102 of the National Environmental Policy Act (NEPA) of 1969, as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508). This Tiered Site-Specific Environmental Assessment (SEA) is being prepared in accordance the June 2011 PEA. The focus of this Tiered SEA is on those areas of concern requiring additional discussion or analysis that are beyond the scope of the PEA.

## **II. Purpose and Need**

The City of Mercedes has applied for Hazard Mitigation Grant Program (HMGP) funding through the Texas Division of Emergency Management (TDEM) under application number HMGP-DR-1791-TX Project #330. Section 404 (HMGP) of the Robert T. Stafford Relief and Emergency Assistance Act, 42 U.S.C. § 5121 et seq., authorizes FEMA to provide funding to eligible grant applicants for cost effective activities that have the purpose of reducing or eliminating risks to life and property from hazards and their effects. Mitigation grant program regulations and guidance that implement these authorities identify various types of hazard mitigation projects or activities that meet this purpose and may be eligible for funding. These projects represent a range of activities that protect structures, the contents within those structures, and/or the lives of their occupants.

The south Texas Coast has experienced three Category 1, four Category 2, six Category 3, and one Category 4 hurricanes between 1900 and 2000. Three of the most damaging hurricanes to affect the Rio Grande border region in the past 60 years are Hurricanes Alice, Beulah, and Bret. Hurricane Alice, 1954, developed quickly and made landfall within 24 hours of its formation. Heavy rains caused the greatest rise on the Rio Grande since 1865. The river rose 30 to 60 feet at Eagle Pass and Laredo. Hurricane Beulah, 1967, was the third largest hurricane on record at the time. The storm struck the Texas coast near Brownsville and moved northwestward passing Harlingen, Raymondville, and Falfurrias, spreading hurricane force wind gusts as far north as Matagorda Bay. The storm surge reached 20 feet along lower sections of Padre Island, and Beulah made 31 cuts completely through the island. According to a September 1968 U.S. Army Corps of Engineers' report, storm surge inundated approximately 630,000 acres of coastal lowland. Approximately 1.4 million acres of land were inundated from stream flooding and ponded water due to the torrential rains that accompanied the storm. One-hundred and fifteen tornadoes were spawned by the system. Fifteen people died in Texas during Beulah; 5 by tornado and 10 by flood. Damages were estimated conservatively at \$100 million. Hurricane Bret, 1999, made landfall on Padre Island as a Category 4 hurricane. Bret drifted westward dumping copious rainfall over south Texas, with over 20 inches estimated by NEXRAD radar over a portion of Kenedy County. Numerous tornadoes were reported and extensive wind damage was noted, especially to the immediate north of landfall.

Currently there is no safe room available to the citizens of Mercedes or the surrounding areas, including nearby rural areas and smaller urbanized cities such as La Feria, Ed Couch, Elsa, Progreso, Progreso Lakes and other unincorporated areas. The vulnerability of this area to hurricane and tornado events are high and immediate life safety protection is needed for populations that are unable to evacuate before hurricane landfall, including emergency responders, or in the event of a quickly arising tornado. As part of Hidalgo County, the City of Mercedes is included in the “Cover the Border Hazard Mitigation Plan.” According to the plan, Hidalgo County and the City of Mercedes are at high or medium risk from ten hazards, which are prioritized by the highest hazard risk. Hurricanes/tropical storms/high winds are ranked as the #1 hazard to Mercedes, TX, and tornadoes are listed as ninth on the list of natural hazard threats to the city.

### **III. Alternatives**

Two project alternatives are proposed in this SEA: 1) No Action Alternative and 2) Proposed Action Alternative- Construction of a Stand-Alone Safe Room in northwest Mercedes.

Under the No Action Alternative, nothing would be done to address the risk of hurricanes and tornadoes in the project area. A safe room would not be constructed. As a consequence, the residents and emergency responders in Mercedes and surrounding areas would remain at risk and would continue to be in danger when hurricanes and other quickly arising high wind events target the project area.

The Proposed Action Alternative involves the construction of a new stand-alone monolithic dome safe room in a vacant field located at Tangerine Avenue & North Street (Latitude: 26.1642917; Longitude: -97.9212863), Mercedes, Hidalgo County, TX (see Appendix C). The safe room would be made from reinforced concrete poured in layers in a domed shape. When not in use as a safe room, the facility would serve as a community center. The safe room would be 20,000 gross square feet with a usable space of 15,863 square feet. It would provide protection for approximately 793 citizens and emergency responders that are unable to evacuate during a hurricane and 3,172 people during a tornado.

The project also includes installing a generator and a storm drain system and utilities at the safe room site, which will link into existing systems. A road extension and parking lot will also be constructed without the use of FEMA funds. The total area of disturbance, including utilities, drainage, road extension, and parking will be approximately 3 acres. The safe room itself will occupy approximately 1 acre. The safe room will be built in accordance with FEMA 361: Design and Construction Guidance for Community Safe Rooms (FEMA, 2008).

### **IV. Environmental Impacts**

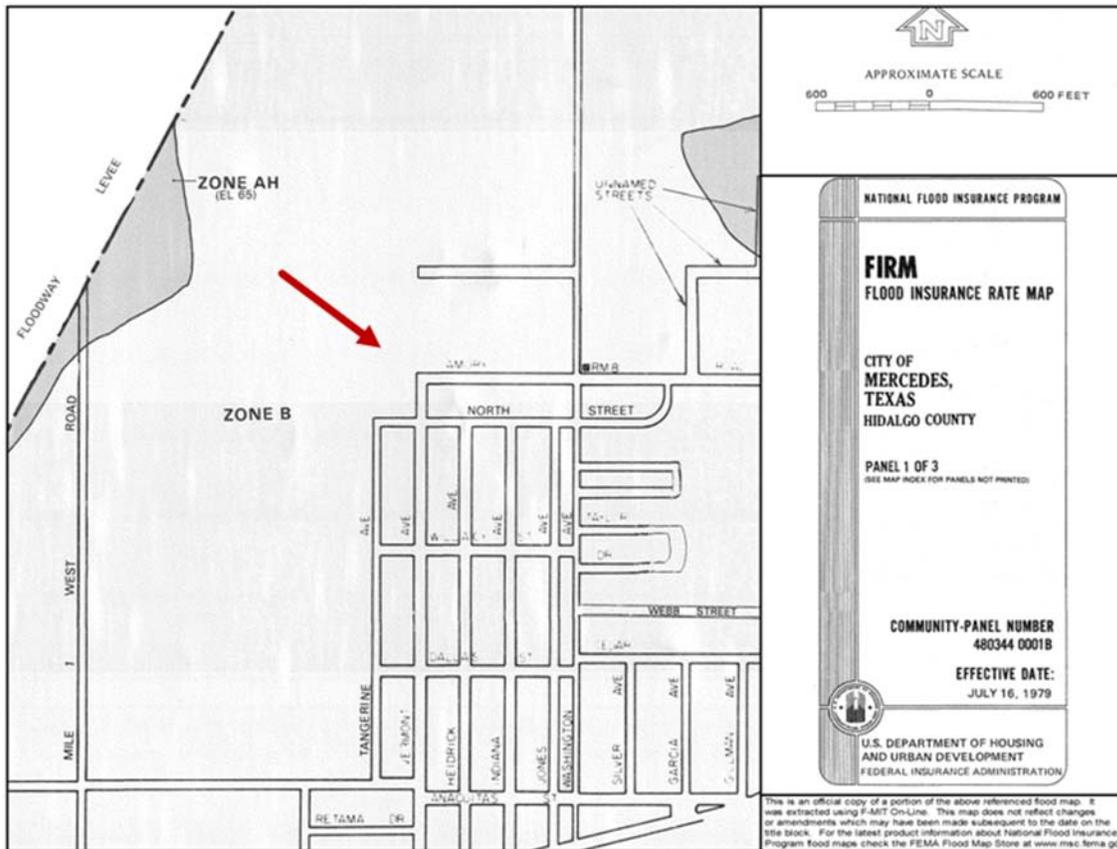
Discussion of the environmental impacts associated with the No Action Alternative is included in the June 2011 PEA. This document incorporates the PEA by reference. The PEA can be found in FEMA’s electronic library at <http://www.fema.gov/library/viewRecord.do?id=4670>.

**Table 1: Summary of Other Environmental Areas of Concern**

| <b>Area of Concern</b>              | <b>No Action Impacts</b>  | <b>Proposed Action Impacts</b>  |
|-------------------------------------|---|---|
| Land Use                            | No effect.  | The proposed action would have minor impacts to land use and would be consistent with surrounding or planned land uses. Project would disturb less than 5 acres.  |
| Geology, Soils, and Seismicity      | No effect.  | The project will convert land that is comprised of Harlingen clay soils and which is not prime or unique farmland. The proposed action would have minor impacts to land use and would be consistent with surrounding or planned land uses.                                      |
| Water Quality and Resources         | No effect.  | Minor temporary effects to water quality that would be at or below water quality standards or criteria.   |
| Wetlands                            | No effect.  | No effect. Project located outside of designated wetlands.  |
| Biological Resources                | No effect.  | Project will have No Effect on threatened and endangered species and will not adversely modify or otherwise affect critical habitat. No effect on native species, their habitats, and the natural processes sustaining them.  |
| Human Health and Safety             | Students, faculty, staff, and residents would remain vulnerable to tornado hazards. | All residents in the area will benefit from the safety provided by the facility.  |
| Minority and Low-Income Populations | Students, faculty, staff, and residents would remain vulnerable to tornado hazards. | No adverse impact on minority or low-income portions of the population is anticipated. All residents in the area will benefit from the safety provided by the facility.   |
| Historic Properties                 | No effect.  | FEMA determined in accordance with CFR 36 Part 800.4(d)(1) that there would be no effect to historic properties due to the Proposed Action Alternative. The State Historic Preservation Office (SHPO) concurred with this determination in a response letter dated May 3, 2011. |
| Air Quality                         | No effect.  | Minor short-term effects.   |
| Noise                               | No effect.  | Minor to moderate temporary effects during construction.  |

FEMA’s environmental planning and historic preservation review reveals that all environmental areas of concern are appropriately accounted for in the PEA with the exception of floodplain impacts. Table 1 provides a summary of the findings for the environmental areas of concern that FEMA typically reviews.

In compliance with FEMA regulations implementing Executive Order 11988, Floodplain Management, FEMA is required to carry out the 8-step decision-making process for actions that are proposed in the floodplain per 44 CFR §9.6. Step 1 is to determine whether the project is located in the floodplain. FEMA has determined that the Proposed Action Alternative is located in the 500-year floodplain, Zone B, as depicted on Flood Insurance Rate Map (FIRM) Community Panel 4803440001B, dated July 16, 1979 (see Figure 1). Zone B is defined as “areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-



**Figure 1:** FIRM with Safe Room Site Indicated.  
**Source:** FEMA.

year flooding with average depths less than one foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.”

Step 2 is to notify and involve the public in the decision-making process, which will be incorporated into the notice of availability for this SEA.

Step 3 is to identify and evaluate practicable alternatives to locating the proposed project in the floodplain, including alternative sites and actions outside of the floodplain. According to FIRM panels 4803440001B and 4803440003B, dated July 16, 1979, almost all of the land within the corporate limits of the city lie within either the 500-year (Zone B) or 100-year (Zones A and AH) floodplain. The only portion within the city limits that is outside the floodplain (Zone C) is a small portion of downtown Mercedes roughly centered at 4<sup>th</sup> Street and Missouri Avenue. The area within Zone C comprises approximately thirteen city blocks. This area outside of the floodplain is densely populated and completely developed as it is part of the original city center. The city was unable to identify a parcel of land large enough to accommodate the construction of a 20,000 square foot safe room in this downtown area. To build in this area, the city would have to acquire and demolish existing structures, with potential historic significance. Acquisitions may not be from willing sellers, and the cost to the city to acquire and demolish structures in addition to constructing the safe room would be much greater than building on a vacant parcel of land. Retrofitting an existing structure to meet safe room engineering standards in Zone C was

not feasible because of size constraints and cost constraints. Acquisition of a structure for retrofit may be complicated by unwilling sellers and by altering historic structures. For these reasons, the City of Mercedes determined that no practicable alternative location or action outside of the floodplain exists. To minimize flooding risk, and with little land available outside of the floodplain, the city selected a safe room site that was in the 500-year rather than the 100-year floodplain. The city chose the proposed safe room site because it was the best situated in terms of access to existing infrastructure and in terms of minimizing flood risk, and because it was the most cost effective parcel available to meet the community's needs.

Step 4 is to identify impacts associated with occupancy and modification of the floodplain and support of floodplain development that could result from pursuing the Proposed Action Alternative. Building the safe room in the floodplain could potentially increase the risk of structural damage due to flooding. It is not anticipated that the Proposed Action Alternative will result in an increased base discharge nor should it increase the flood hazard potential to other structures. As stated above, the majority of the City of Mercedes is already developed and is already in the floodplain and the addition of a safe room to protect lives is not anticipated to encourage development in the floodplain beyond what is already in place. The safe room is intended to serve existing populations.

Step 5 is to develop measures to minimize the impacts and restore and preserve the floodplain. In order to reduce the impacts identified in Step 4 of flooding on the proposed new structure and its occupants, the structure and its supporting utilities will be elevated above the 500-year elevation because the construction of a safe room is considered a critical action. The proposed safe room site is located in an area with ground elevations ranging from a low elevation of 67 feet NGVD (National Geodetic Vertical Datum of 1929) to the highest elevation of 73 feet NGVD. Originally, the safe room was proposed for a construction at Latitude: 26.164477; Longitude: -97.921592, which has a ground elevation of approximately 70 feet NGVD. However, while still in Zone B, a portion of the same project site, about 120 feet southeast of the original proposed location, was at a higher ground elevation (Latitude: 26.1642917; Longitude: -97.9212863) at approximately 73 feet NGVD. This is the highest area within the project site and the surrounding area in general (see Appendix C). In order to mitigate flood risk to the facility, the applicant moved the proposed location of the safe room to this area of higher elevation.

Because safe rooms are critical facilities, the applicant will elevate the safe room above the 500 year elevation and the finished floor will be at 74 feet. The original flood study for the City of Mercedes was conducted in 1979, and the city has not been remapped by FEMA since that time. In order to determine the 500 year event level, the City of Mercedes engineer, in coordination with personnel from the Texas Water Development Board, and FEMA engineering staff with the Risk Analysis Branch, interpreted various data sources (FIRM 4803440001B, dated July 16, 1979; 2003 North Floodway Model; Flood Protection Planning Study for Southern McAllen and Mission, Texas [Halff, 1996]). Two small portions west and east of the proposed safe room location are designated as Zone AH (100-year flood zone), with base flood elevations of 65 feet NGVD and 63 feet NGVD. These areas are located approximately 1,000 feet west and 2,500 feet east of the proposed safe room site. In addition, various studies have developed a design flow for the North Floodway (2003 Model; Halff Associates, 1996). The proposed safe room site is approximately at station 72 in the North Floodway Model. The design flow shows how the floodway would work in an extreme event, such as the flood that occurred in 1967 in association with Hurricane Beulah. The 500-year elevation within the confines of the levee is estimated at 79 feet. Based on the model and the design flow, the 100-year and 500-year events

would be well contained within the levee and therefore a 500-year event would not impact the safe room site. Even in the event of a levee breach, which is not anticipated during the 500-year event, the flat topography of the surrounding areas would allow the water to spread and become shallower, thus decreasing flood elevations. Given that the safe room site is protected by the levees from 100-year and 500-year events, and the base flood elevations in the surrounding areas are 8 to 10 feet lower than the existing elevations of the proposed site, a 500-year flood event would not create 8 feet of storm water ponding at this location due to the topography of the area which slopes southeasterly away from the levees and the protection provided by the existing levees (personal communications Jose Munoz, Guzman & Munoz Engineering & Surveying Inc., June 12, 2012; Larry Voice, FEMA Region 6, June 7, 2012; and Melinda Luna, TWDB, May 30, 2012).

The finished floor of the safe room will be at an elevation of 74 feet, which is above the 500-year flood estimates that have been approximated for this location in the event of levee breach, which is not anticipated for the 500-year event. In addition, the City of Mercedes will be required to coordinate with the local floodplain administrator and obtain required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

Step 6 is to determine whether the proposed action is practicable and to reevaluate alternatives. Per the discussion above, including elevating to mitigate flood risk to the safe room and the unavailability of a location outside of the floodplain, the Proposed Action Alternative is the only practicable alternative.

Step 7 requires that the public be provided with an explanation of any final decision that the floodplain is the only practicable alternative. In accordance with 44 CFR §9.12, the City of Mercedes must prepare and provide a final public notice 15 days prior to the start of construction activities. Documentation of the final public notice is to be forwarded to FEMA for inclusion in the permanent project files.

Step 8 is the review of the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Part 9.11 are fully implemented. The proposed safe room project will be constructed in accordance with applicable floodplain development requirements and in line with the conditions outlined below.

## **V. Mitigation**

1. The City of Mercedes must coordinate with the local floodplain administrator and obtain required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.
2. The City of Mercedes must elevate the safe room at or above 74 feet NGVD.
3. In accordance with 44 CFR §9.12, the City of Mercedes must publish a public notice 15 days prior to the start of construction activities. Documentation of the public notice is to be forwarded to FEMA for inclusion in the permanent project files.

In addition, the City of Mercedes will be required to comply with the conditions that are stated in the PEA FONSI, dated June 2, 2011, for the Proposed Action Alternative (see Appendix A).

## **VI. Agencies Consulted (see Appendix B)**

Texas State Historic Preservation Office  
Texas Commission on Environmental Quality  
Texas Water Development Board

## **VII. Public Comment**

A public notice advertising the availability of this Draft SEA for public review and comment will be posted in the local newspaper of record. The Draft SEA will be available at a physical location in the project area, electronically by request from FEMA Region 6, and at and at the FEMA online Library at <http://www.fema.gov/library/index.jsp>. A 15-day public comment period will commence on the initial date of the public notice. FEMA will consider and respond to all public comments in a Final SEA. If no substantive comments are received, the Draft SEA will become final and a Finding of No Significant Impact (FONSI) will be issued for the project.

## **VIII. List of Preparers/Reviewers**

Dorothy Weir, Principal Preparer, Environmental Specialist, FEMA Region 6  
Kevin Jaynes, CHMM, Principal Reviewer, Regional Environmental Officer, FEMA Region 6

## **IX. References**

Federal Emergency Management Agency (FEMA). 2008. Design and Construction Guidance for Community Safe Rooms. FEMA 361, Second Edition. Available on-line at <http://www.fema.gov/library/viewRecord.do?id=1657>. Accessed August 9, 2012.

Halff Associates, Inc. 1996. Flood Protection Planning Study for Southern McAllen and Mission, Texas. Available on-line at [http://www.twdb.state.tx.us/RWPG/rpgm\\_rpts/95483077.pdf](http://www.twdb.state.tx.us/RWPG/rpgm_rpts/95483077.pdf). Accessed June 20, 2012.

Rio Grande Institute. 2008. Cover the Border Hazard Mitigation Plan. Available on-line at [http://cees.tamtu.edu/covertheborder/draft\\_plan/RGI%20FINAL%20PLAN\\_14%20county.pdf](http://cees.tamtu.edu/covertheborder/draft_plan/RGI%20FINAL%20PLAN_14%20county.pdf). Accessed March 16, 2012.