

Appendix E – Summary of Changes – 2011 HMP Update

This section describes the changes made to the 2006 H-GAC Hazard Mitigation Plan Mitigation for the 2011 Plan Update. It serves as a record of major changes made for each section of the Plan.

Project Background

In December 2010, the Houston-Galveston Area Council contracted with URS Corporation to update the 2006 H-GAC Regional Hazard Mitigation Plan. The Disaster Mitigation Act of 2000 requires communities to update their mitigation plans every five years to remain eligible for Pre-Disaster Mitigation (PDM) program funding, Flood Mitigation Assistance (FMA) program funding, and Hazard Grant Mitigation Program (HGMP) funding. The H-GAC met with counties and jurisdictions in the region to update the Locally-specific Mitigation Action Plans. The planning team met to review the plan goals and action items in the 2006 HMP and review all changes made for the 2011 update prior to submittal to FEMA.

The planning team made several major changes to the 2006 HMP. The major changes are documented and summarized in this memo for each section of the mitigation plan.

2011 Update Changes by Section

The sections below discuss only the major changes made to the 2006 H-GAC Regional Hazard Mitigation Plan for the 2011 Plan Update. Major changes include replacing or removing large portions of text and new additions to the Plan.

Cover Page

The cover page for the HMP has been revised to include the 2011 planning team and the date of the Plan Update.

Section 1.0 Introduction

Section 1.0 includes an introduction, purpose for the plan, and identifies the counties and jurisdictions participating the 2011 HMP Update. The major changes in Section 1.0 include the following:

1. Background: The text of this section was revised and irrelevant information was removed. A brief section summarizing the 2006 HMP and the 2011 HMP Update was included as well.
2. Table 1.1: This table was revised to reflect the counties and jurisdictions participating in this Plan Update. Galveston County and its jurisdictions were removed from the table.

Section 2.0 Planning Process

Section 2.0 included a summary of the planning process for developing the 2006 HMP. The revised Section 2.0 includes a description of the 2011 update including participation from the public and the participating jurisdictions. The major changes in Section 2.0 include the following:

1. The description of the 2006 planning process was removed.
2. A new section, "Preparing the 2011 Update," was added which included a description of the efforts taken to update the 2006 HMP. The section included a list of items included in this update, identification of the planning team, a list of regional and county level planning meetings and participants, a list of participating jurisdictions, a description of input from the public, and the efforts taken to support multi-jurisdictional participation.
3. The list of data sources was moved from Section 4.2 to the end of Section 2.

Section 3.0 Community Profile

Section 3.0 provides a brief description of the region through summaries on geography, environment, services, demographics, land use/development/housing, political subdivisions, and lists of declared disasters. The major changes in Section 3.0 include the following:

1. Figure 3.2: A revised version has been included.
2. Figure 3.3: A revised version with key has been included.
3. Figure 3.4: A revised map has been included.
4. Figure 3.5: A revised map has been included.
5. Table 3.6, Figure 3.6: List and map of major institutions of higher education have been revised.
6. Tables 3.8, 3.10, 3.11, 3.13, 3.14, 3.16, 3.18, 3.19 and 3.21 were updated to reflect available 2010 Census data. Tables 3.19, 3.22, 3.23 and 3.27 contain 2009 estimates.
7. Table 3.25: The data in this table was revised to reflect the most recent percent employment by industry type.
8. Table 3.26: The data in this table was revised to reflect the most recent top 15 Houston area employers and their respective number of employees in 2010.
9. Tables 3.12 and 3.29: Updated population forecasts calculated by H-GAC were also included in the 2011 Plan Update; the population forecasts included in the 2006 HMP were removed.
10. Table 3.28: The unemployment rate was revised using Texas Workforce Commission rates from 2011.
11. Table 3.30 and Table 3.31: These two tables were updated to reflect the most recent information on the number and the event for Presidential and SBA declared disasters in the region. Data included was current as of March 2011.
12. Table 3.32: Communities potential eligible for special consideration were updated.

Section 4.1 Hazard Identification

This section provides a general description of hazards that may affect the H-GAC region. The major changes in Section 4.1 include the following:

1. Flood: Table 4.1-1 was updated to show the available data for 2002 and 2003.
2. Hurricanes and Tropical Storms: Data was added reflecting the public's unease with the Saffir-Simpson scale related to storm surge prediction. This discussion referenced lessons from recent Hurricane Ike in 2008.
3. Tornadoes: This section was updated to include the Enhanced Fujita Scale.
4. Wildfires: Text was added to this section regarding prevention measures the Texas Fire Service has instituted and a discussion on Wildland Urban Interface.
5. Drought: Figure 4.1-5 shows the U.S. Drought Monitor summary map as of November 2011.

6. Expansive Soils: a new hazard for expansive soils has been added.
7. Excessive Heat: Additional information on the threats to human. A heat index table as Figure 4.1-6 has been included.
8. Earthquake: Statement included that the region is in a very low earthquake hazard area and no earthquake further hazard discussions will be made.
9. Toxic Release/Hazardous Materials (HAZMAT): Text was added to this section about the HAZMAT incidents from Hurricanes Katrina and Ike.
10. Expansive Soils: Included statement that expansive soils discussion is included in Drought section and that no further discussion addressing expansive soils as a natural hazard will be made.
11. Wind: Included statement that no separate discussion of wind as a hazard will be made, as it is included within hurricanes and tropical storms, severe thunderstorms and tornadoes.
12. Sinkholes: Update provided on a sinkhole that occurred in 2008 in Daisetta. Statement made that due to the low incidence of sinkholes in the region, no further discussion of sinkholes as a hazard will be made.
13. Subsidence: Statement made that no further discussion of subsidence as a hazard will be made.
14. Tsunami: Text was added to this discussion regarding the most recent two tsunamis in the Pacific region. Statement added that due to the low incidence of tsunamis in the region, no further discussion of tsunamis as a hazard will be made.

Section 4.2 Hazard Analysis

This section presents data related to historical hazard occurrence in the H-GAC region. Generally, this section was updated with the data from events that occurred between the 2006 HMP and this 2011 HMP Update. The major changes in Section 4.2 include the following:

1. Flood: Table 4.2-1 was updated to include regional information through October 2010. Table 4.2-2 was included to reflect the highest magnitude floods for the seven participating counties. A conclusion paragraph was added, providing information on the likelihood of future events.
2. Hurricanes and Tropical Storms: Descriptions were added regarding Hurricane Rita (2005) and Hurricane Ike (2008). Figure 4.2-1: was updated to show major hurricanes through October 2011. Figure 4.2-2: was added; it presents the historic hurricane tracks along the Texas Coast. The data presented in the figure is from 1851 through 2005 and was compiled by the Center for Texas Beach & Shores, Texas A&M University. Following Figure 4.2-2 is a new discussion on storm surge. This section presents figures that depict storm surge and also include maps from the Harris County Flood Control District that show storm surge experienced by the coastal counties from Hurricane Ike. A conclusion paragraph was added, providing information on the likelihood of future events.
3. Severe Thunderstorms: Table 4.2-4 and Figure 4.2-9 were updated to include regional information through October 2010. Figure 4.2-10 was added showing the probability of thunderstorm wind occurrence and potential monetary damages. A conclusion paragraph was added, providing information on the likelihood of future events.
4. Tornadoes: Table 4.2-5, Figure 4.2-12 and text were updated to include regional information through October 2010. A conclusion paragraph was added, providing information on the likelihood of future events.
5. Wildfires: Tables 4.2-6 through 4.2-9 were added. Figure 4.2-14 associated in this section was replaced with a new figure showing wildfire locations in the H-GAC

- region between 2005 and 2011. KBDI values were provided for November 15, 2011 as Figures 4.2-15 and 16.
6. Drought: The figures in this section have been updated with more recent data. The text also reflects updated drought occurrences. Drought indices are available as Figures 4.2-18 through 4.2-20. Figures 4.2-21 and 22 depict two benchmarks for the U.S. Drought Monitor. Figures 4.2-23 and 24 provide annual probability of drought occurrence and potential farm land damages. Discussion on expansive soils, including a map of soil swelling potential (Figure 4.2-26) has been added. A conclusion paragraph was added, providing information on the likelihood of future events.
 7. Expansive Soils: a new hazard for expansive soils has been added.
 8. Excessive Heat: Enhanced section on excessive heat was added. Included are a table including the number of days of 100 degrees or more, a conclusion paragraph which provides information on the likelihood of future events, and a discussion on people at risk to heat-related illness.
 9. Winter Storms: Tables 4.2-14 through 15 were added to show days at or below freezing and days and inches of snow. A conclusion paragraph was added, providing information on the likelihood of future events.
 9. Hail: Table 4.2-16 and Figure 4.2-35 were updated to show major hail events through October 2011. Figure 4.2-36 presents historical frequency of hail events. Figure 4.2-37 provides annual probability of hail occurrence and potential farm land damages. A conclusion paragraph was added, providing information on the likelihood of future events.
 10. Coastal Erosion: Figures 4.2-38 and 39 were added showing coastal erosion in Chambers, Galveston, Brazoria and Matagorda Counties. Table 4.2-17 was added showing miles of critically eroding shoreline. Figure 4.2-40 was added to show estimated coastal erosion along Pirates Beach in Galveston County. A conclusion paragraph was added, providing information on the likelihood of future events.
 11. Dam/Levee Failure: Table 4.2-18 was added to reflect the number of dams with low, significant and high downstream hazard potential for the current number of dams in the region based on NID. Figure 4.2-41 provides a map of the NID dams with low, significant and high downstream potential. Table 4.2-19 provides additional detail on a county basis. A conclusion paragraph was added, providing information on the likelihood of future events.
 12. Toxic Release/Hazardous Materials: A hazard analysis was included in this section for the man-made hazard, toxic release/hazardous materials.
 13. Energy Pipeline Failure: A hazard analysis was included in this section for the man-made hazard, energy pipeline failure.

Section 4.3 Vulnerability Assessment

Section 4.3 provides a detailed vulnerability assessment for the hazards deemed most probable in the H-GAC region. The assessments in this section are mostly conducted using FEMA's HAZUS software package. Because of the proximity of this plan update to the 2010 Census, HAZUS has not been revised to reflect this recently collected data. Tables reflecting probabilities were relocated to section 4.2 to indicate likelihood of future events. Updates were made, when possible, and include the following major changes:

1. A discussion on the use of the existing HAZUS release and a table presenting the revised 2010 population numbers for the H-GAC region was added to the beginning of this section.
2. Figure 4.3-4: This chart was revised to reflect the most recent population projections in the H-GAC region.

3. An explanation regarding the use of the Southern Fire Risk Assessment System was added. This system was used in conjunction with the new wildfire vulnerability assessment for the H-GAC region. Figure 4.3-5 was also added which illustrates the system's methodology.
4. Land Uses and Development Trends: Galveston County and its jurisdictions were removed from this section as they are no longer part of this plan.
5. Flood: Figures 4.3-6 through 4.3-13 were updated with the latest FEMA Q3 Digital Flood Data.
6. The repetitive loss data presented in the 2006 HMP was removed and recent repetitive loss data was added.
7. Wildfire: This section is new to the HMP. It includes a vulnerability assessment based on the community risk rating, WUI and new figures.
8. Expansive Soils: a new hazard for expansive soils has been added.
9. Coastal Erosion: New section added.
10. Excessive Heat: New section added.
11. Table 4.3-35: Severe Repetitive Loss was added to the table.
12. Other Hazards: Discussion deleted. Have been incorporated into hazards in Section 4.3.
13. Table 4.3-29: Probability of Future Hazard Occurrences by Jurisdiction has been removed.
14. Table 4.3-30: Risk by County and by Hazard for the H-GAC Region has been removed.
15. Table 4.3-31: Summary of Vulnerability by Jurisdiction has been removed.
16. Table 4.3-36: Summary of Hazard Exposure has been added.

Section 5.0 Capability Assessment

Section 5.0 provides a description each jurisdiction's capabilities with regard to implementing mitigation strategies. Participating communities were asked to complete a capability assessment survey. Galveston County and its jurisdictions were removed from this section. Tables in Section 5.0 were updated based on the submission of these surveys.

1. Table 5.1, Table 5.2, Table 5.3, and Table 5.9 were updated with information for the following communities:
 - a. Austin County and all participating jurisdictions
 - b. Brazoria County and all participating jurisdictions
 - c. Chambers County and all participating jurisdictions
 - d. Walker County and all participating jurisdictions
2. Table 5.10 reflects updated closed HMGP and HPP-M projects in the region

Section 6.0 Mitigation Strategy

Section 6.0 describes the mitigation strategy utilized by the participating counties and jurisdictions. This section includes the mission statement and the mitigation goals, along with a description of the development of the locally-specific mitigation actions.

1. Introduction: The introduction portion of this section was reduced to be more concise and to include only relevant information.
2. Mitigation Goals: This portion of the text was reduced to include an introduction statement along with the five mitigation goals. The text now refers the reader to Section 2.0 for more information on the mitigation planning process.
3. Table 6.1: This table was removed. Mitigation actions are included in Appendix A.

4. Figure 6.1: The table was modified to include wildfires under the “Moderate Risk Hazard” column. The appropriate mitigation techniques were checked.

Section 7.0 Plan Maintenance Procedures

Section 7.0 describes the plan maintenance procedures. Minimal changes were made to this section, which include:

1. **Table 7.1** was updated to reflect the most current contacts for the plan monitoring and updating.
2. The reference to Appendix A was added.

Appendix A Locally-Specific Mitigation Actions

Appendix A presents the locally-specific mitigation actions for participating communities. The following major changes were made.

1. A.1 presents a new table that includes the status of locally-specific mitigation actions, which is followed by new or revised actions.
2. Section A.2 presents detail on locally-specific mitigation actions that have not been updated and were included in the 2006 HMP. Actions are arranged alphabetically by county and then by city.