

## Appendix D Stakeholder Committee Meeting Documentation

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**Note to Reviewers: All documentation will be added as it becomes available.**

### D.1 Meeting #1

Meeting #1, also referred to as the Kickoff Meeting, was held May 20, 2010, at Galveston City Hall. This section contains the following meeting documentation:

- Invitation to Stakeholder Committee Kickoff Meeting,
- Meeting #1 Sign-In Sheet,
- Meeting #1 Agenda, and
- Meeting #1 Notes.

**Figure D.1-1**  
**Invitation to Stakeholder Committee Kickoff Meeting**

**Kelly George**

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**From:** Wendy O'Donohoe [ODonohoeWen@cityofgalveston.org]  
**Sent:** Wednesday, May 05, 2010 12:16 PM  
**To:** Angelo Grasso; Anthony Cargile (TXDot); Arnold Proctor (GISD); Bob Heintz (USACE); Charlie Kelly; Christina Benton for Mike Shriner; David Ewald; David Watson (TAMUG); Eli Roberts (Texas Gas); Eric Wilson; Gina Spagnola (Chamber); Hens Haglund (Galveston State Park); Harish Krishnanan (CHA); Jeff Sjoström (GEDP); John Gillen (GLO); Keith Gray (Centerpoint); Kelly George; Kerry Kipp (TXDot); Lloy Rinderer; Lori Schwarz; Lou Muller (Park Board); Lyda Ann Thomas; Mike Shriner (UTMB); Mike Varola; Miles Shelton (Galveston College); Steve Carnak (Port of Galveston); Steve LeBlanc; Vic Pierson (Jamaica Beach); Wendy O'Donohoe; Wiley, Charles  
**Cc:** Steve LeBlanc  
**Subject:** Invitation from Steve LeBlanc regarding City Hazard Mitigation Plan  
**Attachments:** Invitation to Kickoff Meeting.doc

This message sent on behalf of Steve LeBlanc, Galveston City Manager;

May 05, 2010

**Re: Invitation to Participate In Galveston's Hazard Mitigation Plan Stakeholder Committee**

Dear Colleagues,

The City of Galveston is preparing for development of a Hazard Mitigation Plan, and has formed a Stakeholder Committee to assist with the evaluation of hazards and risks, as well as the development of the plan. Made possible by a grant provided through the Texas Division of Emergency Management (TDEM), the plan update will build upon existing data and will specifically address the hazards, risks and vulnerabilities that are specific to our island City. The City has contracted the services of a consulting firm, James Lee Witt Associates, to assist with the planning process.

The plan will identify and document potential mitigation opportunities within the City, focusing on the reduction of the risks of loss of life, injury, and property damage from natural or human-caused disaster events. The plan also will provide a foundation for identifying mitigation projects suitable for future federal funding and will address past issues caused by natural and human-caused hazards.

We invite you (or your designee) to have a seat on our Stakeholder Committee. You are receiving this invitation to participate in our hazard mitigation planning process because we have identified your agency or office as one that has both information and an interest that would be beneficial to the planning process. I ask that you or your designee plan to participate in the development of this plan by attending and participating in Stakeholder Committee meetings. We hope to move forward with a high level of attendance and participation in the planning process, as the plan is intended to address hazard vulnerability and mitigation issues within the City's jurisdiction.

The timeline for this process is greatly condensed. The final draft plan must be submitted to TDEM in August 2010, where it will be reviewed and approved by both TDEM and FEMA. We anticipate the need for 3-4 Stakeholder Committee meetings, currently scheduled for the third Thursday of the month, and that each meeting will last 2-3 hours.

The Stakeholder Committee Kickoff Meeting will be held on **Thursday, May 20, 2010 from 1pm – 4pm**. The Committee will meet in Room 204 of Galveston City Hall, located at 823 Rosenberg Avenue.

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If you have questions regarding the planning process or the meeting, please contact or if you have information that you feel would be beneficial to the planning process, please contact Kelly George of James Lee Witt Associates at 813-810-5429 or [kgeorge@wittassociates.com](mailto:kgeorge@wittassociates.com).

Thank you for your help, and for your commitment to making the City of Galveston a more disaster resistant community.

Regards,

Steve LeBlanc  
City Manager  
City of Galveston

Figure D.1-2  
 Meeting #1 Sign-in Sheet

City of Galveston Hazard Mitigation Plan Stakeholder Committee  
 Meeting #1 - May 20, 2010

Name	Office/Department/Agency	Title	Email
KEITH Grog	CenterPoint Energy	Service Area Director	Keith.grog@centerpointenergy.com
<del>KEITH KELLY</del>	City of Galveston	EMC	kelkyn@cityofgalveston.org
* MARY JILL LINTZ	Galveston (Bike) Dept of H&T	Dir. of Public Works	mlintz@ga.gov
LEPI SCHWARTZ	CITY OF GALVESTON	HRD/PARTICIPATION AND COMMUNITY ENGAGEMENT	lschwartz@cityofgalveston.org
Aysel Grasso	"	Dir. of Public Works	grassoay@cityofgalveston.org
Gina Spagnoli	Galveston Chamber	President	gspagnoli@galvestonchamber.com
MICHELLE MIEZAL	Port of Galveston	Deputy Port Director	mmiezal@portofgalveston.com
* DAVID EMMER	RAHWAY	Building Inspector	deimmer@cityofgalveston.org
* Lou Muller	Park Board of Trustees	Exec Dir	lmuller@galvestonparkboard.org
Ronald Brown	Galveston ISD, Public IT	Exec	Ronald.Brown@GISD.Org
David Johnson	TR ASM Galveston	Safety Coordinator	djohnson@tamug.edu
William A. Carver	Tx DOT	Safety Point of Contact	acarver@dot.state.tx.us
Holly Alcega	Texas Department of State Parks	Assistant Manager	hally.alcega@state.texas.gov
JILL SASSERMAN	GEDX	MS	jsasser@kt.net
MINE SPANER	CTRBUS	VP	mspaner@ctbus.com
KELLY OPERAGE	LWA	Planner	koper@lwa.com
Vincent Mesquier	ILIN	Planner	vm@withess.com

**Figure D.1-3  
Meeting #1 Agenda**

1. Introductions
2. Benefits of Participation and Why We're All Here
3. Hazard Mitigation Planning Overview, and What We Need to Accomplish
  - a. Critical Facilities
  - b. Historic Assets
  - c. Beach/Shore Issues
4. Project Timeline
5. Stakeholder Committee Roles and Responsibilities, or What You Need to Do
  - a. Meetings
  - b. Homework
    - i. SharePoint
    - ii. Capability Survey
  - c. Data Collection
  - d. Review and Comment on Drafts
  - e. Recommendations to City Council
6. Public Engagement and Participation
  - a. Hurricane Town Hall
  - b. Public Review and Comment
  - c. Why no public seats on Stakeholder Committee?
7. Hazard Overview and Identification
  - a. Master List of Hazards for Consideration
    - i. What are the hazards?
    - ii. How likely are they to impact Galveston?
    - iii. What happens if they do occur in Galveston?
    - iv. Are there feasible mitigation measures for those hazards?
  - b. Determination of Hazards to be Profiled
    - i. It can happen, but is it likely?
    - ii. Hazard ranking
  - c. Preliminary List of Risk Assessments
    - i. It may happen, and how bad will it be?
    - ii. Where are Galveston's vulnerabilities?
      1. Critical facilities
      2. Historic Assets
      3. Beach/Shore
8. Next Meeting: Thursday, June 17<sup>th</sup> @ 1pm
  - a. Review of drafts of hazard profiles
  - b. Review of preliminary risk assessments
  - c. Begin developing mitigation measures

**Figure D.1-4  
Meeting #1 Notes**

**1. Introductions**

Kelly and Vince introduced themselves and their role in the process – all present participants introduced themselves to one another.

## **2. Benefits of Participation and Why We're All Here**

Kelly discussed the reasons why communities choose to develop hazard mitigation plans, and how they and their partner agencies can benefit from the plan and the planning process. (See PowerPoint presentation for specifics.)

## **3. Hazard Mitigation Planning Overview, and What We Need to Accomplish**

Kelly provided an overview of the planning process, and what the expectations were of the Stakeholder Committee. (See PowerPoint presentation for specifics.) The three areas of specific concern for the City were discussed:

- a. **Critical Facilities** – Discussed identification and general vulnerability of critical facilities.
- b. **Historic Assets** – Discussed significance of historic assets to the City's culture, and importance of taking care to protect them wherever possible.
- c. **Beach/Shore Issues** – Discussed prominence of beach/shore issues to the community, and potential hazards associated specifically with beach/shore.

## **4. Project Timeline**

Kelly presented timeline for project completion, and discussed the condensed timeline and need for longer meetings.

## **5. Stakeholder Committee Roles and Responsibilities, or What You Need to Do**

Kelly discussed the expectations of the members of the Stakeholder Committee. (See PowerPoint presentation for specifics.)

- a. **Meetings** – Members will be asked to attend 3-4 meetings over the summer, with the final meeting being the review of the final draft and the recommendation to Council to submit the plan for review to TDEM. This must happen no later than August 8<sup>th</sup>, 2010.
- b. **Homework**
  - i. **SharePoint** – Kelly and Vince discussed the use of SharePoint as a communication/document sharing tool, to eliminate the need to meet more frequently. Kelly assured committee that a memo would be sent to them, detailing how to access the site and their user name and password.
  - ii. **Capability Survey** – Kelly discussed that the City has opted to include a capability assessment with the plan, and that a survey was under development that they (and City Staff) would be asked to complete.
- c. **Data Collection** – Kelly discussed that all members were selected for their potential to provide data and information to the planning effort, and that the expectation was that they would be able to shorten the research process by helping to identify specific occurrences of hazard events or probable/possible effects.
- d. **Review and Comment on Drafts** – Kelly discussed that they would be asked to review and comment on the draft of the plan, both before it was presented to Council and before it is adopted.
- e. **Recommendations to City Council** – Kelly discussed that the Committee would be responsible for making recommendations to Council regarding the submission and adoption of the Plan.

## **6. Public Engagement and Participation**

Kelly discussed the requirement for public participation in the planning process, as described in 44 CFR, and how this process would meet that requirement.

- a. **Hurricane Town Hall** – Kelly discussed the presentation to the public at the previous night's Hurricane Town Hall meeting, and the citizen survey that is underway to gather information on the public's opinions and knowledge regarding natural hazards and mitigation.

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- b. Public Review and Comment** – Kelly discussed that a public review and comment period would have to occur before the Committee could recommend the Plan to Council, and that a second period would need to occur prior to adoption.
- c. Why no public seats on Stakeholder Committee?** Kelly discussed the sensitive nature of the information in the plan regarding the location of critical facilities, and that such information is not and will not be available to the public. While the plan itself is a public document, the specific location and vulnerabilities of the City's critical facilities (and those of its partners) will be redacted for all public comment periods.

**7. Hazard Overview and Identification**

The committee began completing the Hazard Identification Worksheet. (See Hazard Identification Worksheet for specifics.) During this process, the following points were discussed for each hazard considered:

- a. Master List of Hazards for Consideration**
  - i. What are the hazards?**
  - ii. How likely are they to impact Galveston?**
  - iii. What happens if they do occur in Galveston?**
  - iv. Are there feasible mitigation measures for those hazards?**
- b. Determination of Hazards to be Profiled**
  - i. It can happen, but is it likely?**
  - ii. Hazard ranking**
- c. Preliminary List of Risk Assessments**
  - i. It may happen, and how bad will it be?**
  - ii. Where are Galveston's vulnerabilities?**
    - 1. Critical facilities**
    - 2. Historic Assets**
    - 3. Beach/Shore**

The Committee narrowed down the list of hazards to be profiled to those most likely to occur or to cause devastating damage to the City, its assets, its partners, or its citizens. Kelly discussed that the worksheet would be sent to all Committee members so that they could provide any information they had regarding specific occurrences or sources of information regarding the hazards to be profiled.

- 8. Next Meeting: Thursday, June 17<sup>th</sup> @ 1pm**
- a. Review of drafts of hazard profiles**
  - b. Review of preliminary risk assessments**
  - c. Begin developing mitigation measures**

**Meeting adjourned at 4pm.**

## D.2 Meeting #2

Meeting #2 was held June 17, 2010, at Galveston City Hall. This Appendix contains the following meeting documentation:

- Meeting #2 Reminder,
- Meeting #2 Sign-In Sheet,
- Meeting #2 Agenda, and

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- Meeting #2 Notes.

**Figure D.2-1  
Meeting #2 Reminder**

**Kelly George**

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**From:** Athena Pelly [pellyath@cityofgalveston.org]  
**Sent:** Thursday, June 03, 2010 3:56 PM  
**Subject:** Hazard Mitigation Stakeholder Committee meeting 6/17

June 02, 2010

**Re: Invitation to Galveston's Hazard Mitigation Plan Stakeholder Committee Meeting**

Dear Colleagues,

The City of Galveston is currently developing a Hazard Mitigation Plan, and has formed a Stakeholder Committee to assist with the evaluation of hazards and risks, as well as the development of the plan. Made possible by a grant provided through the Texas Division of Emergency Management (TDEM), the plan update will build upon existing data and will specifically address the hazards, risks and vulnerabilities that are specific to our island City. The City has contracted the services of a consulting firm, James Lee Witt Associates, to assist with the planning process.

The plan will identify and document potential mitigation opportunities within the City, focusing on the reduction of the risks of loss of life, injury, and property damage from natural or human-caused disaster events. The plan also will provide a foundation for identifying mitigation projects suitable for future federal funding and will address past issues caused by natural and human-caused hazards.

The first Stakeholder Committee meeting was held on May 20, 2010, and was widely attended. A great deal of discussion occurred, and we are off to a solid start. We hope to continue moving forward with a high level of attendance and participation in subsequent meetings. Your continued participation and support are greatly appreciated, as is the information that you can add to the planning process. The next meeting will include a review of the hazard profiles and the risk assessment process, as well as a preliminary discussion of the potential mitigation actions to address those risks.

The next Stakeholder Committee Meeting will be held on **Thursday, June 17, 2010, from 1pm – 4pm**. The Committee will meet in Room 204 of Galveston City Hall, located at 823 Rosenberg Avenue. The agenda will be sent under separate email.

If you have questions regarding the planning process or the meeting, please contact or if you have information that you feel would be beneficial to the planning process, please contact Kelly George of James Lee Witt Associates at 813-810-5129 or [kgeorge@wiltassociates.com](mailto:kgeorge@wiltassociates.com).

Thank you for your help, and for your commitment to making the City of Galveston a more disaster resistant community.

Regards,

Wendy O'Donohoe  
Director, Planning and Community Development  
City of Galveston

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Figure D.2-2  
 Meeting #2 Sign-in Sheet

City of Galveston Hazard Mitigation Plan Stakeholder Committee  
 Meeting #2 - June 17, 2010

Name	Office/Department/Agency	Sign-in Sheet	Title	Email
Concetta Kelly	City of Galveston		Director	kkelly@galveston.tx.gov
JANN GREEN	TR&LO		Executive Director	greenjann@tr&lo.com
DAVID EMMEL	City Planning		Director	emmeld@cityofgalveston.org
Debra Kephaua Galindo	Director for MTR		Director	debra@cityofgalveston.org
Ken Grogan	Construction Energy		Construction Director	kgrogan@cityofgalveston.org
Erica Kibbe	Municipal Utilities		Director	ekibbe@cityofgalveston.org
Wendy D'Amico	Air Planning		Director	wendy@cityofgalveston.org
Angela Gross	Public Works		Director	agross@cityofgalveston.org
Jeff Smith	COA/RIA		Assistant Director	jsmith@cityofgalveston.org
Mike Swanson	UTWB		VP	mswanson@cityofgalveston.org
Hans Heitwood	Galveston Island/Seaside Park		Assistant Manager	hans@cityofgalveston.org
LEZI SCHWARTZ	CITY PLANNING		SR/PLANNING DIV. HEAD	lschwartz@cityofgalveston.org
Vince Venetia	Seam		Notes	vvenetia@cityofgalveston.org
Kelly George	SWA		Facilities	kgeorge@cityofgalveston.org

**Figure D.2-3  
Meeting #2 Agenda**

1. Welcome
2. Review of hazards to be profiled (determined at 05-20-10 meeting)
  - a. Discussion of hazard profiles:
    - i. Missing data
    - ii. Information sources
    - iii. Is this the final list?
3. Qualitative Risk Assessments (i.e., relative measure of risk by ranking)
  - a. All hazard profiled will receive qualitative assessment (Worksheet)
  - b. It could happen, and how bad will it be?
4. Quantitative Risk Assessments (i.e., estimate of potential losses)
  - a. Decide hazards to receive quantitative assessments
    - i. Suggested criteria to consider:
      1. Availability of data
        - a. Local knowledge and experience
      2. Likelihood of occurrence
      3. Potential impact to vulnerable areas
  - b. Where are Galveston's vulnerabilities?
    - i. Critical facilities
      1. Need to define critical facilities – different from FEMA 386?
    - ii. Historic Assets
      1. Need to define historic assets – different from FEMA 386?
    - iii. Beach/Shore
      1. Need to identify beach vulnerabilities and concerns
5. Mitigation Goals, Objectives and Actions
6. Homework for July 15 meeting:
  - a. Review Mitigation Actions handout
  - b. Suggested actions to mitigate hazards
7. Revisions to project schedule
  - a. Additional meeting scheduled: Thursday, July 29 @ 1pm
    - i. This will be the final in-person meeting before submission
  - b. Plan presented to City Council on August 12, 2010
  - c. If approved, plan submitted to TDEM August 13, 2010
8. Next Meeting: Thursday, July 15<sup>th</sup> @ 1pm

**Figure D.2-4  
Meeting #2 Notes**

1. Welcome  
**Kelly welcomed the Committee, and thanked them for their continued participation in the planning process. A review of the current meeting's agenda was held.**
2. Review of hazards to be profiled (determined at 05-20-10 meeting)
  - a. Discussion of hazard profiles:
    - i. Missing data
    - ii. Information sources

iii. Is this the final list?

**The final listing of hazards to be profiled was presented. Kelly suggested that two of the proposed hazards been eliminated, and that they be included in discussions of potential impacts and severity of the remaining hazards, where applicable. The Committee agreed, and the list of hazards to be profiled was reduced to the following 14 hazards:**

- **Biohazards**
- **Coastal Erosion**
- **Coastal Retreat**
- **Coastal Subsidence**
- **Environmental Disaster**
- **Extreme Wind**
- **Drought**
- **Flooding**
- **Hazardous Materials Incident**
- **Lightning**
- **Sea Level Change**
- **Terrorism**
- **Tsunami**
- **Wildfire / Urban Fire**

3. Qualitative Risk Assessments (i.e., relative measure of risk by ranking)
  - a. All hazard profiled will receive qualitative assessment (Worksheet)
  - b. It could happen, and how bad will it be?

**Kelly explained the difference between qualitative and quantitative risk assessments, and why both were typically included in mitigation plans. The Committee held a discussion regarding each hazard's potential impact on people, property and infrastructure, and assigned qualitative rankings of Low, Moderate or High to each hazard. For those hazards whose qualitative ranking depended entirely on the circumstances of the event (terrorism, hazardous materials incident), the Committee determined it was best to provide a bridge ranking (low/moderate, moderate/high).**

4. Quantitative Risk Assessments (i.e., estimate of potential losses)
  - a. Decide hazards to receive quantitative assessments
    - i. Suggested criteria to consider:
      1. Availability of data
        - a. Local knowledge and experience
      2. Likelihood of occurrence
      3. Potential impact to vulnerable areas

**The Committee discussed each hazard, and determined which ones they believed, based on history, their experience and local knowledge, should receive a quantitative risk assessment. After review and discussion, it was determined that the following hazards would receive quantitative risk assessments:**

- **Coastal Erosion**
- **Extreme Wind**
- **Flooding**
- **Hazardous Materials Incidents**

**Further discussion determined that the Committee believed that Wildfire / Urban Fire should also receive a quantitative risk assessment, depending on the data available. They charged the planners with determining the feasibility of this, and reporting at the next meeting.**

- b. Where are Galveston's vulnerabilities?
  - i. Critical facilities
    1. Need to define critical facilities – different from FEMA 386?
  - ii. Historic Assets
    1. Need to define historic assets – different from FEMA 386?
  - iii. Beach/Shore
    1. Need to identify beach vulnerabilities and concerns

**Kelly presented the committee with the 386 series definitions of critical facility and historic asset. The Committee considered these definitions, and determined to use them as a base, but to modify the wording somewhat. A discussion was also held as to the specific concerns and vulnerabilities that the Committee believed should be discussed in the plan regarding beach and shoreline issues.**

5. Mitigation Goals, Objectives and Actions  
**The meeting ended before any discussion of goals, objectives and actions could occur. It was determined to move this discussion to the next meeting.**
6. Homework for July 15 meeting:
  - a. Review Mitigation Actions handout
  - b. Suggested actions to mitigate hazards
7. Revisions to project schedule
  - a. Additional meeting scheduled: Thursday, July 29 @ 1pm
    - i. This will be the final in-person meeting before submission
  - b. Plan presented to City Council on August 12, 2010
  - c. If approved, plan submitted to TDEM August 13, 2010
8. Next Meeting: Thursday, July 15<sup>th</sup> @ 1pm  
**Meeting adjourned at 4pm.**

### D.3 Meeting #3

Meeting #3 was held July 15, 2010 at Galveston City Hall. This Appendix contains the following meeting documentation:

- Meeting #3 Reminder,
- Meeting #3 Sign-In Sheet,
- Meeting #3 Agenda, and
- Meeting #3 Notes.

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**Figure D.3-1**  
**Meeting #3 Reminder**

**Kelly George**

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**From:** Athena Pety [petyath@cityofgalveston.org]  
**Sent:** Thursday, July 08, 2010 2:34 PM  
**Subject:** Hazard Mitigation Stakeholder Committee meeting 7/15  
**Attachments:** 071510.pdf

ATTN: Hazard Mitigation Stakeholder Committee:

Please find attached the agenda for the meeting on Thursday, July 15<sup>th</sup> at 1:00 p.m. in City Council Workshop Room 204. If you have any further questions please email or call (409) 797-9560.

Thanks,  
Athena Pety

Figure D.3-2  
 Meeting #3 Sign-in Sheet

City of Galveston Hazard Mitigation Plan Stakeholder Committee  
 Meeting #3 - July 15, 2010

Sign-in Sheet

Name	Office/Department/Agency	Title	Email
Jim Weatherford Kerry Kang	GLD (via phone)	Special Rewards Spec Emer	Jim.Weatherford@glg.state.tx.us Kerry.Kang@CityofGalveston.org
Heidi Heston	Galveston Island State Park	Assistant Manager	Heidi.Heston@state.tx.us
Debb English	Galveston ECC		English.Deb@cityofgalveston.org
David Eakin	Police	Recruiting Officer	David.Eakin@cityofgalveston.org
Lori Schwarz	Planning	Training Div. Mgr.	schwarzlorie@cityofgalveston.org
Mary Jane Cant	Galveston College	Dir. of H&E Risk mgmt.	Mjanc@gc.edu
William A. Pearce	TX DOT	SPOC - MAINT	pearcewill@dot.state.tx.us
Greg Smith	Co. 6 - Fire	Intern	gsmith@cityofgalveston.org
Wendy Williams	Planning	Dept. Head	williams@cityofgalveston.org
Kelly George	DATA	Facilitator / M.P. Partner	kg@cityofgalveston.org

**Figure D.3-3  
Meeting #3 Agenda**

1. Welcome
2. Review of Risk Assessment data/findings (determined at 06-17-10 meeting)
  - a. Discussion of risk assessments:
    - i. Coastal Erosion
    - ii. Extreme Wind
    - iii. Flooding
    - iv. Hazardous Materials
    - v. Wildfire / Urban Fire
3. Mitigation Goals
  - a. Discussion of goals for plan
    - i. Review of existing
    - ii. Discussion of final goals
4. Mitigation Objectives
  - a. Discussion of objectives for plan
    - i. Review of existing
    - ii. Discussion of final objectives
5. Mitigation Actions
  - a. Discussion of actions for plan
    - i. Review of existing
    - ii. Discussion of new actions
6. Prioritization of Mitigation Actions
  - a. Methodology – STAPLEE
  - b. Prioritization Exercise
7. Project Schedule
  - a. Next Meeting: Thursday, July 29 @ 1pm
    - i. This will be the final in-person meeting before submission
    - ii. Review of draft plan
  - b. Plan presented to City Council on August 12, 2010
  - c. If approved, plan submitted to TDEM August 13, 2010

**Figure D.3-4  
Meeting #3 Notes**

1. Welcome

**Kelly welcomed attendees to the meeting, and thanked them for their continued participation.**
2. Review of Risk Assessment data/findings (determined at 06-17-10 meeting)
  - a. Discussion of risk assessments:
    - i. Coastal Erosion
    - ii. Extreme Wind
    - iii. Flooding
    - iv. Hazardous Materials
    - v. Wildfire / Urban Fire

**The results of the qualitative risk assessment were reviewed, to refresh everyone's memory.  
The results of the quantitative risk assessment were presented and opened to discussion.**

**After review of the data, the Committee determined that a full risk assessment should be completed for Wildfire / Urban Fire.**

3. Mitigation Goals
  - a. Discussion of goals for plan
    - i. Review of existing
    - ii. Discussion of final goals
4. Mitigation Objectives
  - a. Discussion of objectives for plan
    - i. Review of existing
    - ii. Discussion of final objectives

**Kelly explained what goals, objectives and strategies are, and how they apply to mitigation planning. The goals and objectives from the 2010 Galveston County Plan Update were presented, as were some other possible goals and objectives. The Committee reviewed the goals and objectives, and discussed among themselves what goals and objectives should be included in the plan. The determination was 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.

Objective 1.1: Educate the public on actions they can take to prevent or reduce loss or life or property damage from all hazards.

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.

Goal #3: Develop hazard mitigation policies and programs designed to reduce the impact of natural and human caused hazards to people and property.

Objective 3.1: Seek ways to reduce losses to and increase participation in and compliance with the National Flood Insurance Program.

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.

Goal #4: Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.

Objective 4.1: Pursue opportunities to mitigate identified Repetitive Loss and Severe Repetitive Loss properties

Objective 4.2: Pursue opportunities for structural mitigation projects and other projects to protect infrastructure from hazards.

5. Mitigation Actions
  - a. Discussion of actions for plan
    - i. Review of existing
    - ii. Discussion of new actions

**Kelly presented actions identified in the previous mitigation plans that the City has participated in. Actions were reviewed and discussed by the committee as to their continued relevance, any modifications to the descriptions that should be made, and any actions that**

**have been completed or are on-going. The Committee determined the final list of actions to be recommended in the plan.**

6. Prioritization of Mitigation Actions
  - a. Methodology – STAPLEE
  - b. Prioritization Exercise

**Kelly reviewed the STAPLEE criteria, and led a discussion on what each criterion is intended to measure. The Committee reviewed each recommended action against the criterion, and assigned a numeric value (1= Low, 2= Moderate, 3= High) to the criterion. These values translated to Low, Moderate, or High priority rankings, based on the total number of points assigned to the project.**

7. Project Schedule
  - a. Next Meeting: Thursday, July 29 @ 1pm
    - i. This will be the final in-person meeting before submission
    - ii. Review of draft plan
  - b. Plan presented to City Council on August 12, 2010
  - c. If approved, plan submitted to TDEM August 13, 2010

**The meeting adjourned at 4:45.**

## D.4 Meeting #4

Meeting #4 was held July 29, 2010, at Galveston City Hall. This Appendix contains the following meeting documentation:

- Meeting #4 Reminder,
- Meeting #4 Sign-In Sheet,
- Meeting #4 Agenda, and
- Meeting #4 Notes.

The City of Galveston, Texas  
Appendix D: Stakeholder Committee Meeting Documentation

**Figure D.4-1**  
**Meeting #4 Reminder**

**Kelly George**

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**From:** Athena Pelly [apellyath@cityofgalveston.org]  
**Sent:** Thursday, July 22, 2010 1:15 PM  
**Subject:** Hazard Mitigation Agenda 7/29  
**Attachments:** 072810.pdf

Please find attached the agenda for the Hazard Mitigation meeting on July 29<sup>th</sup> @ 1:00 p.m. If you have any further questions please email or call (409) 797-8680.

Thanks,  
Athena Pelly

The City of Galveston, Texas  
 Appendix D: Stakeholder Committee Meeting Documentation

Figure D.4-2  
 Meeting #4 Sign-in Sheet

City of Galveston Hazard Mitigation Plan Stakeholder Committee  
 Meeting #4 - July 29, 2010

Sign-in Sheet

Name	Office/Department/Agency	Title	Email
ARRIS KESSY	DEM	EM	Felicia@cityofgalveston.org
David Johnson	APM Galveston	Safety Dir.	10chase@tmvgs.com
LORI SCHUBERZ	CODE PLANNING	HPD/PURM. DIV. HD. SCHUBERZLOR@CITYOF GALVESTON.ORG	
Drew Ewald	Building/Planning	CFM, Building	
Tim Kellen	Police	Commander	Tim.Kellen@cityofgalveston.org
DAVID PEREZ	Police Dept	DEPARTMENT	dperez@cityofgalveston.org
Royce Corusso	Public Works	Director	rcorusso@cityofgalveston.org
Michael Bender	Planning		mbender@cityofgalveston.org
Thomas Kellen	Police	Assistant Manager	tkellen@cityofgalveston.org
Kelly Gertog	W&A Associates	Facilitator	kgerog@wahasocials.com

**Figure D.4-3  
Meeting #4 Agenda**

1. Welcome
2. Review of Capability Assessment data
  - a. Citizen Survey results
  - b. City capability description
3. Review of Monitoring and Maintenance Schedule
  - a. Stakeholder Committee responsibilities
  - b. City Staff responsibilities
4. Public Comment and Review
  - a. FEMA requires minimum of 2 opportunities
    - i. First will be when Committee approves draft plan
      1. Documents will be available on City's website and in City Secretary's Office (anticipated posting: August 5<sup>th</sup>)
      2. Plan will be available for 30 days for review
      3. Notices will be posted in City Hall, City's website, and in the newspaper, with instructions
      4. Public comment will run concurrent with submission to City Council and TDEM/FEMA
    - ii. Second will be a public meeting to introduce the final plan prior to adoption
  - b. Any comments received will be considered for incorporation into the final plan document
5. Review of Final Draft of plan
6. Discussion: Recommend to City Council that they approve submission to TDEM?
7. Project Schedule
  - a. Plan presented to City Council on August 12, 2010
  - b. If approved, plan submitted to TDEM August 13, 2010
  - c. TDEM/FEMA will request revisions over the next few months
  - d. Next meeting: Spring 2011:
    - i. Review final plan
    - ii. Make recommendation for adoption by City Council
    - iii. City Council adopts final plan no later than April 8, 2011

**Figure D.4-4  
Meeting #4 Notes**

1. Welcome
2. Review of Capability Assessment data

**Kelly discussed the methodology that went into the development of the Capability Assessment, as well as the purpose of including the assessment in the plan. Kelly further discussed the importance of having a context in which to consider mitigation actions, and the importance of being realistic with what a community can reasonably accomplish.**

- a. Citizen Survey results

**Kelly discussed the general findings of the Citizen Survey, including the average respondent, and the findings regarding resident's perception of hazards, risks and vulnerabilities.**

- b. City capability description

**Kelly discussed the findings from the interviews with City Staff, and generally how capable the City was to undertake mitigation actions in the post-Ike environment.**

The City of Galveston, Texas  
Appendix D: Stakeholder Committee Meeting Documentation

3. Review of Monitoring and Maintenance Schedule

**Kelly discussed the requirements for monitoring and maintenance, and laid out suggested actions and responsibilities.** Stakeholder Committee responsibilities

a. City Staff responsibilities

**The Committee discussed adding the Public Works Director and Managing Director of Municipal Infrastructure to the responsible party/contact list throughout the plan, and directed that it should be so.**

4. Public Comment and Review

a. FEMA requires minimum of 2 opportunities

i. First will be when Committee approves draft plan

1. Documents will be available on City's website and in City Secretary's Office (anticipated posting: August 5<sup>th</sup>)
2. Plan will be available for 30 days for review
3. Notices will be posted in City Hall, City's website, and in the newspaper, with instructions
4. Public comment will run concurrent with submission to City Council and TDEM/FEMA

ii. Second will be a public meeting to introduce the final plan prior to adoption

b. Any comments received will be considered for incorporation into the final plan document

**Kelly outlined the public comment schedule and requirements with the committee.**

5. Review of Final Draft of plan

**Kelly reviewed elements of Sections 2, 3, 6, and 7 with the committee – the format and contents were discussed and reviewed**

6. Discussion: Recommend to City Council that they approve submission to TDEM?

**The Committee discussed and recommended that the draft be submitted to the City Council, and that permission to submit to TDEM be requested of Council.**

7. Project Schedule

- a. Plan presented to City Council on August 12, 2010
- b. If approved, plan submitted to TDEM August 13, 2010
- c. TDEM/FEMA will request revisions over the next few months
- d. Next meeting: Spring 2011:
  - i. Review final plan
  - ii. Make recommendation for adoption by City Council
  - iii. City Council adopts final plan no later than April 8, 2011

**Kelly reviewed the schedule of the remaining plan activities with the Committee.**

**Meeting adjourned at 4pm.**

## D.5 Meeting #5

Meeting #5 was held {insert date}, at Galveston City Hall. This Appendix contains the following meeting documentation: Meeting #5 Reminder, Meeting #5 Sign-In Sheet, Meeting #5 Agenda, Meeting #5 Presentation, and Meeting #5 Minutes.

**Figure D.5-1**  
**Meeting #5 Reminder**

**Figure D.5-2**  
**Meeting #5 Sign-in Sheet**

**Figure D.5-3**  
**Meeting #5 Agenda**

**Figure D.5-4**  
**Meeting #5 Notes**

## D.6 Meeting Presentations

The pages following contain copies of the meeting presentations used to facilitate the Stakeholder Committee Meetings. In some cases, notes and directions were taken in the presentation. In those instances, the notes or directions are indicated in red text.

City of Galveston Hazard Mitigation Plan  
Stakeholder Committee Meeting  
May 20, 2010

## Agenda

- Introductions
- Benefits of Participation
- Hazard Mitigation Planning Overview
- General Project Timeline
- Stakeholder Committee Role
- Public Engagement
- Hazard Overview and Identification
- Important Dates

2 Act with confidence

## Benefits of Participating

Hurricane Ike, Source: noaa.nhc.com

Act with confidence

## Benefits of Participating

- Every \$1 spent on mitigation projects saves \$4 in recovery costs\*
- 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries\*
- For every eligible \$1 spent locally on FEMA-funded mitigation projects, the feds pay \$3-\$9
- Opportunity to lower flood insurance premiums
- Opportunity to enhance City's disaster resilience

Source: The Multi-Hazard Mitigation Council, "Hazard Mitigation Saves," (2005) an independent review of FEMA mitigation activities.

Act with confidence

## Benefits of Participating

- Eligibility for pre-disaster grant programs (PDM, FMA, SRL, RFC)
- Eligibility for post-disaster grant programs (HMGP, certain PA categories)
- Break the cycle of destruction followed by increasingly costly recoveries
- Consideration and identification of risks, vulnerabilities, and projects to mitigate those vulnerabilities

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## HM Planning Overview

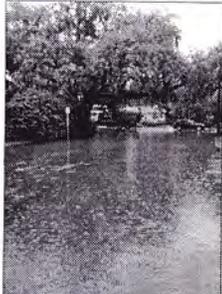
Hurricane Ike, Galveston, 2008

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**WITT**  
West Virginia Institute of Technology

## What is Hazard Mitigation?

Any long-term measure undertaken to reduce or eliminate the risks posed by natural and/or manmade hazards on property and people.



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West Virginia Institute of Technology

## Hazard Mitigation Measures

Hazard mitigation measures include projects that limit hazard impacts, such as wind retrofits, minor flood control projects or safe rooms...

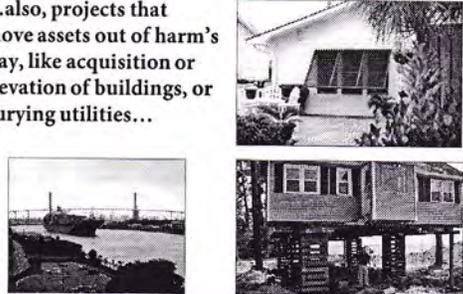


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West Virginia Institute of Technology

## Hazard Mitigation Measures

...also, projects that move assets out of harm's way, like acquisition or elevation of buildings, or burying utilities...



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West Virginia Institute of Technology

## Hazard Mitigation Measures

...and regulatory practices such as enacting or enforcing building codes, permits, or land use policies...



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West Virginia Institute of Technology

## Hazard Mitigation Measures

...or training and educational programs for community and local officials, and public education and outreach programs to educate citizens.



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West Virginia Institute of Technology

## What is a Hazard Mitigation Plan?

- **Hazard Mitigation Plan:**  
A plan to reduce a community's risk and exposure to disasters  
  
*... which is different from an ...*
- **Emergency Operations Plan (EOP):**  
A plan to guide a community's response to an emergency or disaster

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WILSON  
TOWNSHIP  
INCORPORATED

## Hazard Mitigation Planning

- A Hazard Mitigation Plan is typically written before hazard events occur (pre-disaster)
- Hazard mitigation projects can be implemented either before or after a disaster (pre-disaster or post-disaster).

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## How is the Plan Developed?

- Organize resources, including agencies & people
- Assess risks
- Identify mitigation opportunities & priorities
- Develop plan
- Implement plan
- Monitor and evaluate the progress

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## Developing a Hazard Mitigation Plan

It boils down to two basic questions:

- What hazards present the greatest risk to the City of Galveston?
- What are the most effective ways to reduce those risks and mitigate losses?

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## Project Timeline

<p><b>Plan Development</b></p> <ul style="list-style-type: none"> <li>• May 2010: Hazard Identification, Risk Assessment Determination</li> <li>• June 2010: Review Hazard Profiles and Risk Assessments; Develop projects and actions to be included in final plan</li> <li>• July 2010: Review Capability Assessment; Review and prioritize projects and actions; determine maintenance and monitoring schedule; final draft released for public review and comment</li> <li>• July/August 2010: Review final draft and make recommendation to Council</li> </ul>	<p><b>Plan Review/Approval</b></p> <ul style="list-style-type: none"> <li>• August 2010: Council approves submitting final draft to TDEM</li> <li>• August 2010 – March 2011: Draft reviewed by TDEM and FEMA RVI; and requested revisions are addressed with HMPSC via email/SharePoint</li> <li>• March 2011: Formal Approval Pending Adoption is received from RVI; HMPSC posts final plan for public review and comment</li> <li>• April 2011: HMPSC recommends Council formally adopt final plan; Proof of adoption forwarded to RVI</li> </ul>
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## Stakeholder Committee

- Purpose
  - The Stakeholder Committee will provide oversight to the planning process and serve as a source of local knowledge
- Contributions
  - Attend committee meetings
  - Provide local knowledge and input
  - Serve on the committee for a period of one year
  - Review project deliverables
  - Make recommendations to Staff and City Council

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## Public Engagement

- Press Releases
- Hurricane Town Meeting
- Mitigation Survey
- Review and comment of draft and final plan documents

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**WITT** **Examples of Natural Hazards**

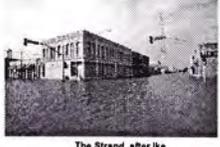
- Flooding
- Severe Thunderstorms
- Extreme Wind Events
- Coastal Erosion



Building the Seawall



After The Great Hurricane



The Strand, after Ike

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**WITT** **Additional Hazards**

- Potential Hazards:
  - Hazardous Materials Incidents (Fixed Site and Transport)
  - Accidental chemical/biological agent release
  - Transportation Incidents (air/rail/bridge)




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**WITT** **Important Dates**

Stakeholder Committee Meeting #1	May 20, 2010
Stakeholder Committee Meeting #2	June 17, 2010
Stakeholder Committee Meeting #3	July 15, 2010
Public Meeting/Comment	Late July 2010
Stakeholder Committee Meeting #4	To Be Determined
Stakeholder Committee Meeting #5	Spring 2011
Public Meeting/Comment	Spring 2011
Adoption by Council	No Later Than April 8, 2011



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**WITT** **Questions?**

Questions ?



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GlobalOptions  
Group

City of Galveston Hazard Mitigation Plan  
Stakeholder Committee Meeting #2  
June 17, 2010

# Agenda

- Introductions
- Progress to Date
  - Hazard Profiles
- Risk Assessment Exercise
  - Quantitative vs. Qualitative
- Hazard Mitigation Goals
  - Homework for July 15<sup>th</sup> Meeting
- Schedule Changes

# Kickoff Meeting Summary

- Meeting Held May 20, 2010
- Discussed planning process and timeline
- Suggested Hazard List Overview
- Hazard Exercise
  - Sent to committee via email – low response rate
  - Need historical occurrences from committee
  - Local knowledge is key in planning process

# Review of Hazards to be Profiled

Biological 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

# Discussion of Hazard Profiles

- Need local data on historic occurrences
- Spreadsheet emailed to Committee on June 1
  - Still need responses, please
  - Local knowledge is key for success
- Suggestion:
  - Rather than profile Transportation Accidents and Water Pipeline/Critical Infrastructure Failure, can we include those scenarios in the risk assessment discussion/data for any applicable hazards?
  - Issue is that these aren't stand alone hazards – they are scenarios that are exacerbated by other circumstances.

# Risk Assessment Exercise

# Qualitative vs. Quantitative Risk Assessment

- **Qualitative Risk Assessment** is a relative measure of risk by ranking (i.e., low, moderate, high)
- Handout shows the suggested methodology (we'll get there in a minute)
- **Quantitative Risk Assessment** is an estimate of potential losses from profiled hazards
- Based on availability of data, likelihood of occurrence, and potential impacts

# Which hazards receive which assessments?

- All hazards profiled will receive a qualitative risk assessment
- Not all profiled hazards will receive quantitative risk assessment
- Quantitative assessments will require either occurrence and probability data or local knowledge to develop scenarios
- Determinations will be made by Committee during an exercise at today's meeting

# Qualitative Risk Assessment Methodology

Potential Impacts to:	People (Life Safety/Livelihood)	Buildings/ Critical Facilities	Infrastructure
Low	Some injury possible but unlikely	Cosmetic damages to structures, <1 day LOF	<ul style="list-style-type: none"> <li>➤ Some roads/bridges temporarily blocked, temporary power loss</li> <li>➤ Road/bridge closures, power &amp; utility loss</li> <li>➤ Long term closures, long term power/utility loss</li> </ul>
Moderate	Injury expected, some deaths possible	Some structural damages, 1-2 days LOF	
High	Several deaths expected	Some structures irreparably damaged, >3-5 days LOF	

# Risk Assessment: Biological Event

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low</b>	
	Infrastructure: <b>Low</b>	

# Risk Assessment: Coastal Erosion

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Moderate</b>	
	Infrastructure: <b>Moderate</b>	

# Risk Assessment: Coastal Retreat

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low/Moderate</b>	
	Infrastructure: <b>Moderate</b>	

# Risk Assessment: Coastal Subsidence

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low</b>	
	Infrastructure: <b>Low</b>	

# Risk Assessment: Drought

## 2010 Galveston County Hazard Mitigation Plan Update

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	<ul style="list-style-type: none"> <li>➤ Drought data very limited</li> <li>➤ Galveston County potential loss estimate (agriculture): \$6,746,395</li> </ul>
	Buildings: <b>Low</b>	
	Infrastructure: <b>Low</b>	

# Risk Assessment: Drought

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low</b>	
	Infrastructure: <b>Low</b>	

# Risk Assessment: Environmental Disaster

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Moderate/High</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low</b>	
	Infrastructure: <b>Low</b>	

# Risk Assessment: Extreme Wind

## 2010 Galveston County Hazard Mitigation Plan Update (Profiled Separately as Tornado & Hurricane Wind)

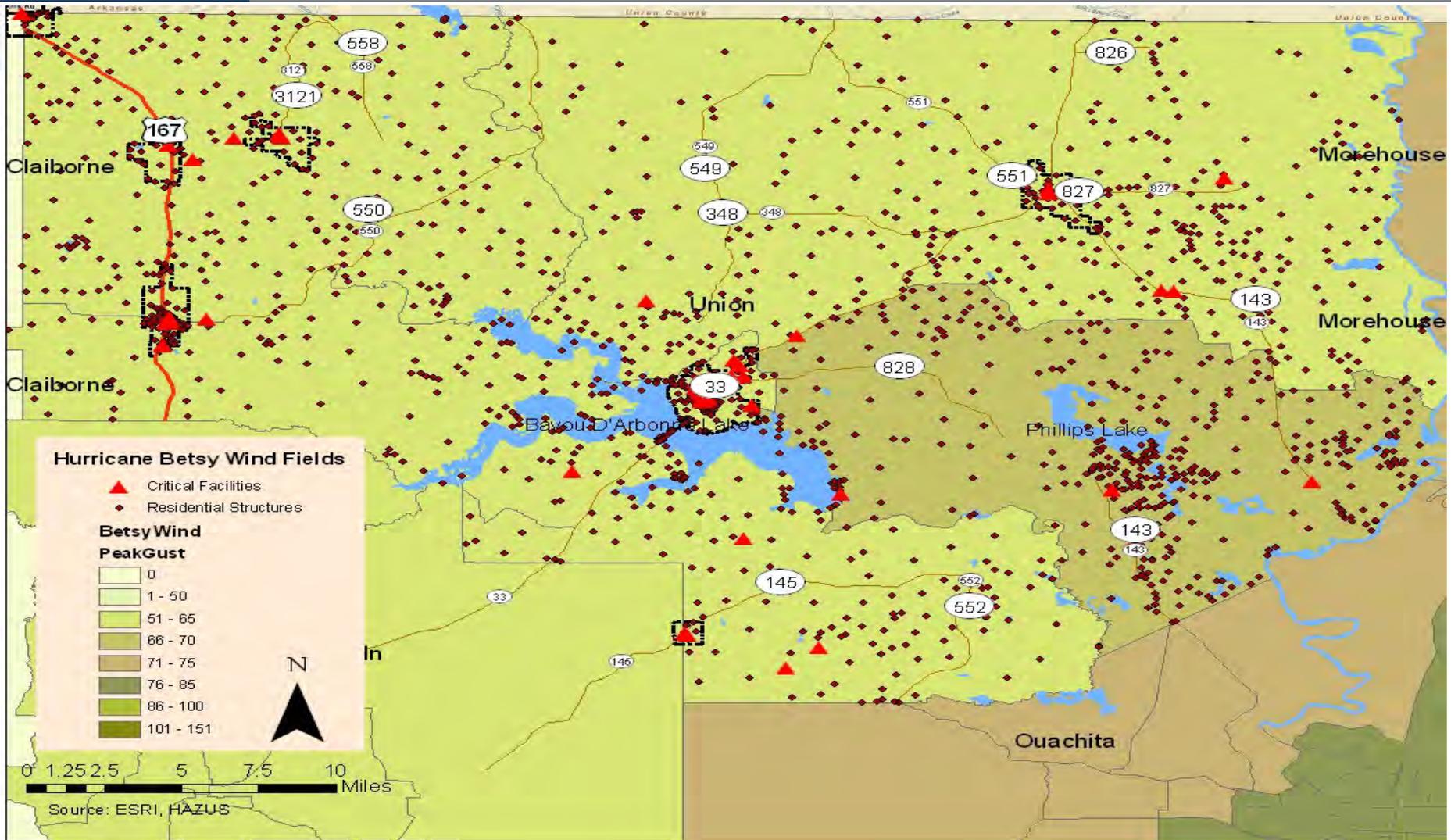
Overall	Qualitative	Quantitative
Potential Impact to:	People: Tornado - Moderate / Hurricane Wind - High	<ul style="list-style-type: none"> <li>➤ Entire population at risk</li> <li>➤ 71 critical facilities at risk (HAZUS)</li> </ul>
	Buildings: Tornado - Moderate / Hurricane Wind - High	<ul style="list-style-type: none"> <li>➤ \$3.9B+ in property at risk</li> </ul>
	Infrastructure: Tornado - Moderate / Hurricane Wind - High	<ul style="list-style-type: none"> <li>➤ 20 Tornado events 1950-2008</li> </ul>

# Risk Assessment: Extreme Wind

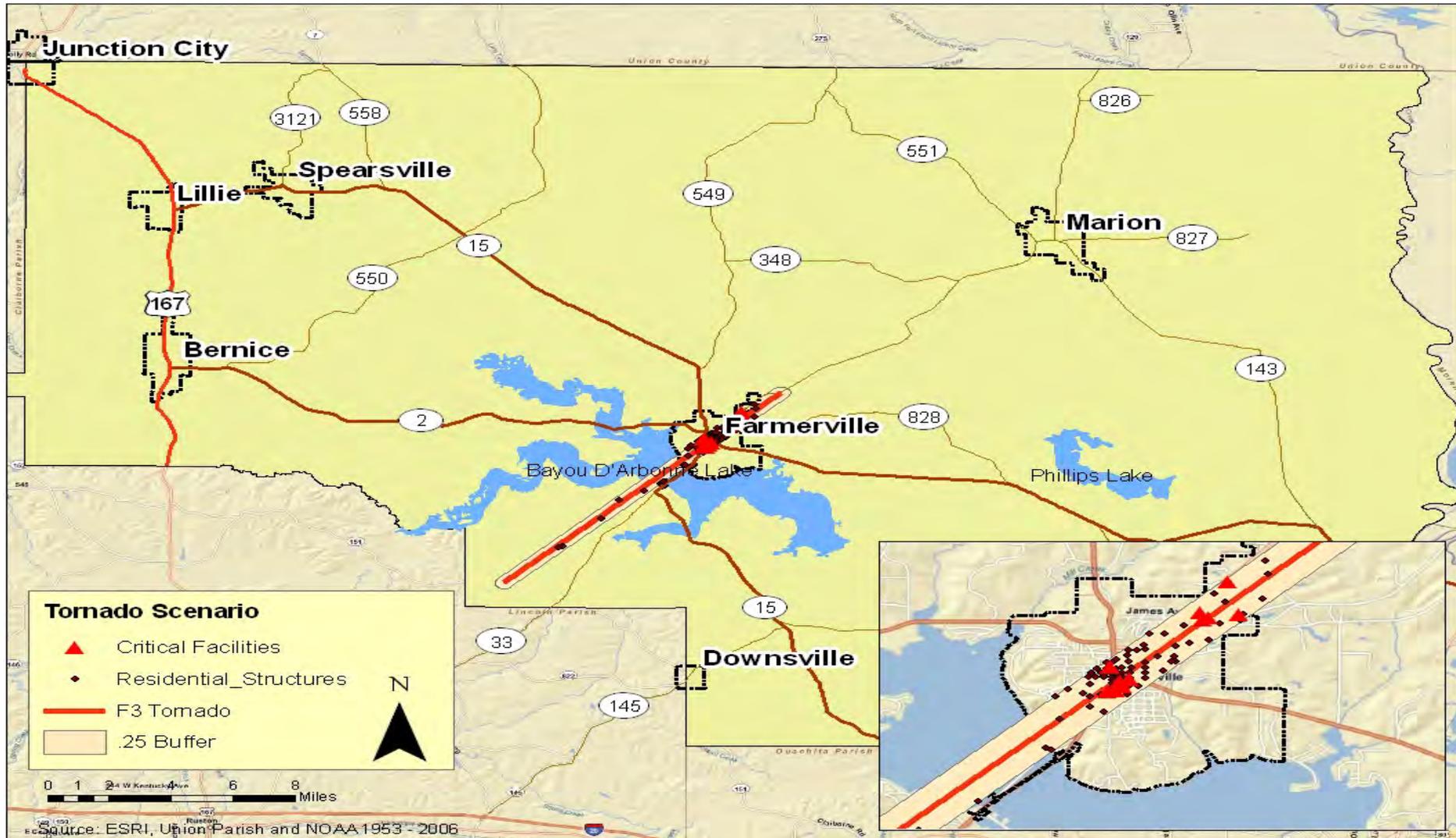
## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>High</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>High</b>	All structures at risk – will be quantified  Critical Facilities?
	Infrastructure: <b>High</b>	All infrastructure at risk – will be quantified  Critical Infrastructure?

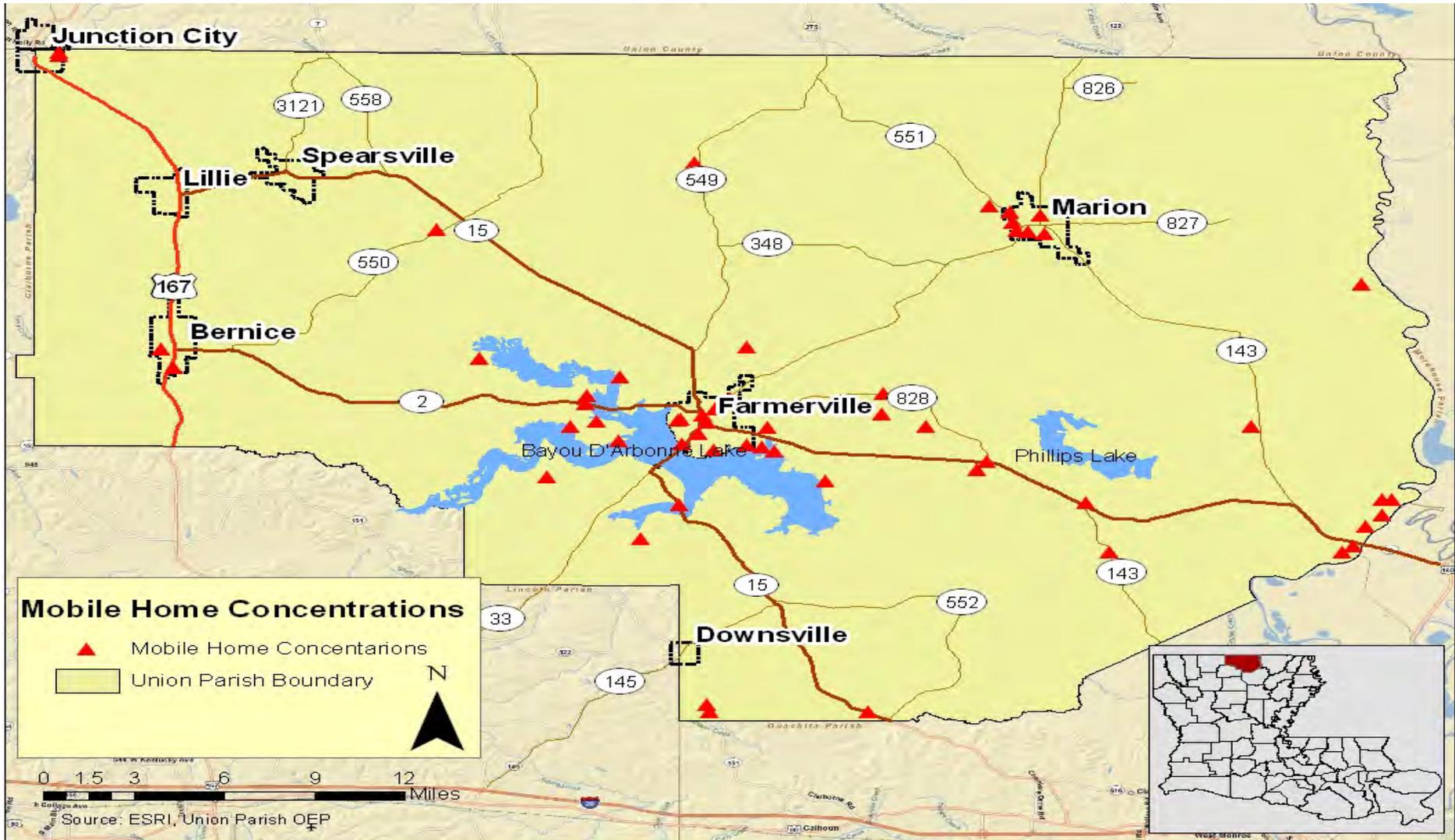
# Example Wind Map - Tropical Systems



# Example Tornado Risk Map



# Example Extreme Wind Vulnerability Map



# Risk Assessment: Flooding

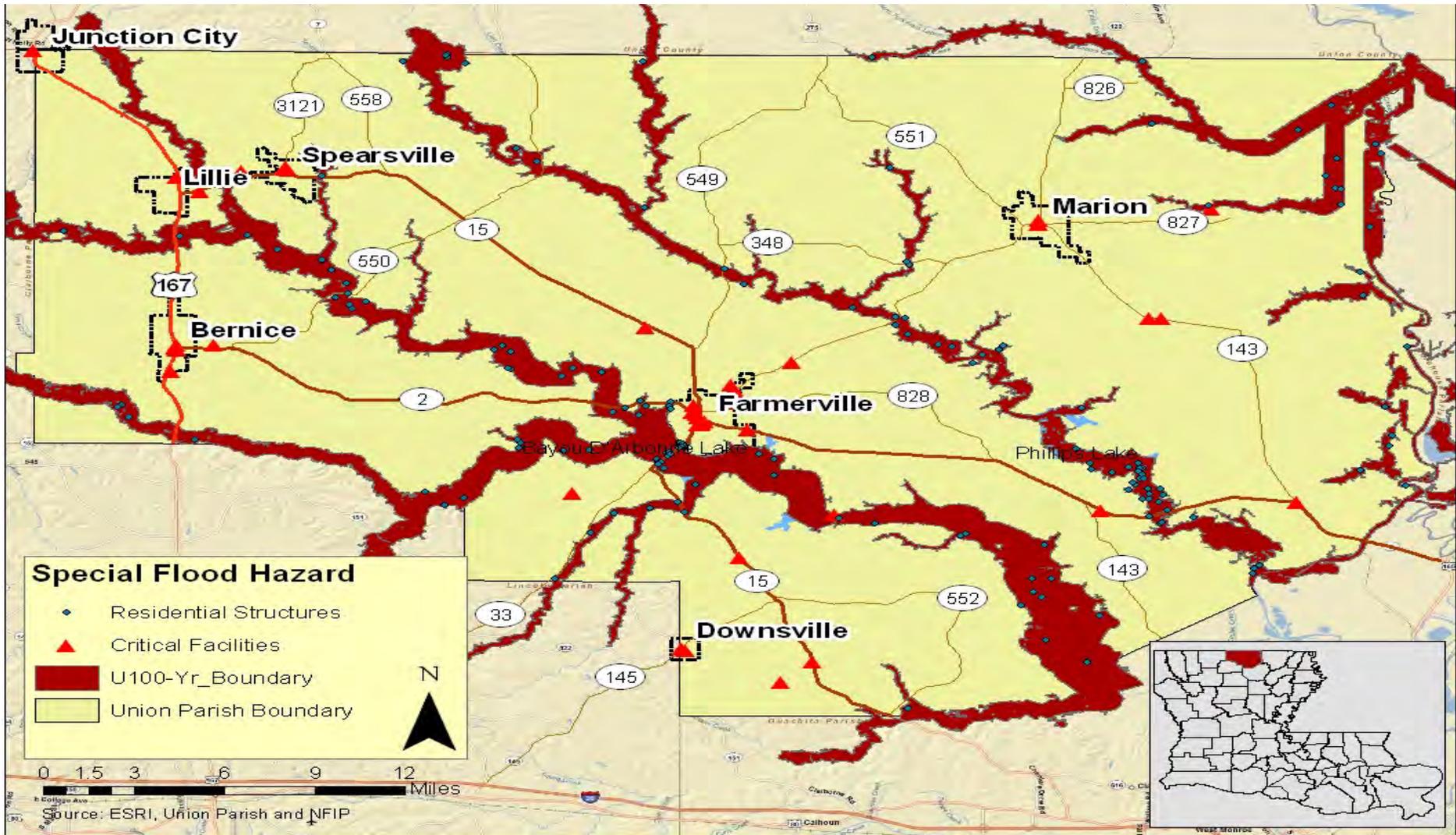
## 2010 Galveston County Hazard Mitigation Plan Update

Overall	Qualitative	Quantitative
<p>Potential Impact to:</p>	<p>People: High</p>	<ul style="list-style-type: none"> <li>➤ Cat 3 surge: estimated \$3.8 B+ improved parcels at risk; 27,083 people at risk</li> <li>➤ Only noted Repetitive Loss properties for County</li> <li>➤ 4 Flooding events between 1994 – 2009 – none of them tropical systems</li> </ul>
	<p>Buildings: High</p>	
	<p>Infrastructure: High</p>	

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Moderate</b>	<ul style="list-style-type: none"> <li>• <b>A/AE zones:</b> 46,599 people (2000 Census)</li> <li>• <b>V/VE zones:</b> 8,370 people (2000 Census)</li> </ul>
	Buildings: <b>High</b>	<ul style="list-style-type: none"> <li>• <b>A/AE zones:</b> 18,447 parcels (HAZUS)</li> <li>• <b>V/VE zones:</b> 6,029 parcels (HAZUS)</li> <li>• 443 Repetitive Loss properties in City</li> </ul>
	Infrastructure: <b>High</b>	<ul style="list-style-type: none"> <li>• Very little infrastructure not located in SFHA (to be calculated)</li> </ul>

# Example SFHA Risk Map



# Example Repetitive Loss Map



# Risk Assessment: Hazardous Materials Incident (Fixed Site & Transport)

## 2010 Galveston County Hazard Mitigation Plan Update

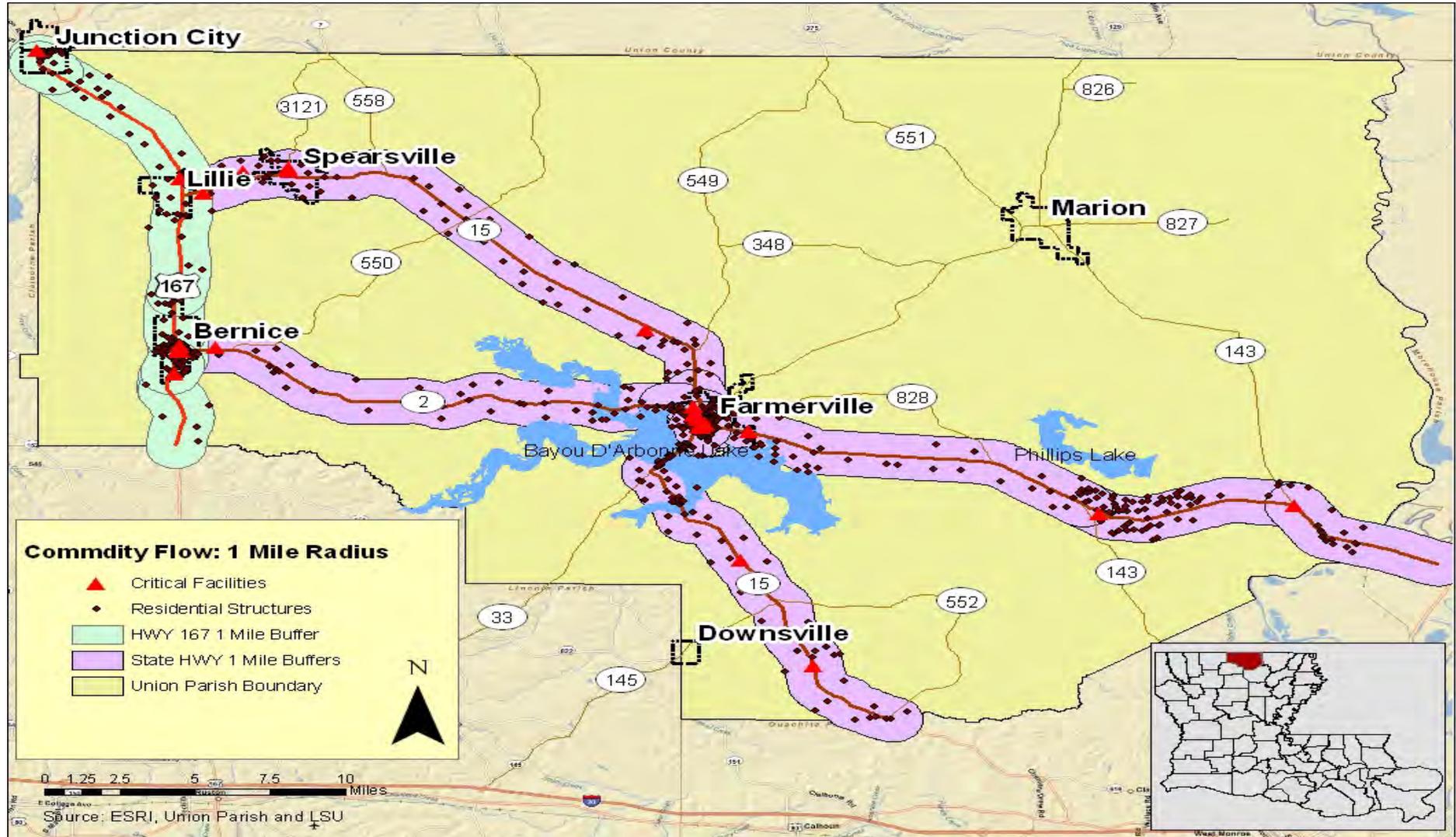
Overall	Qualitative	Quantitative
Potential Impact to:	People: Moderate	<ul style="list-style-type: none"> <li>➤ Expected number of toxic releases (annualized) in County: 161.3</li> <li>➤ <b>Fixed Site - 500 meter buffer:</b> 5,953 people and 1,393 structures - \$285M+ risk estimate</li> </ul>
	Buildings: Moderate	<ul style="list-style-type: none"> <li>➤ <b>Fixed Site - 2,500 meter buffer:</b> 46,633 people and 18,515 structures - \$2.9B+ risk estimate</li> <li>➤ <b>Transport – 500 meter buffer:</b> 19,977 people and 6,789 structures - \$815M+ risk estimate</li> </ul>
	Infrastructure: Moderate	<ul style="list-style-type: none"> <li>➤ <b>Transport – 2,500 meter buffer:</b> 49,623 people and 16,802 structures - \$2.8B+ risk estimate</li> </ul>

# Risk Assessment: Hazardous Materials (Fixed Site & Transport)

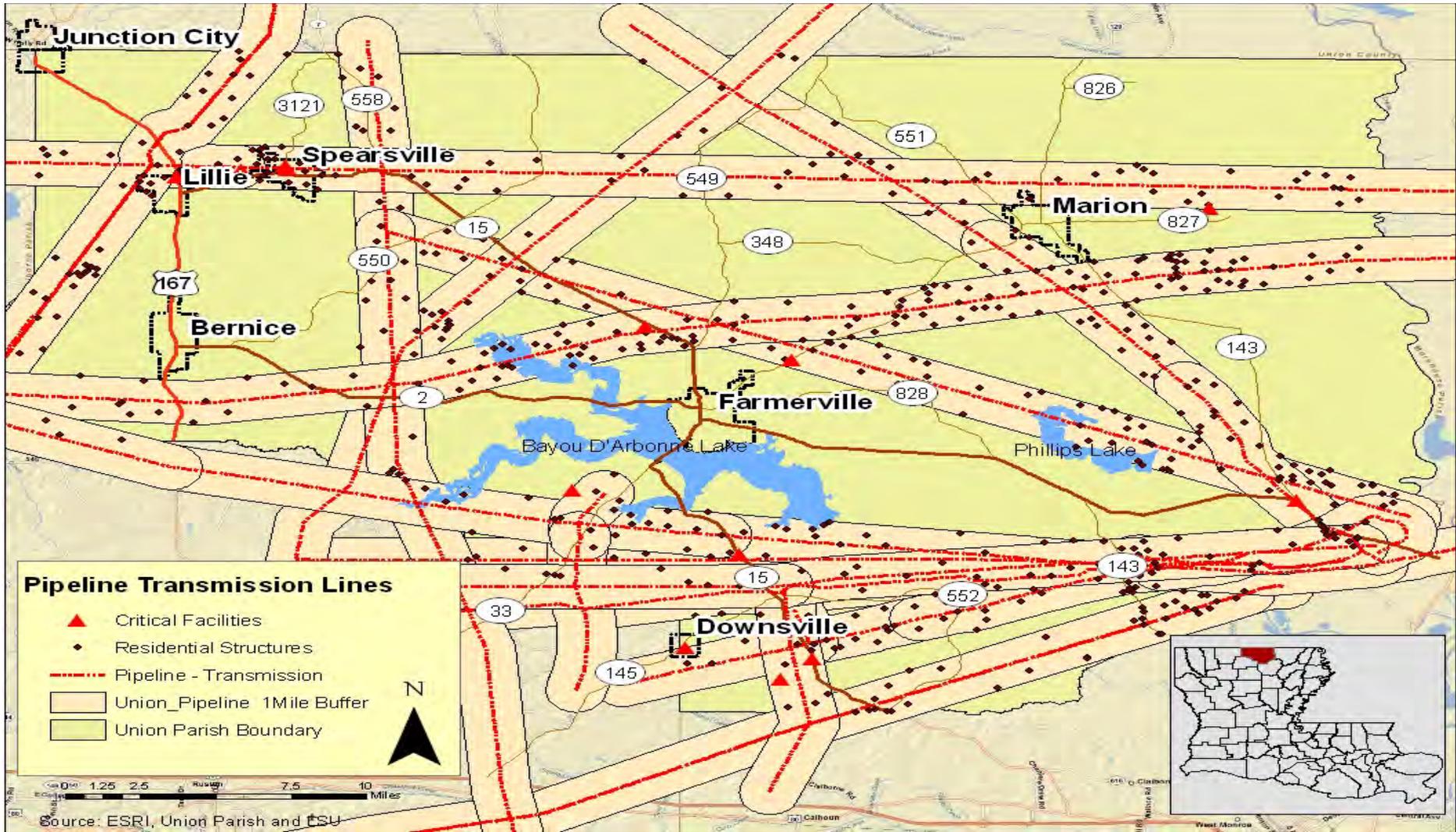
## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low/Moderate</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low/Moderate</b>	
	Infrastructure: <b>Low/Moderate</b>	

# Example HazMat Incident (Transport) Risk Map



# Example HazMat (Pipeline) Risk Map



# Risk Assessment: Lightning

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	
	Buildings: <b>Low</b>	
	Infrastructure: <b>low</b>	

# Risk Assessment: Sea Level Rise

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	
	Buildings: <b>Moderate</b>	
	Infrastructure: <b>Moderate</b>	

# Risk Assessment: Terrorism

## 2010 Galveston Hazard Mitigation Plan

(Not included in 2010 Galveston County Hazard Mitigation Plan Update)

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Moderate/High</b>	➤ No documented history of terrorism
	Buildings: <b>Moderate/High</b>	
	Infrastructure: <b>Moderate/High</b>	

# Risk Assessment: Tsunami

## 2010 Galveston County Hazard Mitigation Plan Update

Overall	Qualitative	Quantitative
Potential Impact to:	People: Very Low	➤ 1 known event; 1 other possible event
	Buildings: Very Low	➤ No recorded damages
	Infrastructure: Very Low	➤ Impacts could be catastrophic, due to island's elevation and population, especially in summer months

# Risk Assessment: Tsunami

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	Quantitative
Potential Impact to:	People: <b>Low</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>Low</b>	
	Infrastructure: <b>Low</b>	

## 2010 Galveston County Hazard Mitigation Plan Update

Overall	Qualitative	Quantitative
Potential Impact to:	People: Very Low	<ul style="list-style-type: none"> <li>➤ 77 wildfire events in county</li> <li>➤ 1,582 acres burned in county</li> <li>➤ City: 7,824 fires in 2008</li> <li>➤ City: 7,665 fires in 2007</li> <li>➤ 9,244 parcels at risk (HAZUS)</li> <li>➤ \$1.53B+ at loss potential</li> <li>➤ 25, 272 people at risk</li> </ul>
	Buildings: Very Low	
	Infrastructure: Very Low	

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	
Potential Impact to:	People: <b>Moderate</b>	2000 Census population estimate: 58,067 2010 TAMU population estimate: 48,373
	Buildings: <b>High</b>	
	Infrastructure: <b>Low</b>	

# 2010 Risk Assessment Determinations

	Biologic Event	Coastal Erosion	Coastal Retreat	Coastal Subsidence	Drought
People					
Buildings					
Infrastructure					
Quantitative Risk Assessment?	NO	YES	NO	NO	NO

# 2010 Risk Assessment Determinations (continued)

	Environmental Disaster	Extreme Wind	Flooding	Hazardous Materials Incident	Lightning
People					
Buildings					
Infrastructure					
Quantitative Risk Assessment?	NO	YES	YES	YES	NO

# 2010 Risk Assessment Determinations (continued)

	Sea Level Change	Terrorism	Tsunami	Wildfire / Urban Fire
People				
Buildings				
Infrastructure				
Qualitative Risk Assessment?	NO	NO	NO	PENDING (KG will research)

# Critical Facilities Identification and Definition

# City Staff Identified Critical Facilities and Assets

- All potable water pump stations and lines-**AGREE**
- All wastewater treatment facilities-**AGREE**
- All essential lift stations-**AGREE**
- City Hall-**AGREE**
- McGuire Dent Recreation Center-**AGREE**
- Hospitals / clinics (to be identified by UTMB?)-**UTMB to follow up**

## **17JUN10 Additions**

- Airport
- Fire Station
- Central Garage
- Community Center (47<sup>th</sup> & Broadway)
- Streets & Traffic on 30<sup>th</sup>
- Harborside Sanitation Facilities & Transfer Station
- Angelo's List of critical bridges & roads
- Causeway
- Communications

## From FEMA 386 series:

“Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.”

# City of Galveston's Definition:

“Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, hospitals and other facilities necessary for continuity of government .” (Note: coordinate with the port, Police Department, park board, GISD, et al for specifics)

# Historic Asset Identification and Definition

# City Staff Identified Historic Assets

- Any structure or asset listed or eligible for listing on the National Register of Historic Places
- Any structure or asset listed on the State Registry
- Any structure or asset designated by the Galveston Landmark Commission
- These categories include most structures east of 61<sup>st</sup> Street

# From FEMA 386 series:

“As defined by 36 CFR Part 800, means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religions and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register.”

# City of Galveston's Definition:

?

# Beach / Shoreline Vulnerabilities and Concerns

# Galveston Beach/Shoreline Vulnerabilities and Concerns:

- Wet Lands (Bay) (KELLY look at the animals and wildlife)
- Dune & vegetation = increased vulnerability
- Loss of usable public beach
- Beach front roads
- Septic systems
- Walkovers

# Hazard Mitigation Goals, Objective and Actions

# Goals, Objectives and Actions (Strategies) Defined

From FEMA Planning Blue Book:

“Goals are general guidelines that explain what you want to achieve. They are broad policy statements and are usually long-term and represent global visions, such as ‘Protect Existing Property’.

“Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific, measurable and may have a defined completion date. Objectives are more specific, such as ‘Increase the number of buildings protected from flooding.’

“The development of effective goals and objectives enables the planning team to evaluate the merits of alternative mitigation actions and the local conditions in which these actions would be pursued. A potential mitigation action that would support the goal and objective example above is ‘Acquire repetitive loss properties in the Acadia Woods Subdivision’.”

# Hazard Mitigation Goals and Objectives from 2010 Galveston County Plan Update:

## **Goal #1:**

Improve education and outreach efforts regarding preparedness. Develop mitigation actions that can be implemented by citizens, businesses and municipal government officials in preparing for disasters.

## **Objective 1.1:**

Heighten public awareness of the full range of natural and man-made hazards they face.

## **Objective 1.2:**

Educate the public on actions they can take to prevent or reduce the loss of life or property damage from all hazards.

## **Goal #2:**

Develop hazard mitigation policies and programs designed to reduce the impact of natural and human caused hazards on people and property.

### **Objective 2.1:**

Reduce repetitive losses to the National Flood Insurance Program.

### **Objective 2.2:**

Enact and enforce regulatory measures to ensure that development will not put people in harm's way or increase threats to existing properties.

## **Goal #3:**

Conduct studies and implement planning processes to increase the understanding of local hazard vulnerability.

### **Objective 3.1:**

Build and support local partnerships to continuously become less vulnerable to hazards.

### **Objective 3.2:**

Build hazard mitigation concerns into planning and building processes.

## **Goal #4:**

Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.

### **Objective 4.1:**

Incorporate hazard mitigation into long-range planning and development activities.

### **Objective 4.2:**

Utilize regulatory approaches to prevent creation of future hazards to life and property.

## **Goal #5:**

Improve evacuation procedures for natural and human-caused hazards.

### **Objective 5.1:**

Maximize participation of property owners in protecting their properties.

### **Objective 5.2:**

Build a cadre of volunteers to safeguard the community before, during and after a disaster.

# Possible Hazard Mitigation Goals and Objectives for 2010 Galveston Hazard Mitigation Plan:

## **Goal #1:**

Improve **education and outreach** efforts, specifically to the public, municipal employees, and local businesses, regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.

## **Objective 1.1:**

Increase awareness of risks and understanding of the advantages of mitigation by the general public, municipal employees, local businesses and elected officials.

## **Goal #2:**

Improve **data collection, use, and sharing**, specifically with neighboring communities, on-Island partners, and with the State, to reduce the impact of hazards.

### **Objective 2.1:**

Improve availability to the City and on-Island partners of data related to all relevant hazards for use in future planning efforts.

### **Objective 2.2:**

Acquire and maintain detailed data regarding vulnerabilities, including critical facilities and historic assets, so that these sites can be prioritized and assessed for possible mitigation actions.

## **Goal #3:**

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

### **Objective 3.1:**

Provide support of hazard mitigation planning, project identification, and implementation at the municipal level.

### **Objective 3.2:**

Support increased integration of municipal hazard mitigation planning and floodplain management with effective municipal zoning regulation, subdivision regulation, and comprehensive planning.

## **Goal #4:**

Pursue **opportunities to mitigate** Repetitive and Severe Repetitive Loss properties and other appropriate hazard mitigation projects, programs, and activities, with a focus on existing structures, future structures, protection of existing infrastructure, and protection of future infrastructure.

### **Objective 4.1:**

Utilize regulatory approaches to prevent creation of future hazards to life and property.

### **Objective 4.2:**

Pursue opportunities to increase participation in the NFIP and the CRS program.

# Requirements for Hazard Mitigation Actions

- Minimum of two (2) actions per hazard profiled
- Actions must be described in terms of:
  - Hazard(s) addressed
  - Description of action/project
  - Application to existing or future structures/development
  - Estimated project cost
  - Potential funding sources
  - Agency/Department responsible for implementation
  - Timeline for implementation
  - Priority for implementation

# Hazard Mitigation Actions from 2010 Galveston County Hazard Mitigation Plan Update:

**(Worksheet to be emailed will describe details of specific actions.)**

## Actions included:

- All-hazard public education and outreach
- Elevation/flood protection of public infrastructure
- Beach nourishment/re-nourishment
- Mitigation of properties at risk for flooding (acquisition, elevation, relocation, flood proofing)
  - Need to specifically address Repetitive and Severe Repetitive Loss properties
- Flood protection and wind hardening of critical facilities
- Flood and wind protection of historic assets
- Emergency power generators for critical facilities and assets
- Construction of a First Responder and Essential Personnel Safe Room

# Suggested Mitigation Actions

- Procurement of GIS datasets (and possibly hardware/software) for use in mitigation planning and project implementation
- Consider adopting Coastal A zones
- Consider expanding Flood Damage Prevention Ordinance to include critical facilities in the 500-year floodplain
- Consider creation of a Substantial Damage Education/Assessment/Implementation plan
- Consider creation of a Coastal Hazard Outreach Strategy Team
- Consider joining NFIP's CRS program
- Develop partnerships with local businesses to increase hazard awareness and mitigation methods
- Identify critical facilities in need of mitigation

# Revisions to Schedule

- Next Stakeholder Committee Meeting – July 15<sup>th</sup>
- Additional meeting scheduled for July 29<sup>th</sup>
- Public review/comment period will be late July/early August – may be concurrent with submission to TDEM
- Draft plan will be presented to City Council on August 12<sup>th</sup>
- If approved, draft plan will be submitted to TDEM on August 13<sup>th</sup>
- Review will take 6-8 months
- Re-convene in Spring to review final draft and recommend adoption to City Council



GlobalOptions  
Group

City of Galveston Hazard Mitigation Plan  
Stakeholder Committee Meeting #3  
July 15, 2010

# Agenda

- Introductions
- Review of Risk Assessment data
- Mitigation Goals
- Mitigation Objectives
- Mitigation Actions
- Prioritization of Actions
  - STAPLEE
- Project Schedule

# June Meeting Summary

- Meeting held June 17, 2010
- Reviewed hazard profiles
- Qualitative risk assessment exercise
- Determined hazards to receive quantitative risk assessment
- Homework emailed to committee:
  - Review Mitigation Actions from Galveston County Plan
  - Suggest additional actions for inclusion in Plan

# 2010 Risk Assessment Determinations

	Biologic Event	Coastal Erosion	Coastal Retreat	Coastal Subsidence	Drought
People	Low	Low	Low	Low	Low
Buildings	Low	Moderate	Low / Moderate	Low	Low
Infrastructure	Low	Moderate	Moderate	Low	Low
Quantitative Risk Assessment?	No	Yes	No	No	No

# 2010 Risk Assessment Determinations (continued)

	Environmental Disaster	Extreme Wind	Flooding	Hazardous Materials Incident	Lightning
People	Moderate / High	High	Moderate	Low / Moderate	Low
Buildings	Low	High	High	Low / Moderate	Low
Infrastructure	Low	High	High	Low / Moderate	Low
Quantitative Risk Assessment?	No	Yes	Yes	Yes	No

# 2010 Risk Assessment Determinations (continued)

	Sea Level Change	Terrorism	Tsunami	Wildfire / Urban Fire
People	Low	Moderate / High	Low	Moderate
Buildings	Moderate	Moderate / High	Low	High
Infrastructure	Moderate	Moderate / High	Low	Low
Qualitative Risk Assessment?	No	No	No	Pending (KG will research and report)

# Risk Assessment: Coastal Erosion

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	
Potential Impact to:	People: <b>Low</b>	2010 TAMU population estimate: 48,373
	Buildings: <b>Moderate</b>	No residential structures known to be at immediate risk (could change rapidly with coastal storm)
	Infrastructure: <b>Moderate</b>	\$125,924,286 - \$146,445,086 (Facilities and loss of service)

# Risk Assessment: Coastal Erosion



**Galveston Public Works Water Lines**

- Seawall
- Water Service Line
- Water Main
- Interstate
- Main Road
- Local Street
- Galveston
- Jamaica Beach



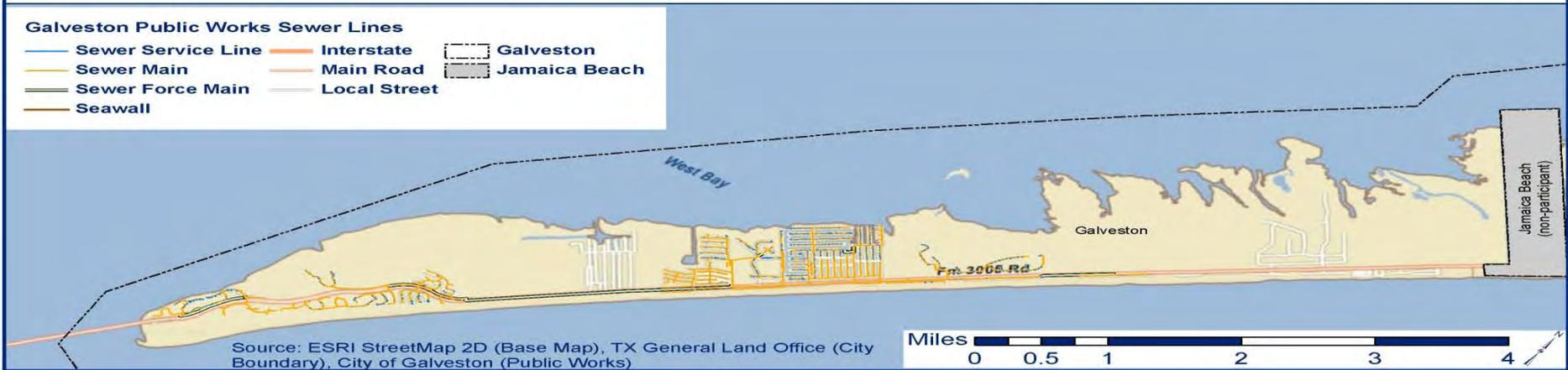
Source: ESRI StreetMap 2D (Base Map), TX General Land Office (City Boundary), City of Galveston (Public Works)

# Risk Assessment: Coastal Erosion



### Galveston Public Works Sewer Lines

- Sewer Service Line
- Sewer Main
- Sewer Force Main
- Seawall
- Interstate
- Main Road
- Local Street
- Galveston
- Jamaica Beach



# Risk Assessment: Extreme Wind

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	
Potential Impact to:	People: <b>High</b>	2010 TAMU population estimate: 48,373
	Buildings: <b>High</b>	All buildings potentially impacted: \$20,439,331
	Infrastructure: <b>High</b>	Total exposure at 100 year event: + \$3B

# Risk Assessment: Extreme Wind

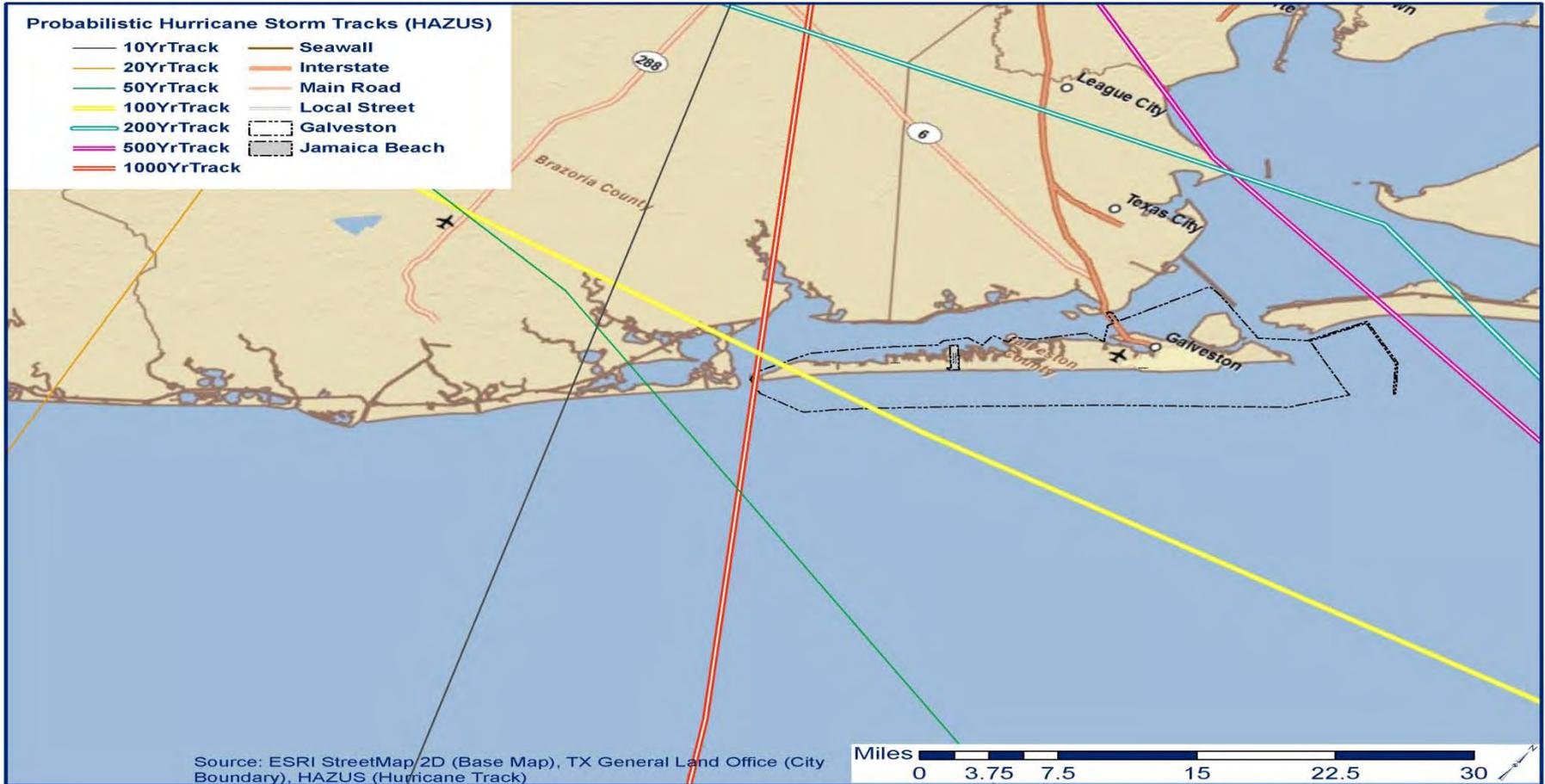
## Anticipated Wind Speeds Based on Recurrence Intervals

<b>MPH:</b>	<b>10 yr</b>	<b>20 yr</b>	<b>50 yr</b>	<b>100 yr</b>	<b>200 yr</b>	<b>500 yr</b>	<b>1000 yr</b>
<b>Average</b>	67	86	111	124	133	144	151
<b>Minimum</b>	64	82	107	123	131	137	149
<b>Maximum</b>	74	97	116	125	134	149	155
<b>Maximum Variation</b>	10	15	9	2	3	12	6

# Risk Assessment: Extreme Wind



# Risk Assessment: Extreme Wind



# Risk Assessment: Extreme Wind

## Annualized Property Losses from Extreme Wind Events

<b>Total Exposure</b>	<b>Residential Structure Risk</b>	<b>Commercial Structure Risk</b>	<b>Total Expected Property Losses</b>	<b>Percent Loss Ratio</b>
<b>\$3,920,377,102</b>	<b>\$20,439,331</b>	<b>\$12,010,466</b>	<b>\$32,449,797</b>	<b>.83%</b>

# Risk Assessment: Flooding

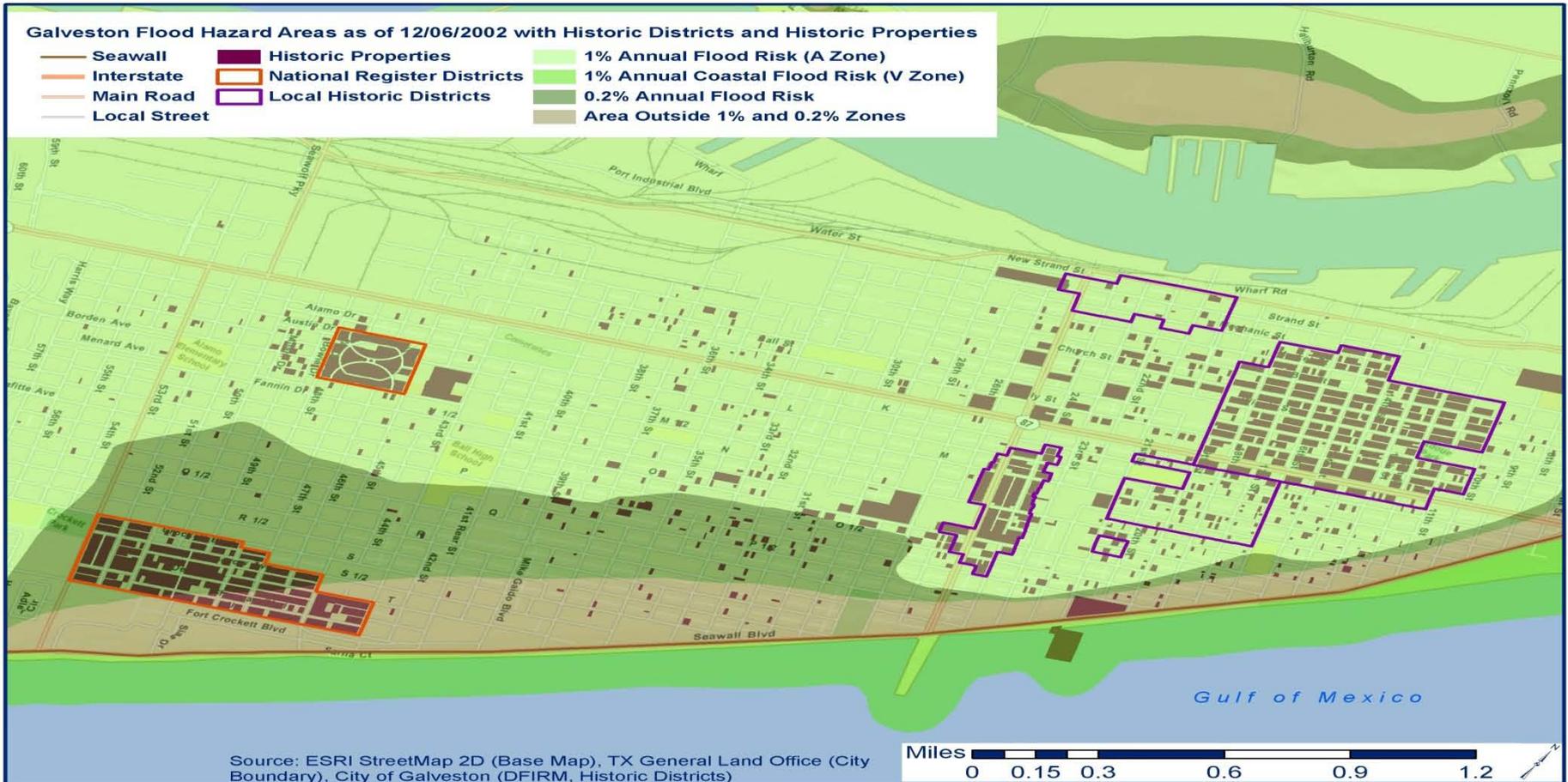
## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	
Potential Impact to:	People: <b>Moderate</b>	2010 TAMU population estimate: 48,373
	Buildings: <b>High</b>	See following slides
	Infrastructure: <b>High</b>	See following slides

# Flood Risk Areas with Rep Loss Properties Identified



# Flood Risk Areas with Rep Loss Properties Identified



# Parcels at Risk from Flooding

Surge Height (in feet)	# Residents at Risk (based on 2000 Census)	% of Residents at Risk	# Parcels at Risk	% of Parcels at Risk	Value of Parcels at Risk
4 – 5	22,466	39%	10,708	38%	\$2,110,212,564
6 -8	33,666	58%	18,853	67%	\$2,940,856,447
9 – 12	57,113	98%	27,083	96%	\$3,806,731,803
13 – 18	58,067	100%	27,876	99%	\$3,809,001,952
>18	58,067	100%	27,876	99%	\$3,809,001,952

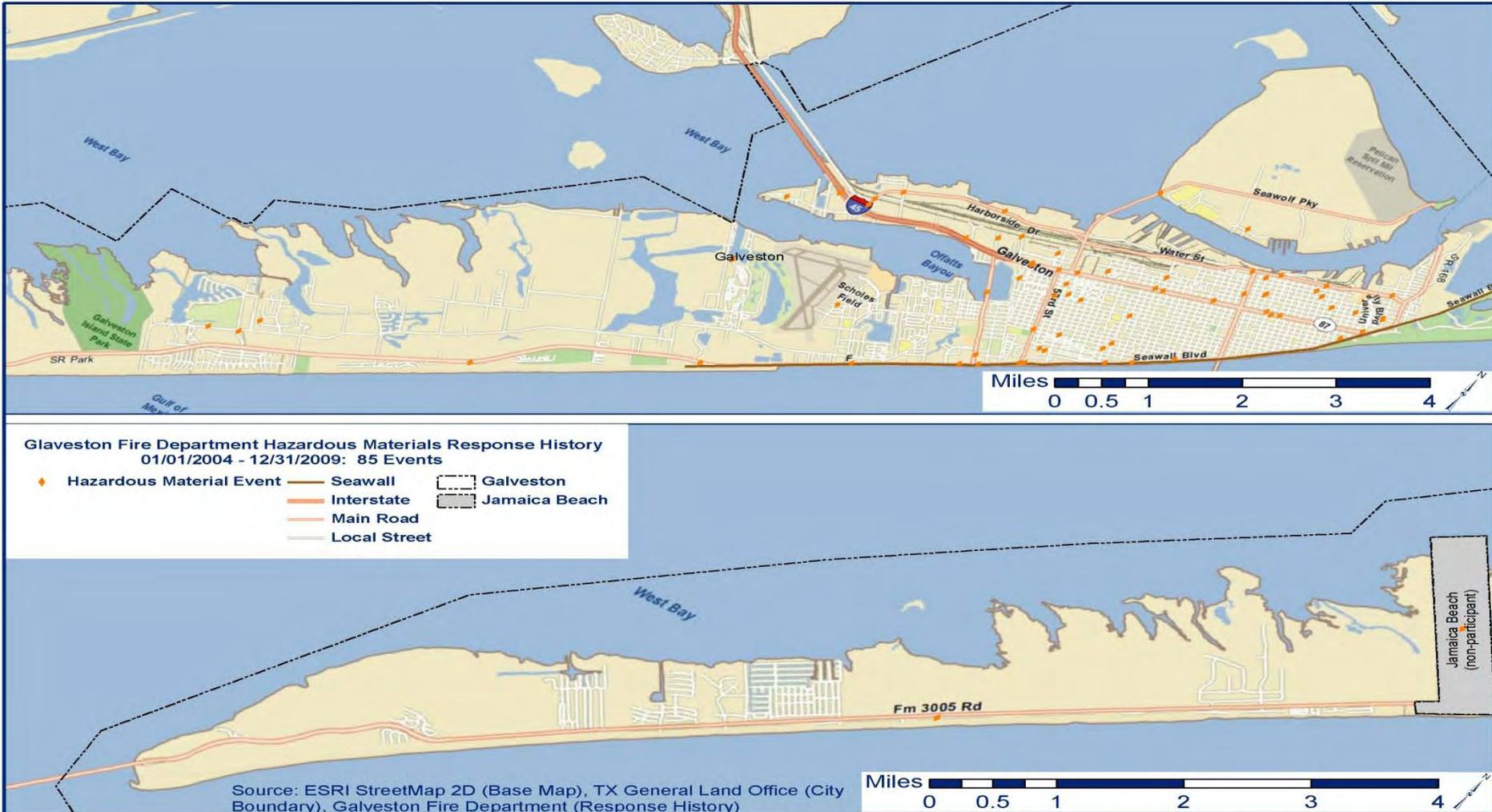
# Parcels and Residents at Risk from Flooding, by Zone

<b>Flood Zone</b>	<b># Residents at Risk (Based on 2000 Census)</b>	<b>% of Residents at Risk</b>	<b># Parcels at Risk</b>	<b>% of Parcels at Risk</b>	<b>Value of Parcels at Risk</b>
V or VE	8,370	14%	6,029	21%	\$522,766,454
A or AE	46,599	80%	18,447	66%	\$2,958,365,858
X (shaded)	11,961	21%	3,187	11%	\$837,708,961

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	
Potential Impact to:	People: <b>Low / Moderate</b>	2010 TAMU population estimate: 48,373
	Buildings: <b>Low / Moderate</b>	See following slides
	Infrastructure: <b>Low / Moderate</b>	See following slides

# HazMat Response History (2004-2009) – 85 Events



# HazMat Line and Pipeline Locations - FIUO

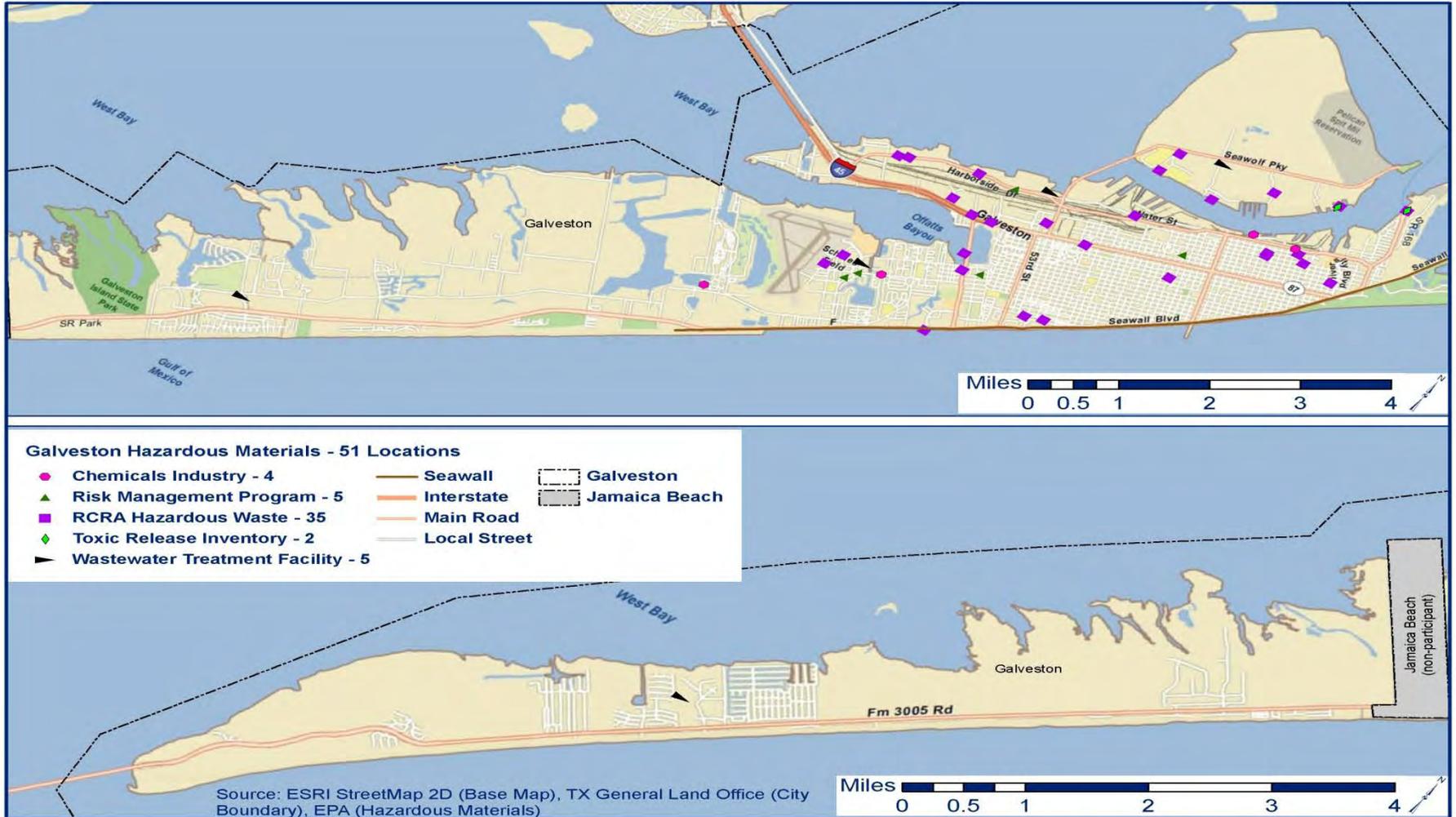


**City of Galveston External Utilities \*\*FOR INTERNAL USE ONLY\*\***

- Seawall
- PowerLines\_HSG
- Crude\_Pipeline\_HSG
- NatGasPipeline\_HSG
- - - OilGasPipelines\_HSG
- Interstate
- Main Road
- Local Street
- Galveston
- Jamaica Beach



# HazMat Facilities – 51 Locations



# Train Derailments (2004-2009) – 15 Events



**Galveston Fire Department Train Derailment History**  
 01/01/2004 - 12/31/2009: 15 Events

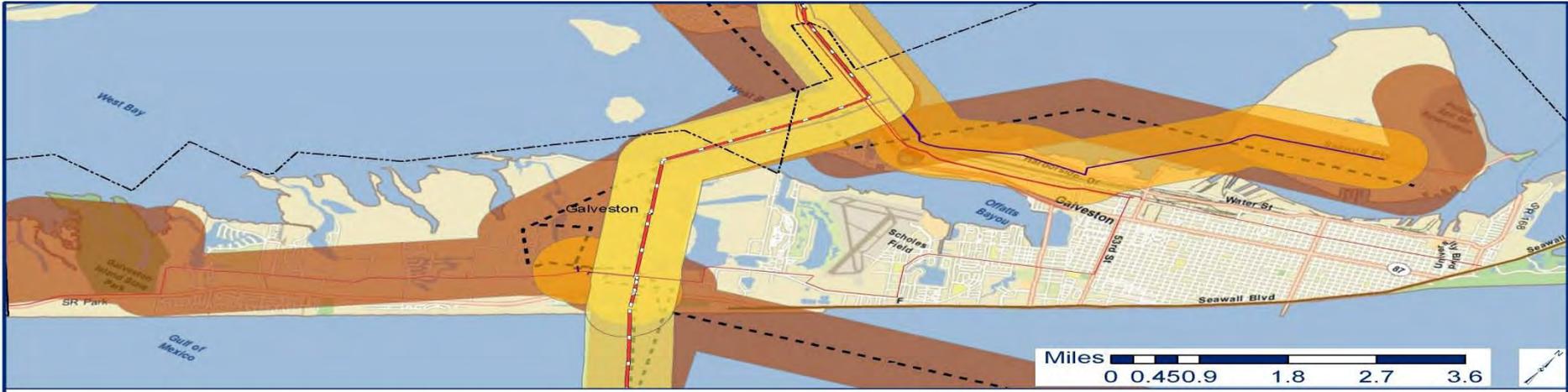
- Train Derailment
- Seawall
- Interstate
- Main Road
- Local Street
- Galveston
- ▭ Jamaica Beach



Source: ESRI StreetMap 2D (Base Map), TX General Land Office (City Boundary), Galveston Fire Department (Response History)

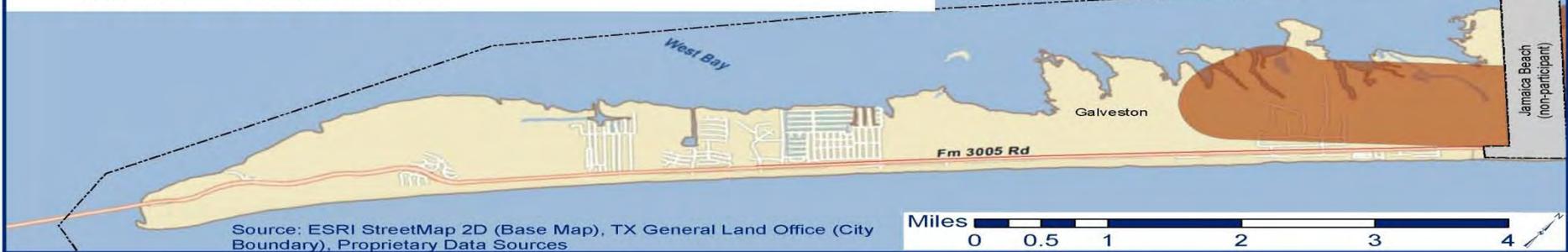
# HazMat Lines with 1-mile Buffer

## - FIUO



**City of Galveston External Utilities \*\*FOR INTERNAL USE ONLY\*\***

- |              |                        |                    |               |
|--------------|------------------------|--------------------|---------------|
| Seawall      | Electrical Power Lines | Crude Oil Buffer   | Galveston     |
| Interstate   | Crude Oil Pipeline     | Natural Gas Buffer | Jamaica Beach |
| Main Road    | Natural Gas Pipeline   | Oil and Gas Buffer |               |
| Local Street | Oil and Gas Pipeline   |                    |               |



# HazMat Estimated Losses

Estimated Population (2000 Census)	Estimated Number of Parcels (Pre-Ike)	Estimated Value of Improved Parcels	Estimated Number of People at Risk (Immediate)	Estimated Number of Parcels at Risk (Immediate)	Estimated Value of Parcels at Risk (Immediate)	Estimated Number of People at Risk (Secondary)	Estimated Number of Parcels at Risk (Secondary)	Estimated Value of Parcels at Risk (Secondary)
<b>Estimated Exposure of People and Assets to Hazardous Materials Incidents – Fixed Site</b>								
58,067	28,111	\$3,920,377,102	5,953	1,393	\$285,733,477	46,633	18,515	\$2,965,038,817
<b>Estimated Exposure of People and Assets to Hazardous Materials Incidents – Highway and Rail</b>								
58,067	28,111	\$3,920,377,102	19,977	6,789	\$815,748,242	49,623	16,802	\$2,874,336,022
<b>Estimated Exposure of People and Assets to Hazardous Materials Incidents – Gulf Intracoastal Waterway</b>								
58,067	28,111	\$3,920,377,102	2,650	740	\$232,756,902	37,118	12,939	\$2,391,323,790
<b>Estimated Exposure of People and Assets to Hazardous Materials Incidents – Natural Gas Pipelines</b>								
58,067	28,111	\$3,920,377,102	10,216	6,144	\$79,699,934	24,215	11,967	\$1,294,256,738
<b>Estimated Exposure of People and Assets to Hazardous Materials Incidents – Oil Pipelines</b>								
58,067	28,111	\$3,920,377,102	1,097	617	\$13,980,770	1,669	1,439	\$89,372,473

## 2010 Galveston Hazard Mitigation Plan

Overall	Qualitative	
Potential Impact to:	People: <b>Moderate</b>	2010 TAMU population estimate: 48,373
	Buildings: <b>High</b>	All buildings potentially at risk – Historic structures and wood frame have higher vulnerability
	Infrastructure: <b>Low</b>	Compromised infrastructure exacerbates risk

# Building Fire Response History (2004-2009) – 721 Events



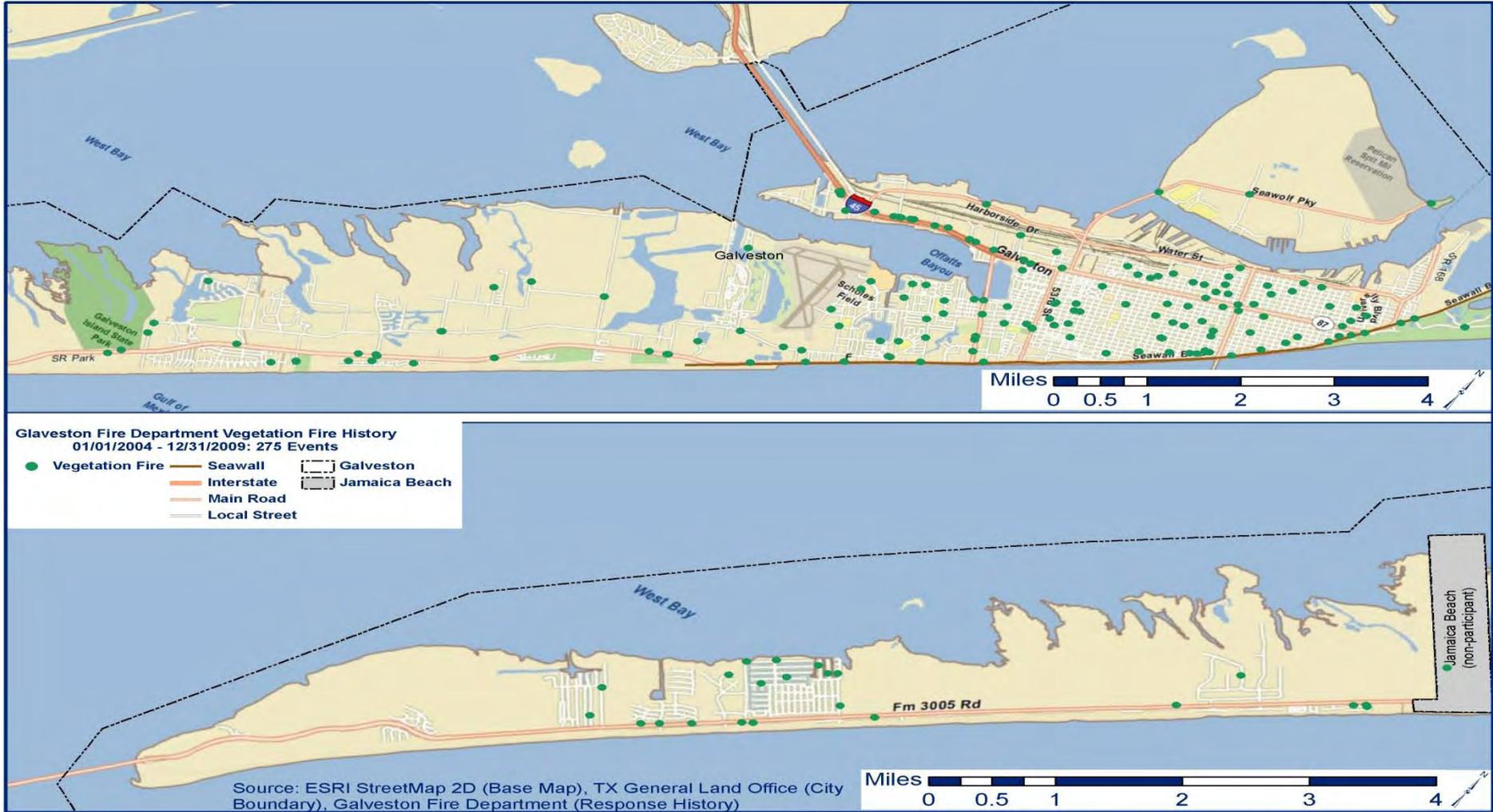
**Galveston Fire Department Building Fire History**  
 01/01/2004 - 12/31/2009: 721 Events

- ◆ Building Fire
- Seawall
- Interstate
- Main Road
- Local Street
- ▭ Galveston
- ▭ Jamaica Beach



Source: ESRI StreetMap 2D (Base Map), TX General Land Office (City Boundary), Galveston Fire Department (Response History)

# Vegetation Fire History (2004-2009) – 275 Events



# Question for Committee

Do you want to complete Wildfire / Urban  
Fire quantitative risk assessment?

Yes

# Hazard Mitigation Goals, Objective and Actions

# Goals, Objectives and Actions (Strategies) Defined

From FEMA Planning Blue Book:

“Goals are general guidelines that explain what you want to achieve. They are broad policy statements and are usually long-term and represent global visions, such as ‘Protect Existing Property’.

“Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific, measureable and may have a defined completion date. Objectives are more specific, such as ‘Increase the number of buildings protected from flooding.’

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# Hazard Mitigation Goals and Objectives from 2010 Galveston County Plan Update:

## **Goal #1:**

Improve education and outreach efforts regarding preparedness. Develop mitigation actions that can be implemented by citizens, businesses and municipal government officials in preparing for disasters.

## **Objective 1.1:**

Heighten public awareness of the full range of natural and man-made hazards they face.

## **Objective 1.2:**

Educate the public on actions they can take to prevent or reduce the loss of life or property damage from all hazards.

## **Goal #2:**

Develop hazard mitigation policies and programs designed to reduce the impact of natural and human caused hazards on people and property.

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Conduct studies and implement planning processes to increase the understanding of local hazard vulnerability.

### **Objective 3.1:**

Build and support local partnerships to continuously become less vulnerable to hazards.

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Build hazard mitigation concerns into planning and building processes.

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Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.

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Incorporate hazard mitigation into long-range planning and development activities.

### **Objective 4.2:**

Utilize regulatory approaches to prevent creation of future hazards to life and property.

## **Goal #5:**

Improve evacuation procedures for natural and human-caused hazards.

### **Objective 5.1:**

Maximize participation of property owners in protecting their properties.

### **Objective 5.2:**

Build a cadre of volunteers to safeguard the community before, during and after a disaster.

# Possible Hazard Mitigation Goals and Objectives for 2010 Galveston Hazard Mitigation Plan:

## **Goal #1:**

Improve **education and outreach** efforts, specifically to the public, municipal employees, and local businesses, regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.

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Increase awareness of risks and understanding of the advantages of mitigation by the general public, municipal employees, local businesses and elected officials.

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Improve **data collection, use, and sharing**, specifically with neighboring communities, on-Island partners, and with the State, to reduce the impact of hazards.

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Improve availability to the City and on-Island partners of data related to all relevant hazards for use in future planning efforts.

### **Objective 2.2:**

Acquire and maintain detailed data regarding vulnerabilities, including critical facilities and historic assets, so that these sites can be prioritized and assessed for possible mitigation actions.

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

### **Objective 3.1:**

Provide support of hazard mitigation planning, project identification, and implementation at the municipal level.

### **Objective 3.2:**

Support increased integration of municipal hazard mitigation planning and floodplain management with effective municipal zoning regulation, subdivision regulation, and comprehensive planning.

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Pursue **opportunities to mitigate** Repetitive and Severe Repetitive Loss properties and other appropriate hazard mitigation projects, programs, and activities, with a focus on existing structures, future structures, protection of existing infrastructure, and protection of future infrastructure.

### **Objective 4.1:**

Utilize regulatory approaches to prevent creation of future hazards to life and property.

### **Objective 4.2:**

Pursue opportunities to increase participation in the NFIP and the CRS program.

# Requirements for Hazard Mitigation Actions

- Minimum of two (2) actions per hazard profiled
- Actions must be described in terms of:
  - Hazard(s) addressed (may be multi-hazard)
  - Description of action/project
    - This is a basic description, not project scoping
  - Application to existing or future structures/development
  - Estimated project cost
    - Can be a ballpark figure
  - Potential funding sources
    - Doesn't necessarily have to be FEMA-eligible
  - Agency/Department responsible for implementation
  - Timeline for implementation
    - Can be range (ie, 2011-2016)
  - Priority for implementation

# Analyzing Mitigation Actions

Communities should evaluate the pros and cons of implementing a particular mitigation action based on local conditions that may impact whether or not the action could be successfully accomplished.

# Questions to Consider

- The following considerations may be useful:
  - Is the action compatible with goals and objectives identified in the State Hazard Mitigation Plan?
  - Is the action compatible with the stated goals of the local hazard mitigation plan?
  - Would the action have an adverse impact on the entire planning area, or beyond?
  - Is the action cost beneficial?
  - Is the action compatible with the State's funding priorities?
  - Is the action compatible with other local or regional plans or initiatives?

# Hazard Mitigation Actions from 2010 Galveston County Hazard Mitigation Plan Update:

**(Worksheet was emailed with details of specific actions.)**

## Actions included:

- All-hazard public education and outreach
- Elevation/flood protection of public infrastructure
- Beach nourishment/re-nourishment
- Mitigation of properties at risk for flooding (acquisition, elevation, relocation, flood proofing)
  - Need to specifically address Repetitive and Severe Repetitive Loss properties
- Flood protection and wind hardening of critical facilities
- Flood and wind protection of historic assets
- Emergency power generators for critical facilities and assets
- Construction of a First Responder and Essential Personnel Safe Room

# Suggested Mitigation Actions

- Procurement of GIS datasets (and possibly hardware/software) for use in mitigation planning and project implementation
- Consider adopting Coastal A zones
- Consider expanding Flood Damage Prevention Ordinance to include critical facilities in the 500-year floodplain
- Consider creation of a Substantial Damage Education/Assessment/Implementation plan
- Consider creation of a Coastal Hazard Outreach Strategy Team
- Consider joining NFIP's CRS program
- Develop partnerships with local businesses to increase hazard awareness and mitigation methods
- Identify critical facilities in need of mitigation

# Review of Hazards Profiled

Biological 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

# Open Mitigation Actions Worksheet

Break after exercise

# Prioritizing Mitigation Actions

# Process for Evaluation and Prioritization

- FEMA recommends using the STAPLEE criteria to identify, evaluate, and prioritize proposed mitigation actions, based on existing local conditions.
- This method provides an objective, realistic method for determining which actions are higher priorities for communities, and which actions community's can realistically undertake.

# STAPLEE stands for....

- Social
- Technical
- Administrative
- Political
- Legal
- Economic
- Environmental

- The public must support the overall implementation strategy and the specific mitigation action.
- Actions must be evaluated in terms of the community's acceptance of them.

# Example Considerations: Social

- Is the action likely to be supported by the public?
- Is the action likely to meet with opposition?
- Does the action disproportionately negatively impact low income and minority populations?
- Does the action disproportionately benefit a particular population or group?

- Mitigation actions must:
  - Be technically feasible;
  - Be capable of long-term loss reduction; and
  - Have minimal secondary impacts.
- Actions should either solve a problem, or provide a partial solution to a problem.

# Example Considerations: Technical

- Will the action provide a solution to a problem?
- Is the action technically feasible?
- Is the action reasonable to implement?

- Consider the capability of the municipality to provide the following support:
  - Staffing
  - Funding
  - Maintenance
- Will outside assistance (i.e., contractors) be required to manage the project?

# Example Considerations: Administrative

- Does the community have the capability to implement and manage the action without negatively impacting normal operations?
- Does the community have the capability to manage the financial portion of the action?
- Does the community have the capability to maintain the action after completion?
- Will the community need to hire/contract for additional staff to implement/manage the action?

- Proposed mitigation actions sometimes fail due to a lack of political acceptability and support.
- What's the current political temperature of the community, the area, and the State?
- How does your political leadership regard:
  - Environmental issues?
  - Economic development?
  - Safety and emergency management issues?

# Example Considerations: Political

- Does the proposed action have local/regional/state political support?
- Does the proposed action have local/regional/state political opposition?
- What political issues are likely to be encountered in the course of implementing the project?

- Municipalities must have the legal authority to undertake a mitigation action (i.e., they must own the facility, or have authorization / responsibility to mitigate the facility from the owner).
- Without the appropriate legal authority, a mitigation action cannot be undertaken, particularly if that action is funded by a federal grant.

# Example Considerations: Legal

- Does the municipality have the legal authority to implement the action?
- Is the municipality the correct legal entity to implement the action?
- Does the municipality legally own the facility to be mitigated?
  - If not, can written authorization be obtained?

- Almost all federal grants require a non-federal cost share.
- What sources of local funding are available to fund mitigation actions?
- What has to happen to authorize allocating the funding to an action?
- How will the community determine an action's cost-effectiveness?

# Example Considerations: Economic

- For most FEMA grants, the non-federal cost share can be provided through cash or in-kind sources.
- How will the community fund the non-federal cost share?
- Who can authorize the use of local funds for non-federal cost shares?

- Good mitigation actions tend to be both sustainable and environmentally healthy.
- Federal grant providers are required to adhere to the provisions of the National Environmental Policy Act, as well as other applicable environmental and historic preservation legislation.
- Are there state environmental policies or regulations that must be adhered to?

# Example Considerations: Environmental

- What negative consequences to the environment would this project produce?
- What positive effects to the environment would be produced by the implementation of this project?
- What federal and state environmental regulations would/may apply to this construction?
- What studies, tests, etc. would be necessary to the project's implementation?
- What are the known environmental issues in the proposed construction area?

# Open STAPLEE Worksheet

# Project Schedule

- Next meeting scheduled for July 29<sup>th</sup>
- Public review/comment period will be late July/early August – may be concurrent with submission to TDEM
- Draft plan will be presented to City Council on August 12<sup>th</sup>
- If approved, draft plan will be submitted to TDEM on August 13<sup>th</sup>
- Review will take 6-8 months
- Re-convene in Spring to review final draft and recommend adoption to City Council

**City of Galveston  
Hazard Mitigation Plan  
Stakeholder Committee**

**Meeting #4  
July 29, 2010**

# Agenda

- Welcome
- Review of Capability Assessment Data
- Review of Monitoring and Maintenance Schedule
- Public Review and Comment
- Review of Drafts
- Discussion and Action: Recommend submission to TDEM
- Project Schedule

# Capability Assessment

- Not a required element
- Does define the context in which hazards, risks, vulnerabilities and actions exist
- Discussions with City Staff directed inclusion in plan
- Two primary means of information collection:
  - Citizen Survey
  - Interviews with City Staff:
    - Director of Planning and Community Development
    - Planning Department Head
    - Historic Preservation Officer
    - Chief Building Official
    - Floodplain Manager
    - Managing Director, Municipal Utilities
    - Public Works Director
    - Fire and Police Departments representatives

# Resident Survey

A total of 116 people completed the survey, between May and July 2010. The majority of respondents were over aged 60, were female homeowners who reside in Galveston year-round, and who have at least some post-graduate education.

Of the 116 respondents, 98% reported that they have either experienced or been impacted by a disaster. The most common disaster reported was hurricanes and/or flooding. The overwhelming majority of respondents describe themselves as either “concerned”, “very concerned”, or “extremely concerned” about the possibility of Galveston being impacted by a disaster.

# Monitoring and Maintenance

- Annual review and written progress report (CRS compliance) – March / April
  - Responsible parties:
    - Director, Planning and Community Development
    - Emergency Management Coordinator
    - Director, Public Works (added by HMPSC)
    - Managing Director, Municipal Infrastructure (added by HMPSC)
- Annual report to HMPSC – March / April
- Annual update to City Council – April / May
- Annual presentation to public at Hurricane Open House – May
- Appendix for annual reports in plan

# Review of Drafts

**Discussion of draft files of plan  
(open files as requested by  
committee)**

# Committee Consideration and Discussion



## **Discussion and Consideration:**

Does the Committee recommend submission of the drafts present to City Council, so that Council may consider authorizing submission of drafts to TDEM/FEMA for review and comment?

# Committee Recommendation



## Recommendation:

**Yes Recommend submission to  
Council**

**Do not recommend submission to  
Council**

# Project Schedule

- Plan presented to City Council on August 12, 2010
- If approved, plan submitted to TDEM August 13
- TDEM/FEMA will request revisions over the next few months
- Next meeting: Spring 2011:
  - Review final plan
  - Make recommendation for adoption by City Council
- City Council adopts final plan no later than April 8, 2011

Questions?

Comments?