

**City of Galveston Hazard Mitigation Plan**  
**2013 Progress Report**  
May 30, 2013

**Background:**

The Disaster Mitigation Act of 2000 (DMA2K) requires that applicants for FEMA mitigation grant funding have a FEMA-approved multi-hazard mitigation plan. This plan is required to describe the hazards that can affect the community, assess the community's risk from these hazards, and to describe actions or projects that the community desires to undertake to mitigate their vulnerability.

Plans may be single or multi-jurisdictional, but must conform to 44 CFR, Part 201 and all applicable mitigation planning guidance issued by FEMA. A community must be a participant in a current, FEMA-approved plan to be eligible for FEMA mitigation funding. Local mitigation plans must be reviewed, updated and re-approved at least every five (5) years.

Development of the City of Galveston's Hazard Mitigation Plan began in May 2010, and concluded in July 2010. The Hazard Mitigation Plan Steering Committee recommended approval of the draft plan for City Council review and submission to TDEM. The plan was presented to Council at the August 12<sup>th</sup> meeting, and submitted to TDEM on August 13<sup>th</sup>, 2010. TDEM and FEMA required 6-8 months for review of the plan.

TDEM and FEMA requested minor changes to the plan thus requiring its modification. The modified plan was published for additional public comments and responses from the required governmental entities and the final plan was submitted and adopted through resolution by City Council on May 12, 2011.

**Progress Reporting Process:**

Per Section 10, Monitoring and Maintenance, the following is required:

*Informal Plan monitoring activities will be ongoing. In addition to the FEMA mandated five year update cycle, the Plan Review Team will perform an informal review of the Plan at least annually, or more often as circumstances require. At least annually, a progress report will be prepared, noting any updates to information in the Plan or progress that has been made towards the goals, objectives or actions identified in the Plan. These reports will be found in Appendix M.*

The annual review of the Hazard Mitigation Plan is to be completed by representatives from these departments: Office of Emergency Management, Planning and Community Development, and Public Works. Review shall include consideration of any change in the previous year for the following items: hazard conditions, vulnerability/risk conditions, public outreach and involvement, as well as action plan items. Documentation of these changes on an annual basis will be incorporated into the five-year update in 2016.

### **Review of Hazard Conditions – May 2012 through April 2013:**

During the review period of the 2013 progress report, the staff committee noted there had been no coastal storm events to impact the community. The drought conditions that were in effect throughout the summer and fall of 2012, which resulted in voluntary water restrictions for the community, have eased due to winter and spring rain events. There have been few notable man-made hazard events.

### **Review of Vulnerability Conditions – May 2012 through April 2013:**

Few changes to vulnerability conditions were documented in the 2013 review period. However, there were several code changes that will assist with reduction in the City's vulnerability over time. As part of the Progress Galveston project, the City finalized the adoption of an Erosion Response Plan (ERP) to implement dune protection, beach access, and erosion response policies and objectives in the City's 2011 Comprehensive Plan and Hazard Mitigation Plan and to comply with state regulations. There were also updates to the Progress Galveston project and continued implementation of the Municipal Stormwater Permitting.

#### **Erosion Response Plan:**

Adoption of an ERP is essential if the City wishes to seek state Coastal Erosion Planning and Response Act (CEPRA) funding to complete projects including dune and wetlands restoration, beach nourishment, shore protection, and other coastal improvement projects. The ERP is designed to achieve the following broad objectives:

- Reduce public expenditures for erosion and storm damage losses to public and private property, including public beaches;
- Ensure the health and stability of existing dune systems and dune vegetation;
- Encourage the natural recovery of dunes and beaches following storm-induced erosion;
- Provide for the establishment of new dunes through restoration projects; and
- Allow for the landward migration of beaches and dunes due to erosion.

Prepared in consultation with local stakeholders and the Texas General Land Office (GLO), the ERP includes the following elements:

- A review of existing shoreline conditions, including information regarding shoreline change or erosion rates;
- A definition of Dune Conservation Areas where beachfront dunes naturally occur and where restored dunes may be located;
- Construction prohibitions, exemptions, and standards for construction activities within and seaward of Dune Conservation Areas;
- A definition of Enhanced Construction Zones and standards for construction activities within these areas;
- Opportunities for mitigation, restoration, and preservation of dune systems;
- Strategies to improve public beach access;

- Procedures for post-storm damage assessment of beach access points; and
- Criteria for acquiring property within or seaward of the Dune Conservation Area.

Following adoption in April 2012, the ERP was forwarded to the GLO for review in May 2012. GLO reviewed the ERP and sent a letter to the City on June 21, 2012 notifying that the ERP is consistent with State Law. On July 20, 2012 the GLO sent the ERP to the Texas Register for the review and posting period. The ERP was formally adopted December 13, 2012.

#### Progress Galveston Project:

In January 2011, the City of Galveston, Texas embarked on a planning project designed to ensure public and private actions align to improve the community's livability, sustainability, and competitiveness. This planning effort, known as Progress Galveston, is organized in three parts: 1) completing an update to the City's Comprehensive Plan; 2) preparing a series of Specialized Plans addressing important issues such as historic preservation, mobility, parks and recreation, disaster recovery, and coastal management; and 3) updating and coordinating regulations affecting the development of private property. As a central component of the City's post-Hurricane Ike recovery process, the project is funded through a grant from the U.S. Department of Housing and Urban Development.

As of May 2013, the Progress Galveston project has made significant progress resulting in the adoption of the City's Comprehensive Plan and preparation of six specialized plans that cover: Parks and Recreation, Historic Preservation, Erosion Responses, Thoroughfares and Mobility, Disaster Recovery, and Sustainability. The updating of the City's development codes, known as the Land Development Regulations, is also underway with the Planning Commission reviewing a draft document.

#### Municipal Stormwater Permit:

On January 26<sup>th</sup> 2012, the Galveston City Council passed ordinance number 12-006 for the regulation of discharges to the municipal separate storm sewer system (MS4). In addition to being a Federal mandate as part of the "Clean Water Act", this also serves as a mitigation tool for the storm water system by minimizing the amount of solids that will make their way into said system. By this reduction of solids, the storm water flows will have less resistance and thus be allowed to flow freely from the areas impacted by the event.

The City has maintained an 'informative' status, focusing on education and informing the public of the regulations. When violations occur, the staff addresses issues in the field and follow up to ensure compliance with the ordinance. The Public Works staff has held an introductory information session with the Building Inspectors in preparation of the next stage of implementation. The next step is the establishment of enforcement policies with the City Management.

### **Review of Public Outreach and Involvement – May 2012 through April 2013:**

The City of Galveston held its annual Hurricane Preparedness Meeting in May of 2012 at the Galveston Island Convention Center. The Governor’s proclamation on ‘Beach Safety Week’ Speakers included TDEM, County, UTMB, USCG, NWS and local management. Approximately 350 citizens attended the meeting.

Other Public Outreach and Involvement actions taken by the Office of Emergency Management include:

- Hosted Public Officials Workshop to educate the elected officials on emergency management responsibilities;
- Initiated Emergency Management social media platforms using Facebook and Twitter;
- Implemented a new National Incident Management System (NIMS) training program for municipal employees;
- Performed a full scale drill to prepare employees to operate a functional needs evacuation debarkation site and the emergency operations center;
- Gave presentations to the Galveston Historical Foundation, condominium associations, and homeowner associations on disaster preparedness;
- Hurricane Preparedness Guide published in May 29<sup>th</sup> Galveston County Daily News; and
- Proposed City Council an update on emergency preparedness measures.

### **Updates to the Hazard Mitigation Action Plan – May 2012 through April 2013:**

The broad goals of the City of Galveston Hazard Mitigation Plan, as determined by the HMPSC, are as follows:

- Goal 1: Improve education and outreach efforts, specifically to the public, elected officials, municipal employees and local businesses, regarding the potential impacts of hazards and the identification of specific measures that can be taken to reduce those impacts.
- Goal 2: Improve capabilities, coordination and opportunities at the municipal level to plan and implement hazard mitigation projects, programs and activities, especially through the use of GIS, coordination with universities and colleges, and public/private partnerships.
- Goal 3: Develop hazard mitigation policies and programs designed to reduce the impact of natural and human caused hazards to people and property.
- Goal 4: Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.

The HMPSC developed the following program of mitigation actions in response to the risk and capability assessments (see Sections 7 and 8) that will be implemented on a City-wide basis.

These actions are presented in Table 9.3.3-1, and are organized by goal and objective. The actions presented in the table represent both previously identified actions from other planning efforts and newly-identified actions, determined through discussions with the HMPSC and City Staff.

Action items that were included in the 2010 County Update were considered and included by the HMPSC. Such actions are noted as “existing actions” in Table 9.3.3-1. Some actions may have been modified as a result of discussions among the HMPSC members.

Completed actions are indicated by shading. Those actions that were identified in previous planning efforts and are not yet been completed have been deferred. In all cases, these actions were not completed due to one or more of the following circumstances:

- Lack of available funding; or
- Resources otherwise directed towards response and recovery efforts following Hurricane Ike; or
- Interruption in normal operating procedures and scheduled projects following Hurricane Ike.

For the 2013 Progress Report, updated items are noted in **Bold** and underlined. If an action has been completed, it will be shaded and noted for the year of completion.

**Table 9.3.3-1  
City of Galveston –Mitigation Action Plan**

<b>City of Galveston – Mitigation Action Plan</b>								
<b>Proposed Action</b>	<b>Hazard(s) Addressed</b>	<b>New or Existing Action</b>	<b>Estimated Cost</b>	<b>Potential Funding Source(s)</b>	<b>Agency / Department Responsible</b>	<b>Implementation Schedule</b>	<b>Comments</b>	<b>Priority</b>
<b>Goal 1: Improve education and outreach efforts, specifically to the public, elected officials, municipal employees and local businesses, regarding the potential impacts of hazards and the identification of specific measures that can be taken to reduce those impacts.</b>								
<b>Objective 1.1: Educate the public and others on actions they can take to prevent or reduce loss or life or property damage from all hazards.</b>								
Provide hazard and disaster awareness and preparedness information to the public, both residents and visitors.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing (On-going)	\$2,000	General Fund	Office of Emergency Management	2011-2016 Ongoing annually		High

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<p>Use internet to provide information to residents and visitor regarding natural disasters, preparation and protection.</p> <p><b>Expanded</b> use of social media to provide information.</p> <p>Maintain use of One Call Reaches All as means of notification and information.</p>	<p>Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire</p>	<p>Existing <b>(On-going)</b></p>	<p><b>\$21,000</b></p>	<p>General Fund</p>	<p>Office of Emergency Management</p>	<p>2011-2016 Ongoing annually</p>	<p>This activity is on-going in the aftermath of Hurricane Ike</p>	<p>High</p>
<p>Conduct town meeting prior to start of hurricane season, to provide information to residents.</p>	<p>Extreme Wind; Flooding</p>	<p>Existing (On-going)</p>	<p>\$2,000</p>	<p>General Fund</p>	<p>Office of Emergency Management</p>	<p>2011-2016 Ongoing Annually</p>	<p>This activity occurs annually prior to hurricane season.</p>	<p>High</p>

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Purchase and distribute NOAA All-Hazard radios or other public notification devices to public facilities, schools, day cares, medical facilities, critical facilities, and large public gathering places.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing (Modified) (Deferred)	\$100 per unit	FEMA HMGP	Office of Emergency Management	<b><u>Action Completed 2013</u></b>	Applies to existing and future development.	High
Implement public information and education campaign to educate residents and businesses about benefits of xerogardening and xeriscaping.	Drought	Existing (Deferred)	\$5,000	General funds, Texas Agriculture Extension Service	Planning and Community Development, Office of Emergency Management	2011-2016	Applies to existing and future development.	High
Implement public information and education campaign to educate residents and businesses about hazardous materials incidents, evacuation procedures in the event of an accident, and sheltering-in-place.	Hazardous Materials Incident	Existing <b><u>(On-going)</u></b>	\$2,500	Private Funds, General funds, FEMA HMGP	Galveston Fire Department, Office of Emergency Management, Public Works	2011-2016		High

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Implement public information and education campaign to educate residents and businesses on how to reduce the threat of urban fires and wildfires.	Wildfire / Urban Fire	Existing <b>(On-going)</b>	\$2,500	FEMA HMGP, Texas Forest Service, General Funds	Galveston Fire Department, Office of Emergency Management	2011-2016	Applies to existing and future development.	High
Increase on-island CERT capability and capacity.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	On-going	\$5,000	General Funds	Office of Emergency Management/ Galveston County Office of Emergency Management	2011-2016	<b><u>CERT Training on-going</u></b>	Moderate

**Goal 2:**  
**Improve capabilities, coordination and opportunities at the municipal level to plan and implement hazard mitigation projects, programs and activities, especially through the use of GIS, coordination with universities and colleges, and public/private partnerships.**

**Objective 2.1:**  
**Acquire and maintain detailed data regarding vulnerabilities, including critical facilities and historic assets, so that these resources can be prioritized and assessed for mitigation actions.**

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Work cooperatively with NOAA and other agencies to conduct workshop/study on sea level rise in Galveston.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Sea Level Change	New <b><u>(Deferred)</u></b>	\$5,000+	General Funds, NOAA	Planning and Community Development	2011-2016		Moderate
Development of Sustainability Plan/Program Implementation.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	<b><u>On-going/ Underway</u></b>	<b><u>\$50,000</u></b>	General Funds, CDBG	Planning and Community Development	2011-2016	Applies to existing and future development.  <b><u>Expected adoption of Sustainable Action Plan by the end of 2013.</u></b>	Moderate

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Development of Greenprinting Plan for areas east of West End study.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	New <b><u>(Deferred)</u></b>	\$5,000	General Funds, Texas Parks and Wildlife, CDBG	Planning and Community Development/ Public Works Department	2011-2016	“Greenprinting” refers to a strategy to manage growth that ensures quality of life, clean air and water, recreation and economic health. Applies to existing and future development.	Moderate

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Develop proposed land use mapping to allow easier consideration of hazards in future development.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing/ Underway	\$15,000	General Funds, CDBG	Planning and Community Development	2011-2016	Applies to future development.  <b><u>Expected completion by the end of 2013.</u></b>	Moderate
Consider / Development of structural acquisition plan/procedures.	Flooding	Existing/ Underway	\$5,000	General Funds	Planning and Community Development	2011-2016	Applies to existing structures.  Included in the Erosion Response Plan (ERP)	Moderate
Consider / Development of structural elevation plan/procedures.	Flooding	New <b><u>(On-going)</u></b>	\$5,000	General Funds	Planning and Community Development	2011-2016	Applies to existing structures.	Moderate

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Consider alternative methodologies for determination of substantial damage.	Extreme Wind Flooding Wildfire / Urban Fire	New <b>(On-going)</b>	\$5,000	General Funds	Planning and Community Development	2011-2016	Applies to existing structures.	Moderate
Consider / Contract for historic property mitigation study, to determine best practices for mitigation of homes on larger scale.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	New <b>(Deferred)</b>	\$50,000	General Funds, THC, GHF, National Park Service, CDBG	Planning and Community Development	2011-2016	Applies to existing structures.	Moderate

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Digitalization of paper records, city-wide, for access post-disaster (mitigate data loss and allow for continuity of operations/government).	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing/ Underway	\$5,000+	General Funds, FEMA HMGP, CDBG	City Secretary's Office with assistance from City Departments	2011-2016		Moderate

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Develop detailed inventory of critical facilities, to include elevations, square footage and contents inventory.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	New <b>(On-going)</b>	\$5,000	General Funds	<b><u>Risk Management</u></b>	2011-2016	Applies to existing and future development.	High
<b>Goal 3:</b>								
<b>Develop hazard mitigation policies and programs designed to reduce the impact of natural and human caused hazards to people and property.</b>								
<b>Objective 3.1:</b>								
<b>Seek ways to reduce losses to the National Flood Insurance Program, and to increase participation in and compliance with the NFIP.</b>								
Consider joining the NFIP's Community Rating System.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Flooding; Sea Level Change; Tsunami	Existing (On-going)	\$10,000	General Funds	Planning and Community Development	2011-2016	No cost to join program, though administrative costs will be incurred to maintain membership  <b><u>City has hired a consultant and the application development is under way.</u></b>	Moderate

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Consider adoption and enforcement of freeboard requirement into City's Flood Damage Prevention Ordinance.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Flooding; Sea Level Change; Tsunami	Existing (On-going)	\$2,500	General Funds	Planning and Community Development	2011-2016	Action is currently under consideration for implementation. Would apply to future development and any existing structures designated as substantially damaged or improved.  Included for City-owned facilities and CDBG-DR projects.  <b><u>Will be considered along with the adoption of new Floodplain maps.</u></b>	Moderate
Increase number of floodplain managers in the building division through training and certification.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Flooding; Sea Level Change; Tsunami	New <b><u>(On-going)</u></b>	\$10,000	General Funds, FEMA	Planning and Community Development	2011-2016	<b><u>Certification opportunities identified.</u></b>	Moderate
Identify Repetitive Loss flooding properties for future mitigation projects.	Flooding; Tsunami	Existing (Complete)	Unknown	General Funds, FEMA	Planning and Community Development	<b>Action Completed <u>2011</u></b>	Action has been completed, and will be removed in next Plan update.	Medium

**Objective 3.2:**

**Consider measures to ensure that modifications to existing development, as well as any future development, will not put people or property in harm's way, or will not increase threats to existing properties.**

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Support aggressive beach nourishment program to address critical erosion areas.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing (Modified) (On-going by GLO)	Unknown	USACE, GLO, CIAP, GLO CEPRA	GLO, Planning and Community Development	2011-2016	This action is on-going in the aftermath of Hurricane Ike.	High
Restore destroyed dune systems to decrease / mitigate damage to public and private property.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing (On-going by GLO)	Unknown	FEMA HMGP/PDM/FMA, State (CEPRA) and local grants, USACE	GLO, Planning and Community Development	2011-2016	This action is on-going in the aftermath of Hurricane Ike.	High
Install shoreline protection devices in areas subject to coastal erosion to reinforce dune systems.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing <b>(On-going)</b>	\$175,000	FEMA HMGP, USACE, GLO	GLO, Planning and Community Development, Public Works	2011-2016	<b><u>Partnership with the Park Board for beach renourishment and dune restoration project at the western end of the Seawall. Potential renourishment project from 10<sup>th</sup> Street to 61<sup>st</sup> Street in front of the Seawall.</u></b>	Moderate
<b>Goal 4:</b>								
<b>Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.</b>								
<b>Objective 4.1:</b>								
<b>Pursue opportunities to mitigate identified Repetitive Loss and Severe Repetitive Loss properties</b>								

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Elevation, acquisition or other mitigation of identified Repetitive Loss and Severe Repetitive Loss properties.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing (Modified) (Deferred)	\$50,000+ (per structure)	CDBG, FEMA HMGP/ PDM/ FMA/ SRL/ RFC, Property Owners, NFIP ICC	Planning and Community Development	2011-2016	Applies to existing structures.	High
<b>Objective 4.2:</b>								
<b>Pursue opportunities for structural mitigation projects and other projects to protect infrastructure from hazards.</b>								
Exposed concrete and rebar on public beaches – remove debris and threat to public and private property – reducing property damage during hazard events.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	<b>Completed</b>	Unknown	FEMA Public Assistance, GLO, CEPRA, Texas Beach Sweep, CDBG	<b>Texas General Land Office (GLO)</b>	<b>Action Completed 2012</b>	This action is on-going in the aftermath of Hurricane Ike  <b>Action has been completed and will be removed in the next Plan update.</b>	High
Elevate coastal roads to better protect public during evacuation and to protect the roads from flood damage, where technically feasible.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing (Modified) (Deferred)	Unknown	Potential funding from TXDot, CDBG	FHWA, TXDoT, Public Works	2011-2016 Ongoing project	Applies to existing and future coastal roads.	High

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Implement improved drainage projects and better maintenance program for clearing drainage ditches.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing <b>(On-going)</b>	Unknown	TWDB, FEMA HMGP, CDBG, Enterprise Funds	Public Works	2011-2016	Applies to existing and future drainage systems.	High
Elevation of structures at risk from flooding.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing <b>(On-going)</b>	\$50,000 - \$100,000 (per structure)	CDBG, FEMA HMGP / PDM/ FMA/SRL, Property Owners, NFIP ICC	Planning and Community Development/ Grants and Housing Department	2011-2016	Will require coordination with TDEM and FEMA to address BCA issues.  Applies to existing structures. (Future structures will require elevation to meet current codes/ordinances.)  CDBG-DR projects and City-owned facilities	Moderate
Install security/surveillance equipment at all municipal facilities.	Hazardous Materials Incident; Terrorism	Existing (Modified) (On-going)	\$100,000	TDEM, DHS, General Funds	Office of Emergency Management	2011-2016	Applies to existing and future development.  <b><u>City Hall and Justice Center complete.</u></b>	High

**City of Galveston – Mitigation Action Plan**

<b>Proposed Action</b>	<b>Hazard(s) Addressed</b>	<b>New or Existing Action</b>	<b>Estimated Cost</b>	<b>Potential Funding Source(s)</b>	<b>Agency / Department Responsible</b>	<b>Implementation Schedule</b>	<b>Comments</b>	<b>Priority</b>
Purchase text equipment for local cable channel.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing (Complete)	\$20,000	FEMA HMGP / PDM	PIO	<b>Action Completed <u>2011</u></b>		High

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Identify and purchase needed vehicles and equipment for public safety departments.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing (Modified) (On-going)	\$750,000	FEMA PA, DHS, General Fund, CDBG, Donations	Fire Department, Police Department, Public Works, Beach Patrol, Office of Emergency Management	2011-2016	Some equipment and vehicles will be or has been purchased through FEMA PA funding.  <b><u>Fleet Services continues to upgrade vehicles for the public safety departments.</u></b>	High
Harden facility and improve security at 30 <sup>th</sup> Street Water Pump Station.	Extreme Wind; Flooding; Hazardous Materials Incident; Terrorism	Existing (Complete)	<b><u>\$600,000</u></b>	Unknown	Municipal Utilities	<b>Action Completed <u>2011</u></b>		Moderate

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Harden facility and improve security at unmanned municipal utility facilities.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Sea Level Change; Terrorism	Existing/ Underway	\$2,500,000	General Funds, DHS, TWDB, FEMA HMGP/PDM	Municipal Utilities	2011-2016	<u>Actions underway for the 30<sup>th</sup> Street Pump Station, the Harborside Drive Wastewater Treatment Plant, and the 59<sup>th</sup> Street Pump Station.</u>	Moderate
Acquisition and demolition of structures damaged by flooding, including abandoned structures.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing (Modified) (On-going)	\$50,000+ (per structure)	CDBG, FEMA HMGP/ PDM/ FMA/ SRL/ RFC, Property Owners, NFIP ICC	Planning and Community Development	2011-2016	Applies to existing structures.	Moderate
Elevation or other flood protection of historic structures at risk from flooding.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Sea Level Change; Tsunami	Existing (Modified) (Deferred)	\$50,000+ (per structure)	CDBG, FEMA HMGP/ PDM/ FMA/ SRL/ RFC, Property Owners, NFIP ICC	Planning and Community Development	2011-2016	Applies to existing structures.	Moderate

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Study, evaluate, design and construct flood control methods, with particular emphasis on the protection of critical facilities and critical infrastructure.	Biologic Events; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Sea Level Change; Tsunami	Existing (Modified) (On-going)	\$50,000+ (per structure or device)	CDBG, FEMA HMGP/ PDM/ FMA, General Fund	Public Works	2011-2016	<b><u>Actions underway for the 30<sup>th</sup> Street Pump Station, the Harborside Drive Wastewater Treatment Plant, and the 59<sup>th</sup> Street Pump Station.</u></b>	Moderate
Mitigation/hardening of substantially damaged structures (historic/non-historic).	Extreme Wind; Wildfire / Urban Fire	Existing (Modified) (On-going)	\$50,000+ (per structure)	CDBG, FEMA HMGP/ PDM, Property Owners	Planning and Community Development	2011-2016	Applies to existing and future structures.	Moderate

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Identify critical facilities and other necessary public buildings that require emergency power generation - Purchase and install emergency power generators and related housing and connection equipment at all critical facilities or other necessary public buildings.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing (Modified) (On-going)	Unknown	FEMA HMGP, CDBG, General Funds, Enterprise Funds	Office of Emergency Management, Public Works	2011-2016	<b><u>Generators installed at the Airport, 30<sup>th</sup> Street Pump Station, City Hall, Sewer Lift Station #1, Maquire-Dent Recreation Center, and three Fire Stations.</u></b>	High

**City of Galveston – Mitigation Action Plan**

Proposed Action	Hazard(s) Addressed	New or Existing Action	Estimated Cost	Potential Funding Source(s)	Agency / Department Responsible	Implementation Schedule	Comments	Priority
Design and construct a Safe Room (using FEMA 361 design guidance) to house emergency personnel and first responders who must remain on the island during evacuations.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing (On-going)	\$10-\$15MM	FEMA HMGP/ PDM, General Funds, Donations, CDBG	Office of Emergency Management, City Manager's Office	2011-2016	Project applied for under DR-1791 HMGP  <b><u>2013: Still under investigation</u></b>	Moderate

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Perform retrofits of public utilities (including sanitary sewer and drinking water systems), which may include the following: inflow guards on manhole covers, elevated electrical components, flood proof or elevate utility structures within SFHAs, ring berms around critical facilities that cannot feasibly be elevated, watertight manhole covers, tied down fuel storage tanks.	Biologic Events; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Tsunami	Existing (Modified) (On-going)	\$5,000+ per project	FEMA HMGP/ PDM/ FMA, General Funds, TWDB, CDBG	Public Works	2011-2016	<b><u>Inflow guards installed. Electronic components for lift stations installed above the Base Flood Elevation.</u></b>	Moderate
Increase native canopy by tree planting in public rights-of-way to reduce urban heat levels.	Drought	Existing (On-going)	\$500,000	Arbor Day Foundation General Funds, CDBG, Donations, Residents	Planning and Community Development, Public Works, Parks and Recreation Department, Galveston Tree Committee	2011-2016	Applies to existing and future development.  <b><u>Free tree giveaways held for the public. Several blocks of Broadway replanted with palms and large trees.</u></b>	Moderate
Develop and implement a system for early detection / notification of hazardous materials incidents, leaks and accidents.	Hazardous Materials Incident	Existing (Modified) (On-going)	\$25,000+	Private funding	Galveston Fire Department, Public Works, Office of Emergency Management	2011-2016	Cost would be dependent on material.  2012: Port of Galveston and UTMB have expanded capabilities	Moderate

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Investigate eligibility and benefits of National Weather Service's "StormReady" Community program – Apply for entry to program, if beneficial and feasible.	Extreme Wind; Lightning	Existing (Modified) (Deferred)	\$2,500	Private Funds, General funds	Office of Emergency Management	2011-2016	<b><u>Action Complete 2013. Will need to reapply in 2016.</u></b>	Low
Wind retrofit critical facilities and those other public buildings that must function following an extreme wind event.	Extreme Wind	Existing (Modified) (On-going)	\$125,000+	FEMA HMGP/ PDM, General Funds, CDBG, EECDBG	Office of Emergency Management, Planning and Community Development, Public Works, City Manager's Office	2011-2016	Project for McGuire Dent Recreation Center submitted under DR-1791 HMGP. Applies to existing structures.  2012: EECDBG project to repair/improve City Hall windows and doors.  <b><u>Action Complete 2013</u></b>	Moderate
Develop and implement stormwater drainage system improvements.	Flooding	Existing (Deferred)	\$250M	General Funds, Enterprise Funds, TWDB, CDBG	Public Works	2011-2016	Applies to existing and future development.	Moderate
Develop vegetation management program to mitigate spread and fueling of fires.	Wildfire / Urban Fire	Existing <b><u>(On-going)</u></b>	\$5,000	FEMA HMGP/ PDM, Texas Forest Service, General Funds, CDBG	Galveston Fire Department	2011-2016	Applies to existing and future development.	Moderate

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Investigate ways to harden and protect facilities and infrastructure belonging to Gulf Coast Water Authority (Sole source provider of potable water to City) – Implement projects as funding becomes available.	Extreme Wind; Flooding; Hazardous Materials Incident; Sea Level Change; Terrorism	Existing/ Underway	\$6,500,000	General Funds, Enterprise Funds, FEMA HMGP/ PDM, CDBG	Municipal Utilities	2011-2016	Applies to existing and future development.	High
Rehabilitate the 1894 Bayline, for use as emergency water connection in the event of failure or damage of the water main.	Coastal Erosion; Coastal Retreat; Coastal Subsidence; Extreme Wind; Flooding; Hazardous Materials Incident; Sea Level Change; Terrorism	New <b>[On-going]</b>	\$8,000,000	General Funds, Enterprise Funds, CDBG FEMA HMGP	Municipal Utilities	2011-2016	Applies to existing equipment/structures. <b>2013: Pending funding</b>	High
Implement plans for elimination of on-site sewage treatment.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Environmental Disaster; Flooding; Sea Level Change; Tsunami	New <b>[On-going]</b>	\$10,000+ per structure	General Funds, Enterprise Funds, CDBG, Property Owners	Planning and Community Development, Municipal Utilities	2011-2016	Applies to existing structures.	Moderate

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Monitor funding sources for opportunities to provide assistance to homeowners for purchase of grinder pumps (maintenance would remain property owner’s responsibility).	Biologic Event	New	\$5,000+ per structure	Unknown at this time	Planning and Community Development, Municipal Utilities	2011-2016	Applies to existing structures.	Moderate
Investigate and implement hardening of IT and phone (communication) infrastructure, to include off-site/remote facilities.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing [On-going]	\$5,000+	General Funds, FEMA HMGP, CDBG	Planning and Community Development, Municipal Utilities, Office of Emergency Management, IT/Finance Department	2011-2016	Applies to existing and future infrastructure.  <b><u>2013: Developing city-wide fiber network</u></b>	High

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Increased capacity/hardening for internal departmental communication.	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Existing [On-going]	\$5,000+	General Funds, FEMA HMGP, CDBG	Planning and Community Development, Municipal Utilities, Office of Emergency Management, IT/Finance Department	2011-2016	Applies to existing and future infrastructure.  <b><u>2013: Developing city-wide fiber network</u></b>	High

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Develop a standby application for post-disaster code enforcement (includes building, compliance, planning, public works, etc).	Biologic Event; Coastal Erosion; Coastal Retreat; Coastal Subsidence; Drought; Environmental Disaster; Extreme Wind; Flooding; Hazardous Materials Incident; Lightning; Sea Level Change; Terrorism; Tsunami; Wildfire / Urban Fire	Complete	\$5,000	General Funds	Planning and Community Development	Action Completed 2012		High

