JEFFERSON COUNTY DRAINAGE DISTRICT NO. 6
2016 HAZARD MITIGATION PLAN UPDATE

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EXECUTIVE SUMMARY

Jefferson County Drainage District No. Six (DD6) undertook development of this Mitigation Plan to protect public health, safety and welfare. The purpose of this Plan is to reduce or avoid the impacts of hazards by identifying and analyzing hazards and outlining mitigation actions that will help the District reach this goal. This Mitigation Plan is a single jurisdiction Plan. This Mitigation Plan also enables DD6 to apply for disaster mitigation funding sources that are otherwise unavailable without an approved Mitigation Plan.

DD6 staff has shown their commitment to hazard mitigation by writing a Hazard Mitigation Plan in 2005 and updating that plan in 2010. The 2010 Plan was approved by FEMA on June 26, 2011. DD6 staff further demonstrated their commitment to hazard mitigation by applying for and administering FEMA grants to complete numerous projects as well as self-funding projects that help protect public health, safety and welfare.

For this Mitigation Plan update, DD6 secured funding to hire a private firm to guide the planning process and Plan development. DD6 organized a Mitigation Planning Committee (MPC) consisting of members from DD6, Jefferson County and the City of Beaumont. The MPC is comprised of both members from the previous MPCs as well as new members.

The majority of this Plan is focused on the flood hazard because DD6's mission and jurisdictional authority are explicitly limited to activities related to controlling floods (although DD6 does have the authority to complete actions to protect and mitigate damage to its own facilities, assets and protect personnel).

The Plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended; The National Flood Insurance Act of 1968 (NFIA), as amended; and Title 44 Code of Federal Regulations Section 201.6 (44 CFR 201.6).

SECTION 1 – THE PLANNING PROCESS

INTRODUCTION

Jefferson County Drainage District No. Six (DD6) undertook development of the original Hazard Mitigation Plan because of increasing awareness that natural and man-made hazards, especially flood hazards, may affect people and property in the area. The Hazard Mitigation Plan was written to find District vulnerabilities to hazards and outline mitigation actions that help to reduce or avoid the impacts of hazards. To help reach those goals, mitigation funds are made available to jurisdictions with updated Hazard Mitigation Plans.

In accordance with 44 Code of Federal Regulations (CFR) 201.6(d)(3), local mitigation plans must be "reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for… grant project funding."

In this update, the Mitigation Planning Committee looked at what has changed in the District since the last version of the plan was approved and what new actions need to be taken based on those changes.

AUTHORITY

Jefferson County Drainage District No. Six (DD6) is a conservation and reclamation district and a political subdivision of the State of Texas. DD6 was established January 21, 1920, after a favorable vote on January 10, 1920. It was extended and enlarged (Vol. 63, P.478) according to the authority of the 57th Legislature, Chapter 349, and Chapter 7, Title 128, Revised Civil Statutes of Texas, Art. 8129. Enlargement came about in 1961 through legislation (HB 1063), which also established DD6 as a Conservation and Reclamation District under Section 59, Article XVI, Texas Constitution. DD6 was created primarily to provide drainage of overflow lands within DD6. DD6 is governed by a five-member Board of Directors, appointed by the County Commissioners Court of Jefferson County, Texas.

Authority for the preparation of the Hazard Mitigation Plan is derived from Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended; The National Flood Insurance Act of 1968 (NFIA), as amended; and Title 44 Code of Federal Regulations Section 201.6 (44 CFR 201.6). These required State and local governments to develop and formally adopt Hazard Mitigation Plans in order to be eligible for certain disaster mitigation grant funding sources.

In June, 2003 Drainage districts within the State of Texas were granted additional authority via Chapter 49.211 of the Texas Water Code and House Bill 919. Specifically, Chapter 49.211 of the Texas Water Code required districts to adopt master plans before they can adopt rules relating to review and approval of proposed development drainage plans. Further, HB 919 granted districts the authority to require developers to submit drainage plans for approval during the

platting process. The bill also provided legal authority for DD6 to halt subdivision plans based on floodplain development control and regulation. DD6 was created primarily to provide drainage of over flow lands within DD6, including the construction and maintenance of drains, ditches and levees, and other improvements of the District.

Emergency response is the responsibility of the City of Beaumont and Jefferson County. The City owns and maintains several roadside ditches, however DD6 owns the majority of ditches within DD6 and is responsible for routine maintenance. After an event, it is a cooperative effort between the City, County Precincts, and DD6 to identify ditches that need cleaning (as well as crossings). There are known problem areas that are regularly checked during and after an event.

Both the City and the County have early warning capability. Citizens in the area rely mostly on local weather, which is reported to be very capable. DD6 has over 59 stream and rainfall gauges throughout DD6. These stream gauges provide data that is used by DD6 and the Lake Charles branch of the National Weather Service to predict potential flooding. DD6 uploads stream gauge data to the National Weather Service every 15 minutes.

Further discussion on existing policies and programs are addressed in "review and incorporation of existing plans, studies, reports and technical information".

THE PLANNING PROCESS

The process used to develop this Plan was guided by a Mitigation Planning Committee (MPC), which carried out most of the planning duties. The MPC determined that in addition to the small committee that would steer the planning process, a larger group of interested individuals called Stakeholders would be included in the planning process to review drafts and provide comments at critical points in the plan development. At the first Plan update meeting held on February 25, 2016, the MPC finalized who would comprise the MPC (below). The MPC Meeting Minutes can be found in Appendix 1 of this Plan. The MPC was responsible for data collection and update, review and update each section of the plan, provide status of the mitigation actions from the previous plan and provide any new actions for review by the Stakeholders and the public. The Stakeholders group was larger and comprised of individuals and organizations from both inside and outside Jefferson County DD6. The MPC was comprised of the following individuals:

Table 1 – Mitigation Planning Committee

Team Member	Job Title	Organization
Ms. Karen Stewart	**Business Manager-Purchasing Agent, Grant Manager, Director of HR & Risk Management**	**DD6**
Mr. Doug Canant	**District Engineer**	**DD6**
Mr. Chuck Oakley	**CFO**	**DD6**

Ms. Adina Ward	**Floodplain Administrator**	**City of Beaumont**
Mr. Thomas Gill	**Streets and Drainage Manager**	**City of Beaumont**
Mr. Don Rao	**Jefferson County Engineering Director**	**Jefferson County**
Mr. Jeff Ward	**Mitigation Planning Consultant**	**JSWA**
Mr. Dan Ward	**Mitigation Planning Consultant**	**JSWA**

As drafts of the Updated Plan were prepared, the MPC used email to distribute them to Stakeholders, and requested that they provide comments. Stakeholders were also invited to public meetings and were requested to provide feedback through email or by telephoning Jefferson County DD6 or a member of the consultant team. When the final draft was completed by the MPC, the Stakeholders were notified by mail and provided a website to download and review the plan for any updates or comments. The consultant was responsible for archiving the comments and including them in edited versions of the Plan update. The Stakeholders Group was comprised of the following individuals and entities:

Table 2 – Stakeholders Group Members

Group Member	Job Title	Organization
Mr. Richard LeBlanc	**General Manager**	**DD6**
Mr. Gilbert Ward	**C.P.G. Hydrologist Water Resources Planning Water Supplies Section**	**Texas Water Development Board**
Mr. Randall Reese	**General Manager**	**Sabine Neches Navigation District**
Dr. John W. Frossard	**Beaumont Independent School District Superintendent**	**Beaumont Independent School District**
Mr. Shannon Holmes	**Hardin Jefferson Independent School District Superintendent**	**Hardin Jefferson Independent School District**
Ms. Pamela Lechler	**Hamshire Fannett Independent School District Superintendent**	**Hamshire Fannett Independent School District**
Dr. Kenneth Evans	**President**	**Lamar University**
Dr. Paul J. Szuch	**President**	**Lamar Institute of Technology**
Ms. Kim Moncla	**Executive Director - Foundation, Baptist Hospitals of Southeast Texas**	**Baptist Beaumont Hospital**
Mr. Paul Trevino	**CEO, Christus Southeast Texas**	**Christus St. Elizabeth Hospital**
Mr. Phil Kelley	**Manager**	**Jefferson County Drainage District 7**
Mr. Leroy Mc Call Jr	**Manager**	**Jefferson County Drainage District 3**

Mr. Kenneth Wiemers P.E.	**Area Engineer Beaumont**	**Texas Department of Transportation**
Mr. Scott Hall, P.E.	**General Manager**	**Lower Neches Valley Authority**
Mr. Patrick Trahan	**Government Relations Director**	**Exxon Mobil Oil Corporation**
Mr. Michael Lockwood	**Plant Manager**	**Goodyear Tire and Rubber**
Ms. Sue Landry	**Homeland Security Director**	**Southeast Texas Regional Planning Commission**
Mr. Kerry Abney	**Mayor**	**City of Nome, TX**
Mr. John Walker	**Mayor**	**City of China, TX**
Ms. Becky Ford	**Mayor**	**City of Bevil Oaks, TX**

PUBLIC INVOLVEMENT

Consistent with DD6's standard objective to inform and involve citizens, and to fulfill the public involvement requirements of the mitigation planning programs, during the plan development process, DD6 notified and invited residents to review the document and attend two public meetings. For the first public meeting, a public notice was published informing the public about the Hazard Mitigation Planning process and urged the public to be involved in this process.

The first public meeting was held on April 14, 2016 to review and comment on a preliminary draft of the Plan update. In accordance with legal requirements, DD6 published public notices about the presentation in the Beaumont Enterprise prior to the meeting (See Appendix 2, Public Notice Documents). The notice explained the purpose of the meeting and provided the date, time, and location of the meeting. The meeting minutes (and attendee lists) for the public meeting is included in Appendix 2 of the Plan update.

The public had a second opportunity to review the final draft Plan when the document was posted on the Jefferson County DD6 website at www.dd6.org/plan.pdf and placed at the City of Beaumont's City Hall and at DD6's office on Walden Rd. Prior to placing the document online, DD6 announced the availability of the final draft plan for review and provided a way for the public to provide comments. The public notice in the Beaumont Enterprise and the letters to all stakeholders explaining that the District's Hazard Mitigation Plan update was in the final draft stages and available for review are attached in Appendix 2). The stakeholder and public comments were incorporated and the plan was presented at the second public meeting on June 28th for final review and comment before submission. No one from the public attended either meeting.

REVIEW AND INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

A wide variety of existing plans, studies, reports and technical information were reviewed and incorporated into this Hazard Mitigation Plan. The following Plans are available: The Jefferson County DD6 Drainage and Flood Damage Reduction Plan (Master Drainage Plan), Drainage Regulations; Jefferson County Drainage District No. 6, Drainage Criteria Manual for Drainage District No. 6 and the Texas State Mitigation Plan. In addition, Flood Insurance Rate Maps (FIRM) and Flood Insurance Study were reviewed, though no changes were made since the last version of the Plan. The specific Plans, Studies and Reports are listed below along with a discussion on how they were incorporated into the Plan update.

- **Jefferson County DD6 Drainage and Flood Damage Reduction Plan (Master Drainage Plan).** Jefferson County DD6 prepared the Flood Damage Reduction Plan to examine how development is reviewed and to satisfy the requirements of HB 919 so that DD6 could develop, adopt, implement, and enforce regulations relating to its review and approval of development proposals. DD6 meets on an annual basis to review this plan, specifically to select the best way to expand on the District's capability to enforce development restrictions throughout the service area. The District completes periodic reviews of the Master Drainage Plan to identify mitigation actions that can be incorporated in the Hazard Mitigation Plan.
- **Drainage Regulations; Jefferson County Drainage District No. 6**, Jefferson County DD6 completed Drainage Regulations within DD6. The regulations were adopted by DD6 to protect, maintain and enhance public health, safety and general welfare, and to minimize the impacts of increases in stormwater runoff and flooding. The District completes periodic reviews of the Drainage Regulations to identify mitigation actions that can be incorporated in the Hazard Mitigation Plan. DD6 meets on an annual basis to review these regulations, specifically to identify ways to enhance and/or tighten drainage regulations to further minimize impacts of increases in stormwater runoff and flooding.
- **Drainage Criteria Manual for Drainage District No. 6**, DD6 completed the Drainage Criteria Manual. This manual was completed to support the Master Drainage Plan and Drainage Regulations that were adopted by Jefferson County DD6 pursuant to the authority set forth in the Texas Water Code §49.211. The purpose of the Drainage Criteria Manual is to outline criteria and guidance to be used by developers, engineers, and land surveyors in the design of drainage measures to manage runoff. The District completes periodic reviews of the Criteria Manual to identify mitigation actions that can be incorporated in the Hazard Mitigation Plan. DD6 meets on an annual basis to review these regulations, specifically to identify ways to expand criteria and guidance to be used by developers, engineers, and land surveyors in the design of drainage measures to manage runoff.

- **2013 State of Texas Mitigation Plan Update**. The mitigation strategies and goals from the State Plan were reviewed. This plan also incorporated useful tables, figures and information from the State of Texas Mitigation Plan.
- **Flood Protection Planning Study**; **City of Beaumont and Jefferson County Texas;** This study focuses on the Hillebrandt Bayou Watershed and shares some of the same actions and potential projects as this Hazard Mitigation Plan.
- **Jefferson County Flood Insurance Rate Map (FIRM).** The Flood Insurance Rate Maps (FIRMs) prepared by FEMA offer the best overview of flood risks. FIRMs are used to regulate new development and to control the substantial improvement and repair of substantially damaged buildings. The Jefferson County and City of Beaumont FIRMs were reviewed and included in the Plan update to develop a floodplain map identifying the 100-year floodplain within DD6.
- **Jefferson County and the City of Beaumont Flood Insurance Study (FIS)**. The most recent FIS's for both the City of Beaumont and Jefferson County are dated August 6, 2002. These studies were reviewed again as part of the Plan update.
- **Jefferson County Hazard Mitigation Plan.** The plan is currently undergoing its update but reviewed the actions and risk assessment.

INCORPORATION OF THE HAZARD MITIGATION PLAN INTO OTHER PLANNING MECHANISMS

As part of the original HMP development, DD6 integrated components of the Plan into other planning mechanisms. In addition to incorporating some of the Plan requirements in the DD6 Master Drainage Plan, elements of the previous versions of this Plan have been incorporated into the Flood Protection Planning Study; as well as City of Beaumont and Jefferson County Texas hazard mitigation plan. The MPC is currently reviewing the plans listed above and looking for opportunities where components of this HMP update can be integrated into these other plans and studies as well as new plans or studies. Mitigation Plan requirements have been incorporated into DD6's annual project planning and budgeting process. A member from DD6 attends Planning Committee Meetings for both the City and Beaumont and Jefferson County. During these meetings hazard mitigation projects, goals and priorities identified in the DD6 HMP are discussed and then considered by all Planning Committee Members for incorporation into both the City and county level HMP's. Many of the goals and priorities identified in this HMP are similar to the goals and priorities for the City of Beaumont and Jefferson County which will help to ensue this plan is incorporated into those planning mechanisms.

PLAN MAINTENANCE AND CONTINUED PUBLIC INVOLVEMENT

Upon adoption of this Plan update, the public will be notified of any substantial changes to the document between 2016 and the next scheduled Plan update in 2021. Any changes

proposed by the MPC considered significant will be distributed to the list of Stakeholders. The Stakeholders will be encouraged to review the changes and provide comments on any proposed plan revisions.

DD6 will involve the public in the plan maintenance process and during the next Plan Update in 2021, using the same methods as the plan development. The public will be notified when the revision process is started and provided the opportunity to review and comment on changes to the plan and priority action items. It is expected that a combination of informational public meetings, draft documents posted on the web site, and public Board of Director meetings will be undertaken.

The DD6 Hazard Mitigation Plan update will be posted on the District's Web site and notices of its availability will be distributed to the federal and State agencies that were notified and invited to participate in Plan development, Jefferson County, City of Beaumont, City of Bevil Oaks, City of Nome, City of China, adjacent counties and cities, Citizens who attended public meetings and provided contact information; and the organizations, agencies, and elected officials who received notices of public meetings.

PLAN MONITORING, EVALUATING AND UPDATING

The Mitigation Planning Committee determined that progress would be best monitored by annual meetings of the MPC. Upon adoption in 2016, the MPC will meet on an annual basis to discuss the status of the Plan and determine if any significant changes are warranted. As part of the meeting, the Business Manager of DD6 will note progress made on the prior mitigation action items listed in Table 30. To this end, the Business Manager may convene a meeting of the appropriate District, City of Beaumont and Jefferson County Departments to discuss and determine progress, and to identify obstacles to progress, if any.

In addition to annual meetings, the Business Manager will convene meetings after damage-causing natural hazard events to review the effects of such events. Based on those effects, adjustments to the mitigation priorities listed in Table 30 may be made or additional event-specific actions identified.

DD6 will initiate Plan reviews and updates based on the following:

1. On the recommendation of the Business Manager or on its own initiative, DD6 Board may initiate a Plan review at any time.

2. At approximately the one-year anniversary of the Plan's re-adoption, and every year thereafter.

3. After natural hazard events that appear to significantly change the apparent risk to District assets, operations and/or citizens.

4. When activities of DD6, County, or the State significantly alter the potential effects of natural hazards on District assets, operations and/or citizen. Examples include completed mitigation projects that reduce risk, or actions or circumstances that increase risk.

5. When new mitigation opportunities or sources of funding are identified.

In addition to the circumstances listed above, revisions that warrant changing the text of this Plan or incorporating new information may be prompted by a number of circumstances, including identification of specific new mitigation projects, completion of several mitigation actions, or requirements for qualifying for specific funding.

Major comprehensive review of and revisions to this Hazard Mitigation Plan update will be considered on a five-year cycle. To be adopted in 2016, the Plan will enter its next review cycle sometime in 2021. The Mitigation Planning Committee will be convened to conduct the comprehensive evaluation and revision.

The 2021 Update of this plan will begin 2 years prior to expiration of this plan. The Mitigation Planning Committee will begin by reviewing the meeting notes from the Annual review and evaluation meetings that will be taking place throughout the next five years. The planning committee will also review any changes in development and disasters that have occurred within the District since the last version of this Plan. This information will help determine hazards to be included in the Update of this plan and possibly identify mitigation actions needed to address hazards based on the changes in new development. The next Update will follow the same planning process to allow the public input on hazards and prioritization of actions.

SECTION 2 – HAZARD ASSESSMENT

INTRODUCTION

DD6 is a conservation and reclamation district and a political subdivision of the State of Texas. DD6 was established January 21, 1920, after favorable vote on January 10, 1920. It was created primarily to provide drainage of over flow lands within DD6, including the construction and maintenance of drains, ditches and levees, and other improvements of the District.

Although DD6 is subject to a range of hazards typical of the northern Gulf Coast, for the reasons outlined below, DD6 has determined that the most appropriate and useful approach to developing its mitigation plan is to eliminate certain hazards from detailed risk assessment in its Hazard Mitigation Plan. There are three reasons for this: (1) DD6's mission and jurisdictional authority is explicitly limited to activities related to controlling floods (although the organization does have the authority to complete actions to protect and mitigate damage to its own facilities); (2) non-DD6 assets and populations that are potentially exposed to hazards are part of another mitigation plan, and hence including them in the present document would be redundant and serve no meaningful purpose – Jefferson County and the City of Beaumont have both the authority and the responsibility to sponsor mitigation activities for their constituent populations and communities, and; (3) the hazards were determined not to affect District Facilities. DD6 will continue to coordinate with the County and City to ensure that mitigation actions are developed and implemented in a rational manner, reducing or eliminating conflict and overlap between the jurisdictions.

During the Crosswalk review process in the 2010 version of this Plan, the FEMA reviewer highlighted the confusion and inconsistency of addressing a hazard and completing a risk assessment for a hazard that DD6 had no jurisdictional authority to mitigate against and that has no impact on DD6 owned facilities. As opposed to removing any discussion of the hazard, which would have warranted an entire re-write of the plan, it was agreed to provide a narrative discussion for each of these hazard indicating that there is no negative impact to DD6 operations or facilities. As such, it has been determined that the planning area, based on DD6 jurisdictional authority, and DD6 owned facilities will not be negatively impacted from the below hazards. For this reason, the hazards listed below have been eliminated from further consideration and there are no mitigation action items associated with them.

- Extreme Heat – This hazard does not affect District-owned facilities and DD6 has no authority to mitigate against this hazard.
- Drought – This hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Winter Storm – While winter storm can cause pipes to freeze, the need for ice and snow to be removed, and downed power lines, the District facilities have been built to insulate the pipes, have backup generators for downed power lines and have the

necessary equipment to remove ice and snow. This hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.

- Earthquake – Due to the extremely low probability of an earthquake within the planning area, and the fact that there is no record of any historical building damage as a result of seismic activity in the planning area, this hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Land Subsidence – Due to the extremely low probability of a land subsidence within the planning area and the fact that there is no record of any historical occurrences of land subsidence in the planning area, this hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Wildfire – Due to the low probability of Wildfire in the Planning area and the fact that DD6 owned facilities are located in an urban area, this hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Coastal Erosion – Jefferson County, not DD6, maintains beaches and dune systems and the District has no authority to mitigate against this hazard.
- Expansive Soils – Severe damage from expansive soils is not well documented so its occurrence as catastrophically damaging is not documented. This hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Hailstorms – DD6 buildings are built to withstand hail damage and the District has covered parking garages and storage areas to protect all assets from hail damage. This hazard does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Lightning – DD6 facilities are all built to be protected from lightning and therefore, lightning does not affect District owned facilities and DD6 has no authority to mitigate against this hazard.
- Dam/Levee Failure – FEMA and the U.S. Army Corps of Engineers (USACE) maintain the National Inventory of Dams, a database of high and significant hazard dams. For the most part, data are provided by State agencies responsible for regulation and inspection of dams or by the USACE. Based on that inventory, there are no high hazard dams that affect the watersheds in or draining through DD6.

The hazards that DD6 will address as part of this plan update are:

- Tornado
- Thunderstorm/High Wind
- Hurricane and Tropical Storm
- Flood

GEOGRAPHY, CLIMATE, AND POPULATION

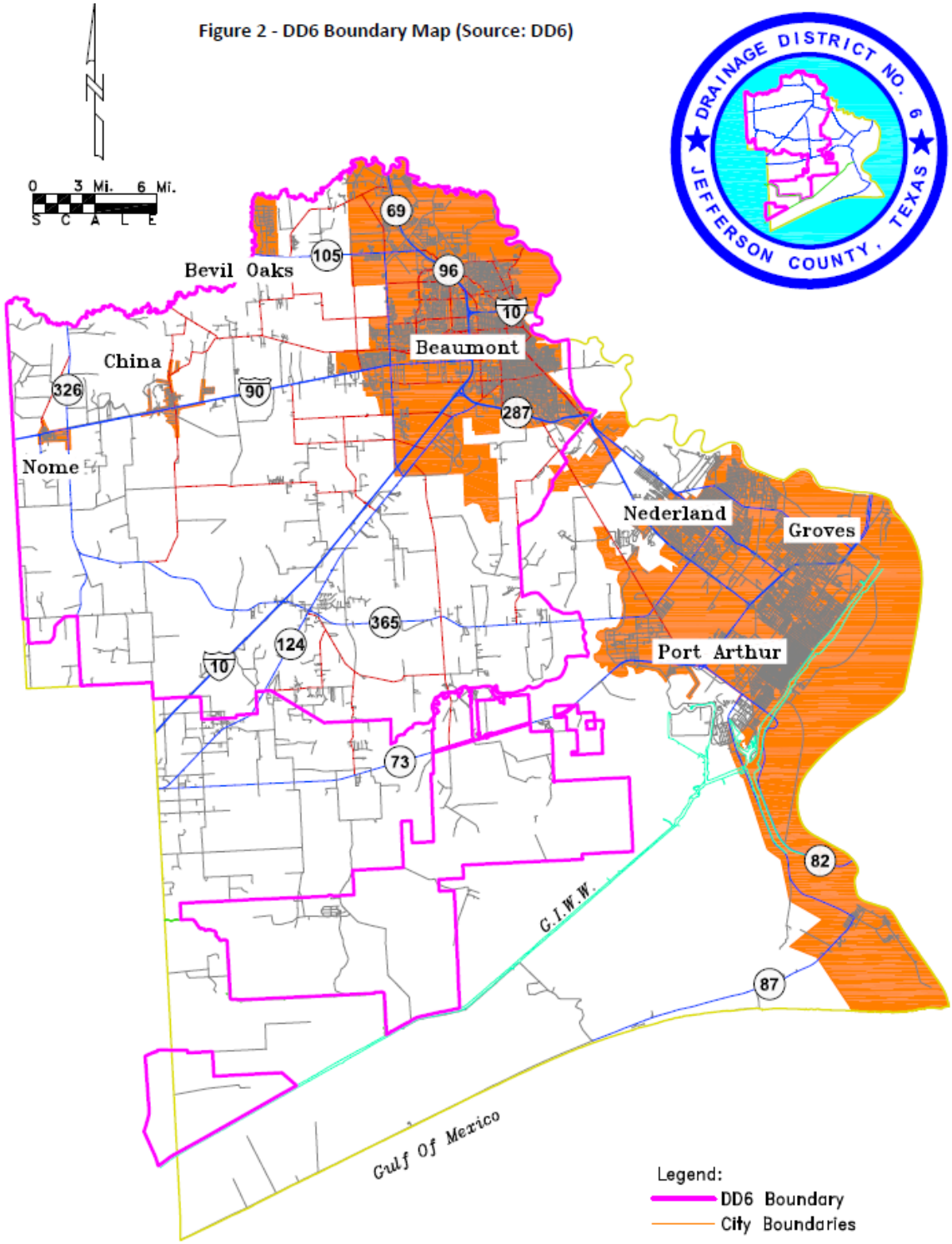
The area covered by Jefferson County Drainage District No. Six (DD6) is located in southeast Texas. The City of Beaumont is the County seat and the largest City of Jefferson County. The City is situated approximately 85 miles east of Houston, approximately 70 miles northeast of Galveston, and 275 miles southeast of Dallas (Figure 1). Ground surface elevations across DD6 vary from 37 feet to 3 feet above mean sea level. The topography is described as nearly flat prairie and the geologic structure is nearly flat strata. The bedrock types are comprised of deltaic sands and muds. Data from the Bureau of Economic Geology, at the University of Texas at Austin, identifies the land as "expansive clay and mud – locally silty, locally calcareous, flat to low; hilly prairie; commonly tilled".

Figure 1 - Vicinity Map: State of Texas (Source: Mapquest)

The climate of the region is humid subtropical, with warm summers and moderate winters. Rainfall is abundant and on the average, evenly distributed throughout the year. The heaviest rains usually occur during the hurricane season, which extends from June through October. Average annual precipitation for the area is approximately 56 inches and the average annual temperature is about 69 degrees.

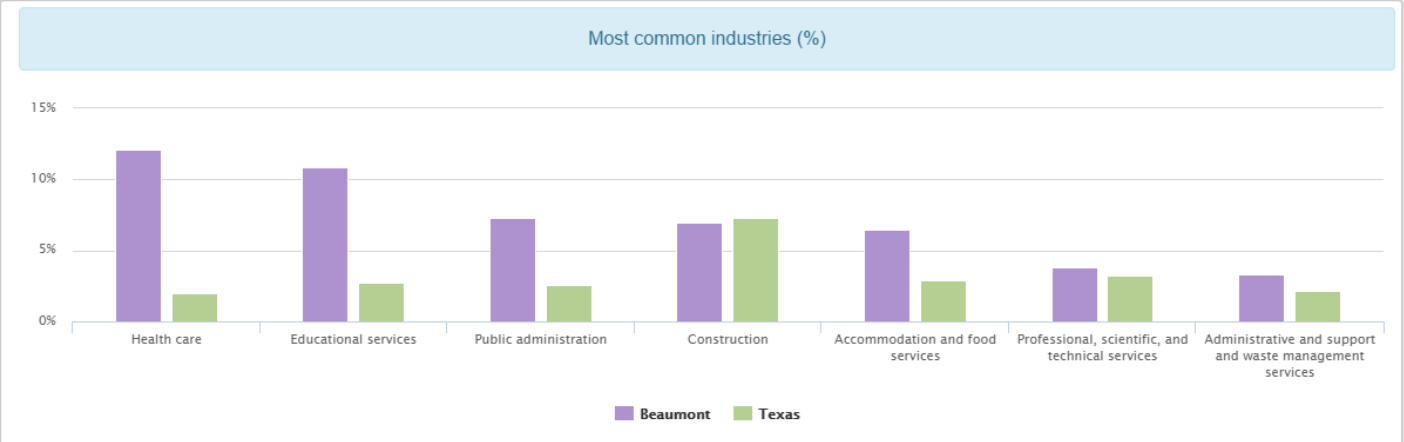
Jefferson County Drainage DD6 consists of approximately 487 square miles and lies entirely within Jefferson County and the City of Beaumont. Figure 2 is a map identifying the boundary area (shown in pink) for Jefferson County DD6. The DD6 Hazard Mitigation Plan Update is prepared for the entire District.

Figure 2 - DD6 Boundary Map (Source: DD6)



According to the United States Census Bureau, Jefferson County as a whole had an estimated total population of 252,235 in 2014. This is a 3.7 percent increase from the 2008 census data, which estimated the Jefferson County population at 243,090. In 2014, the population of the labor force in Jefferson County was 109,639, approximately a one percent increase from the estimated labor force in year 2000. The original Plan indicated the top three industries in the County were education, health, and social services. As of 2013, the top three industries were health care, educational services and public administration as indicated by Table 3.

Table 3 – Most Common Industries, Beaumont, Texas (Source: www.City-data.com)



Jefferson County includes both incorporated and unincorporated areas. The population totals for the eight incorporated areas within the County are identified in Table 4. As indicated in the table, the cities of Beaumont, Bevil Oaks, China, and Nome are located within Jefferson County DD6. The population of the four cities within the planning area consists of over half the County population. The remaining incorporated areas are located outside of the planning area. The population of unincorporated Jefferson County totals 31,562.

Table 4 - Incorporated Areas of Jefferson County (Source: US Census Bureau, 2014 - Estimates)

City	Overall Population	Within DD6 Planning Area	Population within Planning area
Beaumont	117,585	Yes	117,585
Bevil Oaks	1,244	Yes	1,244
China	1,127	Yes	1,127
Nome	561	Yes	561
Groves	15,753	No	N/A
Nederland	17,108	No	N/A
Port Arthur	54,540	No	N/A
Port Neches	12,755	No	N/A
Total	220,673		120,517

The City of Beaumont is the largest municipality in the planning area and as of 2014 had an estimated population of 117,585.

Table 5 identifies the total number and estimated value of buildings/infrastructure within Jefferson County DD6. The table indicates there are 50,266 residential buildings and 7,666 commercial buildings. As shown in Table 4 of the Plan update, the total population of the incorporated areas within DD6 is 120,517. The total population in DD6 is slightly higher than this figure when considering the additional residents living within the unincorporated areas. The data in Table 4 is used periodically throughout this section to identify the overall District-wide exposure for certain hazards that equally impact the entire planning area such as hurricanes/tropical storms.

Table 5 – Buildings/Infrastructure within Jefferson County Drainage District Six (Sources: Jefferson County Central Appraisal District)

Type	Number of Structures	Estimated Value
Residential Buildings*	50,266	$4,933,674,187
Commercial Buildings*	7,666	$16,065,585,012
District owned Buildings or structures**	19	$3,342,142
Total	57,951	$21,202,601,341

* – Value and number of structures based on percent of County population in the Planning Area.

** –Value based on insured value of District owned structures

OVERVIEW OF RISKS

Numerous federal agencies maintain a variety of records regarding losses associated with natural hazards. Unfortunately, no single source is considered to offer a definitive accounting of all losses. FEMA maintains records on federal expenditures associated with declared major disasters. The U.S. Army Corps of Engineers (USACE) and the Natural Resources Conservation Service collect data on losses during the course of some of their ongoing projects and studies. National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) database is another source where data statistics such as injuries, deaths, and damage estimates are maintained for a variety of natural hazards. The data is maintained at the county-wide level, with more recent entries listing the specific location within the county. Although not always specific to DD6, this county-wide hazard data from the NCDC is often the best available resource for documenting historical events. For the hazards profiled, the query results from the NCDC database are provided in the hazard specific subsections.

In the absence of definitive data on some of the natural hazards that may occur in DD6, illustrative examples are useful. Table 6 provides brief descriptions of particularly significant natural hazard events occurring in DD6's recent history. This list is not meant to capture every

event that has affected the area, rather lists one or two examples of the types of events that have affected the area in the past.

Data on Presidential Disaster Declarations characterize some natural disasters that have affected the area. In 1965, the federal government began to maintain records of events determined to be significant enough to warrant declaration of a major disaster by the President of the United States. Presidential Disaster Declarations are made at the county level and are not specific to any one city or sub-area, such as DD6. Given that DD6 is responsible for drainage in a large portion of Jefferson County, it is likely that a disaster declaration for Jefferson County affected DD6 in some way. Between 1965 and 2009 twelve such disasters have been declared in Jefferson County and are identified in Table 6. In addition to the declared events, the table also includes several incidents which did not receive a Presidential Disaster Declaration. Since the last update, while the State of Texas has received 9 more Presidential Disaster Declaration, none of those have impacted or included Jefferson County.

Table 6 –Natural Hazard Events and Declared Major Disasters in Jefferson County

(Sources: Public Entity Risk Institute (PERI) website, FEMA, NCDC database)

Date & Disaster (DR)	Nature of Event
November 7, 1957	TORNADO (F3) – An F3 tornado touched down in Jefferson County. This tornado was 200 yards wide and stayed on the ground for 4 miles causing $2.5M in damages, 2 deaths, and 59 injuries.
June 29, 1973 (DR-393)	SEVERE STORMS AND FLOODING – a massive storm hit the Houston Texas area dumping 10 – 15 inches of rain. In total the storm resulted in 10 deaths and over $50M in damage.
April 26, 1979 (DR-580)	SEVERE STORMS, TORNADOES, AND FLOODING – (Nearly 300 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $2.8 M in payments). Rainfall reported in amounts between 9.56 to 10.7 inches in the Beaumont area and 11.5 inches in Bevil Oaks are, flooded many communities along the Neches river and Taylor, Pine Island, and Hillebrandt Bayous. Pine Island crested at 34.29 feet at Sour Lake, surpassing a record 31 feet set in 1917. Many homes, businesses and roads in the area were damaged.

Date & Disaster (DR)	Nature of Event
July 28, 1979 (DR-595)	STORMS AND FLASH FLOODS - (Over 100 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $700K in payments). Tropical Storm Claudette formed in the Central Atlantic the morning of July 15, 1979. It never reached hurricane intensity as it wandered across the northern Caribbean, and the Gulf of Mexico 10 days, making landfall near Port Arthur the evening of the 24th. Rainfall was estimated at 11 inches in the Beaumont area. The area suffered severe wind damage to utilities.
September 26, 1980 (DR-632)	TROPICAL STORM DANIELLE - (Over 200 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $1.5M in payments). Rains of 8-9 in. fell on most of Texas. Particularly hard hit were Fisher, Mitchell, Nolan, and Scurry Counties.
May 31, 1989 (DR-828)	SEVERE STORMS, TORNADOES AND FLOODING - (28 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $500K in payments). Widespread rains caused flooding that resulted in five deaths and total damages of about $50 million. The storm dumped between 10 and 15 inches of rain in the southeast Texas area. Homes in Bevil Oaks flooded.
July 18, 1989 (DR-836)	TROPICAL STORM ALLISON - (Over 400 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $3.8M in payments). Tropical Storm Allison caused torrential rains of 10-15 in. from Houston to Beaumont. Houston Intercontinental Airport recorded 10.34 in. during 24 hours. The storm resulted in three deaths and over $60M in damages.
November 15, 1994 (DR-1041)	SEVERE THUNDERSTORMS AND FLOODING - (Over 200 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $5.5M in payments). A tropical, mid-latitude rainfall of unusual proportion on a 30- to 35-county area of southeast Texas resulted in catastrophic flooding. The intense rainfalls totaled more than 25 in. at several locations and more than 8 in. on much of southeast Texas. The storm resulted in 18 deaths and an estimated $700M in damages.

Date & Disaster (DR)	Nature of Event
May, 1996	DROUGHT - Drought conditions continued across southeast Texas. Rainfall totals from January through May averaged 10 to 15 inches below normal. The main areas affected include farming and fire protection. Crop damage across the entire region exceeded 1 million dollars.
August 12, 1996	SEVERE LIGHTNING - As many as 9,000 lightning strikes this evening resulted in one man injured, one house fire, and several telephone poles damaged.
January 14, 1997	ICE STORM - A record ice storm paralyzed southeast Texas and southwest Louisiana. Around 90,000 electric customers across southeast Texas were without power for up to six days. Emergency shelters were opened for several nights due to the cold weather following the ice storm. More trees and power lines were knocked down in this ice storm than what came down during Hurricane Bonnie in 1986. Hundreds of homes received minor damage due to trees or tree limbs falling on roofs. Several house fires were directly or indirectly related to the ice storm, but fortunately there were only no injuries. Numerous traffic accidents attributed to icy roads led to several minor injuries. One death was indirectly attributed to the ice storm. Two men were electrocuted on Tuesday, January 21st, while doing cleanup work for a local electric company. One 48 year old man died, and a 19 year old man was seriously injured in the accident
August, 26 1998 (DR-1239)	TROPICAL STORM CHARLEY – (Limited damage in Jefferson County) Up to 16 in. of rainfall in south-central Texas caused flooding in many counties, to include Jefferson
October, 14 1998 (DR-1245 & 1257)	HURRICANE GEORGES - (23 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $200K in payments). Tropical Storm Frances, and a localized thunderstorm that followed later in the same month, resulted in widespread flooding.
August 31, 2000	EXTREME HEAT - Record heat occurred in late August across southeast Texas. At the Southeast Texas Regional Airport, the all-time record high of 108 was tied on August 31st. Previously it had been achieved on July 14 1902.

Date & Disaster (DR)	Nature of Event
June 9, 2001 (DR-1379)	TROPICAL STORM ALLISON - (Nearly 500 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $12 M in payments). Tropical Storm Allison produced flooding throughout Southeast Texas, Louisiana, and across the eastern United States. Damages were estimated at $5 Billion and prompted a Presidential disaster declaration for 30 counties in Texas.
October 29, 2002 (DR-1439)	SEVERE STORMS, TORNADOES AND FLOODING – (Over 400 Jefferson County/City of Beaumont policy holders filed flood claims resulting in over $8.7M in payments). This unnamed storm produced heavy rains, causing flooding throughout Jefferson County.
September, 24, 2005 (DR-1606)	HURRICANE RITA – Hurricane Rita made landfall just east of the Texas-Louisiana border. Along the coast of Jefferson County, storm surges near 10 feet occurred near Sabine Pass, where over 90 percent of the homes were severely damaged or destroyed. The storm surge backed up the Sabine River, and flooded a small section of downtown Orange with around four to five feet of storm surge. High winds estimated at over 100 mph snapped and uprooting trees, and damaged over 125,000 homes and businesses.
September 13, 2008 (DR-1791)	HURRICANE IKE - Ike delivered a 17.5-foot storm surge on Jefferson County's coastal plain and dropped anywhere from 6 to 20 inches of rain, depending on where in the County it was measured. The surge caused flooding in the county's sparsely developed coastal areas, though no flooding occurred as a result of heavy rain. In total, at least 4,000 homes were flooded in Jefferson County. Within DD6, the event caused no flood related property damages, mainly due to recently completed mitigation efforts.

Jefferson County Drainage District Six has the authority to mitigate tornadoes, hurricanes and thunderstorm/high winds when they threaten DD6 buildings and assets. They also have the authority to mitigate against the flood hazard in all aspects. The National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) collects and maintains certain hazard data in summary format, indicating injuries, deaths, and estimated damages.

For each hazard profiled in the present section, the planning team assigned a highly likely, likely, occasional or unlikely probability of future occurrences. The hazard probability was assigned in accordance with table 7 below.

Table 7 – Frequency of Hazard Occurrence

Frequency of Occurrence:
☐Highly likely: Event probable in next year.
☐Likely; Event probable in next three years
☐Occasional; Event possible in next five years
☐Unlikely; Event possible in next ten years

To deduce which hazards leave DD6 most vulnerable, the MPC ranked each hazard the potential to cause damage, disrupt continuity of operations or shutdown facilities by providing a classification. Definitions for overall vulnerability are subjective based primarily on future probability, impact and severity, with additional considerations for potential impacts locations of buildings, critical facilities and infrastructure. Vulnerability classification criteria are general and involve some degree of overlap amongst classes. Definitions for overall vulnerability classifications used are listed in Table 8.

Table 8 – Level of Vulnerability

Level of Vulnerability	Description
Very High	High probability of future occurrence and potential catastrophic severity
High	Moderate/high probability of future occurrence and potential critical severity
Moderate	Moderate probability of future occurrence and limited potential severity
Low	Low/moderate probability of future occurrence and limited/negligible potential severity

TORNADO

A tornado is defined as a rapidly rotating vortex or funnel of air extending ground-ward from a cumulonimbus cloud. Most of the time, vortices remain suspended in the atmosphere and are visible as a funnel cloud. However, when the lower tip of a vortex touches the ground, the tornado becomes a force of destruction.

TORNADO LOCATION

Figure 3 – Vicinity Map: State of Texas (Source: Mapquest)

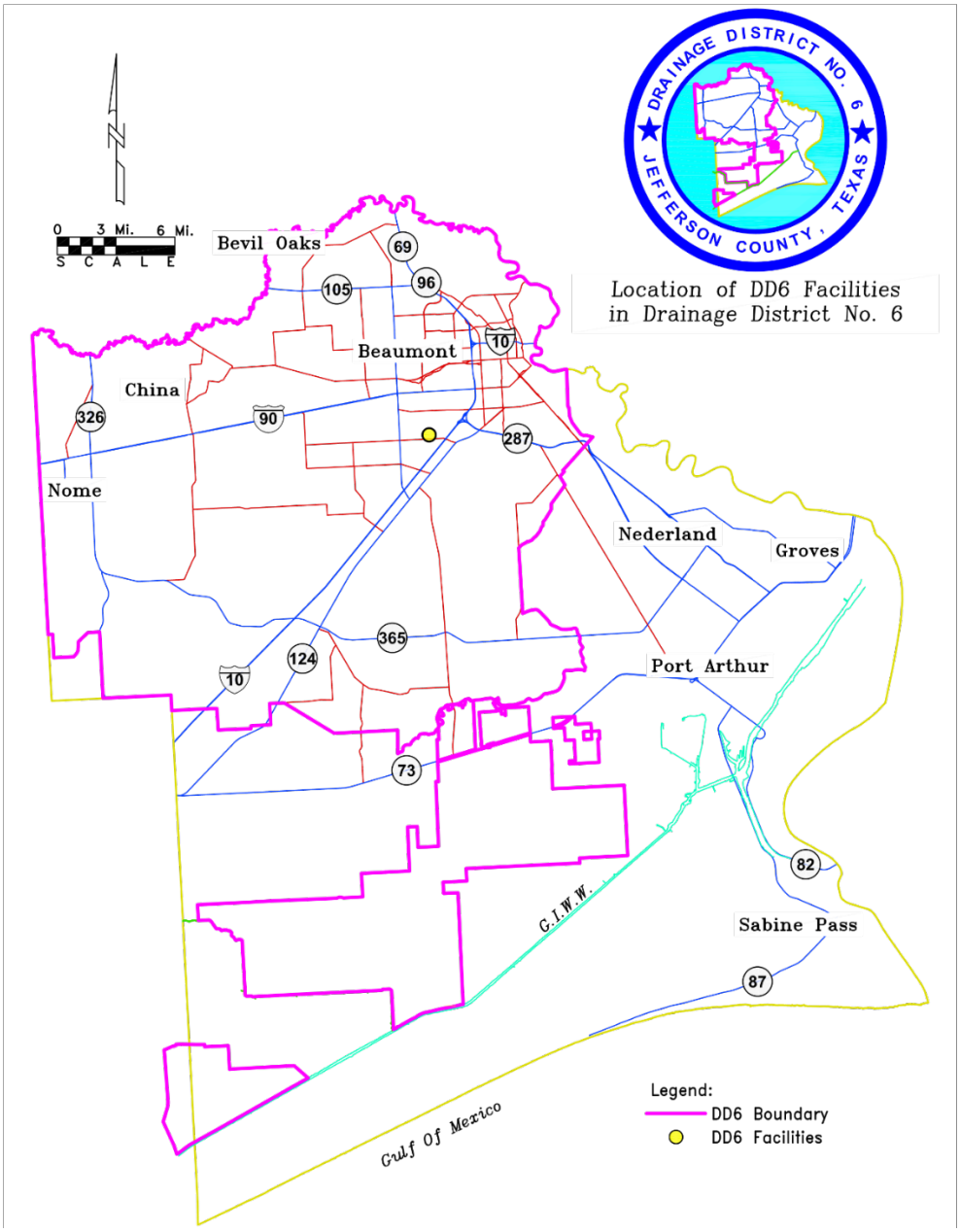
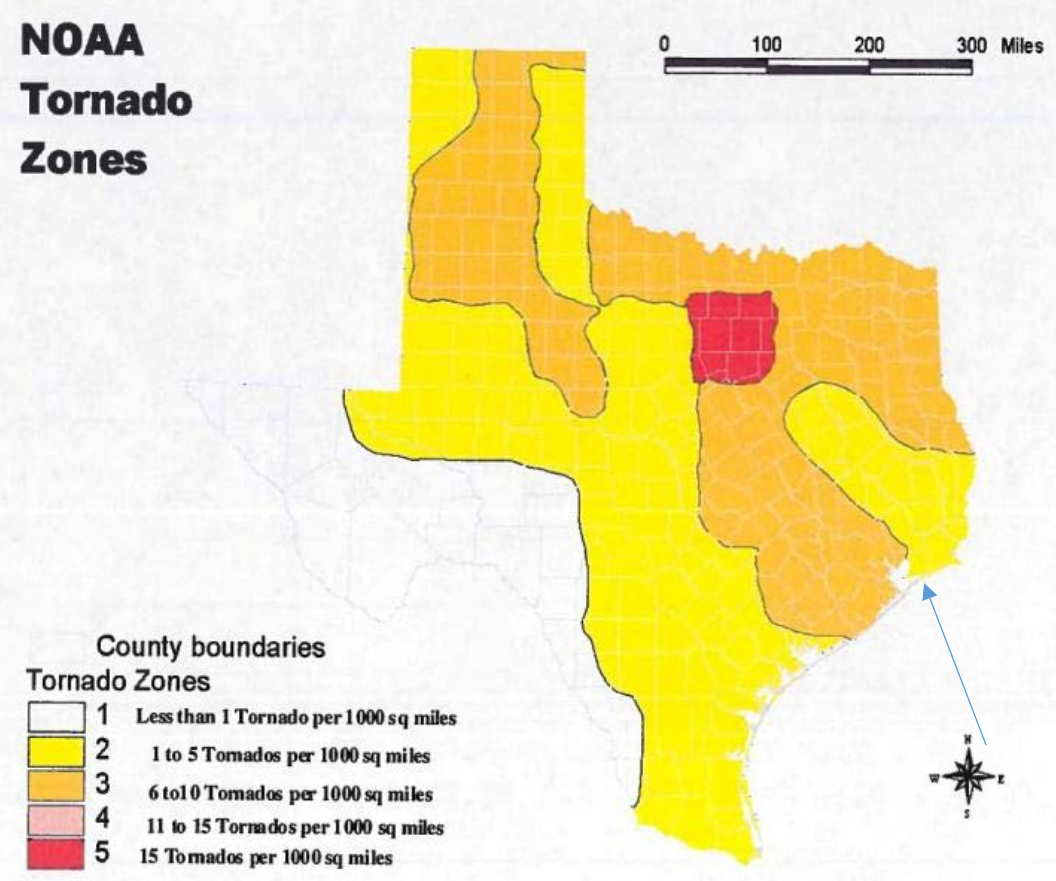


Figure 4 illustrates the frequency of tornado strikes in Texas per 1,000 square miles. Texas is considered the U.S. "tornado capital." While Texas tornadoes can occur in any month and at all hours of the day or night, they occur with greatest frequency during the late spring and early summer months during late afternoon and early evening hours. Northern Texas is most vulnerable, but the area around DD6 experiences 1 – 5 tornadoes per 1,000 square miles. The tornado hazard affects the entire planning area equally.

Figure 4 – Tornado Activity in the U.S. (Source: NOAA – Storm Prediction Center)



TORNADO EXTENT

Tornado damage severity is measured by the Enhanced Fujita Tornado Scale (EF-Scale). The Enhanced Fujita Scale assigns numerical values based on wind speed and categorizes tornadoes from zero to five representing increased degrees of damage. Tornadoes are related to larger vortex formations, and therefore often form in convective cells such as thunderstorms or in the right forward quadrant of a hurricane or tropical storm, far from the hurricane eye. Table 9 describes the categories for the Enhanced Fujita Tornado Scale. We can expect to experience a tornado ranging from EF0 to EF5 in the planning area.

Table 9 – Enhanced Fujita (EF) Scale

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (mph)**	**Potential Damage**
EF0	65-85	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.

PREVIOUS OCCURRENCES OF TORNADO

According to the NCDC database, Jefferson County experienced 101 tornadoes (42 F0s, 29 F1s, 2EF1s, 20 F2s, and 6 F3s) between 1950 and 2016 (experiencing just one event since the last planning effort was underway). There is not specific data for just Jefferson County DD6, but the hazard is reasonably predicted to have uniform probability of occurrence across the entire planning area. Note that prior to 2007, the Fujita (F) Scale was used. Again, note that the boundaries of the DD6 planning area do not correspond exactly to Jefferson County, which is the reporting area for the NCDC, so the figure should be regarded as a general indication of event history area-wide. For these events, the NCDC database reported three deaths, 142 injuries and just $55.979 Million in damages. Table 10 summarizes the 31 tornadoes that resulted in at least $50,000 in damages.

Table 10 – Tornado Events in Jefferson County with at Least $50,000 in Property Damage (Source: NCDC Storm Events Database)

Location	County/ Zone	St.	Date	Time	T.Z.	Mag	Dth	Inj	PrD
Totals:							3	142	55.979M
GILLBURG	JEFFERSON CO.	TX	08/18/2009	12:57	CST-6	EF1	0	10	20.000M
GROVES	JEFFERSON CO.	TX	04/03/2000	03:20	CST	F1	0	0	3.000M
JEFFERSON CO.	JEFFERSON CO.	TX	11/07/1957	21:15	CST	F3	2	59	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	10/11/1970	14:47	CST	F2	0	0	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	10/11/1970	15:30	CST	F3	0	19	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	11/13/1972	05:25	CST	F2	0	0	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	06/11/1973	21:05	CST	F1	0	0	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	10/22/1979	04:44	CST	F2	0	0	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	01/31/1983	14:00	CST	F3	0	1	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	05/20/1983	13:15	CST	F0	0	0	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	05/20/1983	13:40	CST	F0	0	0	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	05/20/1983	13:45	CST	F2	1	9	2.500M
JEFFERSON CO.	JEFFERSON CO.	TX	05/20/1983	14:01	CST	F1	0	3	2.500M

BEAUMONT	JEFFERSON CO.	TX	10/13/2001	03:55	CST	F1	0	0	1.000M
NOME	JEFFERSON CO.	TX	01/01/1999	23:45	CST	F3	0	5	500.00K
CHINA	JEFFERSON CO.	TX	10/16/2006	05:00	CST-6	F1	0	0	300.00K
JEFFERSON CO.	JEFFERSON CO.	TX	11/07/1957	21:23	CST	F3	0	1	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	08/05/1964	18:20	CST	F2	0	6	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	07/15/1969	16:10	CST	F1	0	0	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	05/12/1972	07:23	CST	F2	0	2	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	07/29/1972	15:00	CST	F1	0	0	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	05/26/1973	03:45	CDT	F2	0	3	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	10/28/1974	13:55	CST	F2	0	3	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	09/05/1980	16:45	CST	F1	0	0	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	04/23/1981	11:15	CST	F2	0	2	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	04/10/1984	23:30	CST	F0	0	0	250.00K
JEFFERSON CO.	JEFFERSON CO.	TX	02/18/1987	04:50	CST	F1	0	0	250.00K
HAMSHIRE	JEFFERSON CO.	TX	04/03/2000	03:08	CST	F1	0	1	100.00K
BEAUMONT	JEFFERSON CO.	TX	11/18/2003	01:00	CST	F0	0	0	100.00K
NOME	JEFFERSON CO.	TX	06/09/2010	04:32	CST-6	EF1	0	0	100.00K
PORT ARTHUR	JEFFERSON CO.	TX	07/14/1997	15:05	CST	F0	0	3	50.00K

TORNADO PROBABILITY

Though Jefferson County DD6 has experienced 101 tornadoes between 1950 and 2016, many of these events reported occurred on the same day and are considered part of the same storm system. Most of the tornado events are from EF0 to EF2, with the catastrophic tornado events occurring with far less chance. An average of damaging tornadoes across the planning area provides the probability. With 31 significantly damaging events over 66 years, the frequency of an event is:

Table 11 – Frequency of Tornado Occurrence

Frequency of Occurrence:
☐Highly likely: Event probable in next year
☒Likely; Event probable in next three years
☐Occasional; Event possible in next five years
☐Unlikely; Event possible in next ten years

It should be noted that due to DD6's missions and jurisdictional authority being explicitly limited to activities related to controlling floods, they only have the authority to mitigate the effect of tornadoes on District owned facilities and personnel.

TORNADO IMPACT AND VULNERABILITY

DD6's missions and jurisdictional authority being explicitly limited to activities related to controlling floods, they only have the authority to mitigate the effect of tornadoes on District owned facilities and personnel. The FEMA software used for assessing tornado risk is based exclusively on life safety. Since the last version of the plan, DD6 built a 3,000 sq. ft. tornado shelter built to house District Staff during a tornado event, in accordance with FEMA 361 - Design and Construction Guidance for Community Shelters. This building can easily house all 150 employees for the duration of a tornado event.

Considering the analysis is based entirely on avoided injuries and fatalities, the tornado risk for DD6 is considered $0. Even though District facilities and personnel are not vulnerable to tornadoes, based on our analysis, other District assets such as tractors, bulldozers, dump trucks, excavators and many other vehicles totaling to $18,551,880 in insured value, may still have some risk of being damaged by tornadoes either while in storage or on project sites. However, the size and number of vehicles owned by the District make trying to protect all of them from tornadoes infeasible. The District's vulnerability is considered Low as defined in Table 8.

HURRICANES AND TROPICAL STORMS

Hurricanes, tropical storms, and typhoons, collectively known as tropical cyclones, are among the most devastating naturally occurring hazards in the United States. They present flooding, storm surge, and high wind hazards to the communities that they impact.

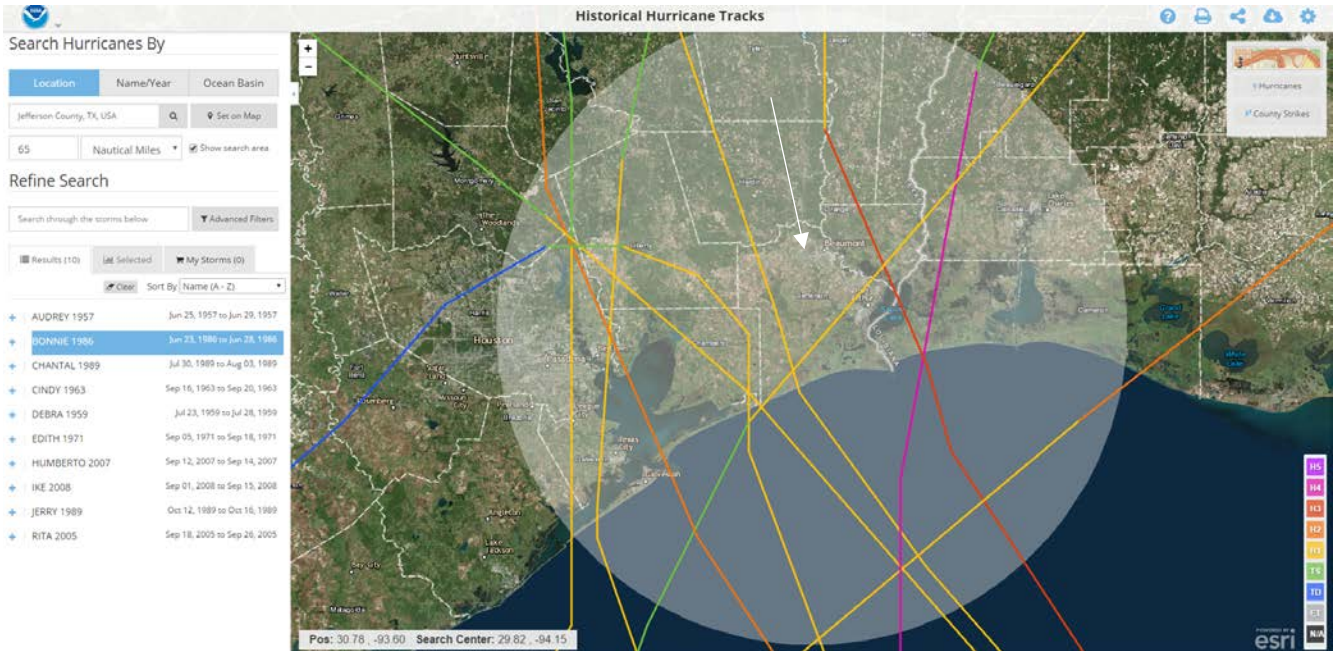
A hurricane is defined as a low-pressure area of closed circulation winds that originates over tropical waters.

Hurricanes bring high winds and heavy rains and are usually accompanied by high storm surge; a rapid rise of offshore water elevation primarily caused by the combination of extremely high winds over a large stretch of open water and low barometric pressure which accompany a hurricane, together working to create a dome of water near the eye of the hurricane. As the hurricane nears land, its winds push the dome toward the shore while the slope of the sea floor blocks the water's escape and it comes ashore as a rising surge.

HURRICANE AND TROPICAL STORM LOCATION

A hurricane or tropical storm occurs every year during hurricane season which begins in May and ends in November. Some of these storms dissipate before making landfall, but have the chance of striking anywhere on the Golf Coast or eastern seaboard. According to the National Hurricane Center's Historical Hurricane Tracker, from 1950 to 2016, there have been ten hurricanes and 11 tropical storms within a 65 nautical mile radius of Jefferson County Texas. Figure 5 shows the planning area, indicated by the white arrow, and the ten hurricanes that came within 65 nautical miles. As shown by the figure, there were six H1s, two H2s, one H3 and one H4.

Figure 5 – Historical Hurricane Tracks for Jefferson County TX (National Hurricane Center)



HURRICANE AND TROPICAL STORM EXTENT

A hurricane begins as a tropical depression with wind speeds below 39 mph. As it intensifies, it may develop into a tropical storm, with further development producing a hurricane. Hurricane winds blow in a large spiral around a relative calm center known as the "eye." The "eye", the storm's core, is an area of low barometric pressure and is generally 20 to 30 miles wide. The storm may extend outward 100 - 400 miles in diameter. As a hurricane approaches, the skies will begin to darken and winds will grow in strength. As a hurricane nears land, it can bring torrential rains, high winds, storm surges, and severe flooding. Table 12 and Table 13 below identify the criteria for each stage of development. The Saffir / Simpson Hurricane Scale is used to classify storms by numbered categories. Hurricanes are classified as Categories 1 through 5 based on central pressure, wind speed, storm surge height, and damage potential. We can

expect to experience a storm ranging from a tropical depression to a category 5 hurricane in the planning area.

Table 12 – Classification of Tropical Cyclones

Stage of Development	Criteria
Tropical Depression (development)	**Maximum sustained surface wind speed is < 39 mph**
Tropical Storm	**Maximum sustained wind speed ranges 39 - <74 mph**
Hurricane	**Maximum sustained surface wind speed 74 mph+**
Tropical Depression (dissipation)	**Decaying stages of a cyclone in which maximum sustained surface wind speed has dropped below 39 mph**

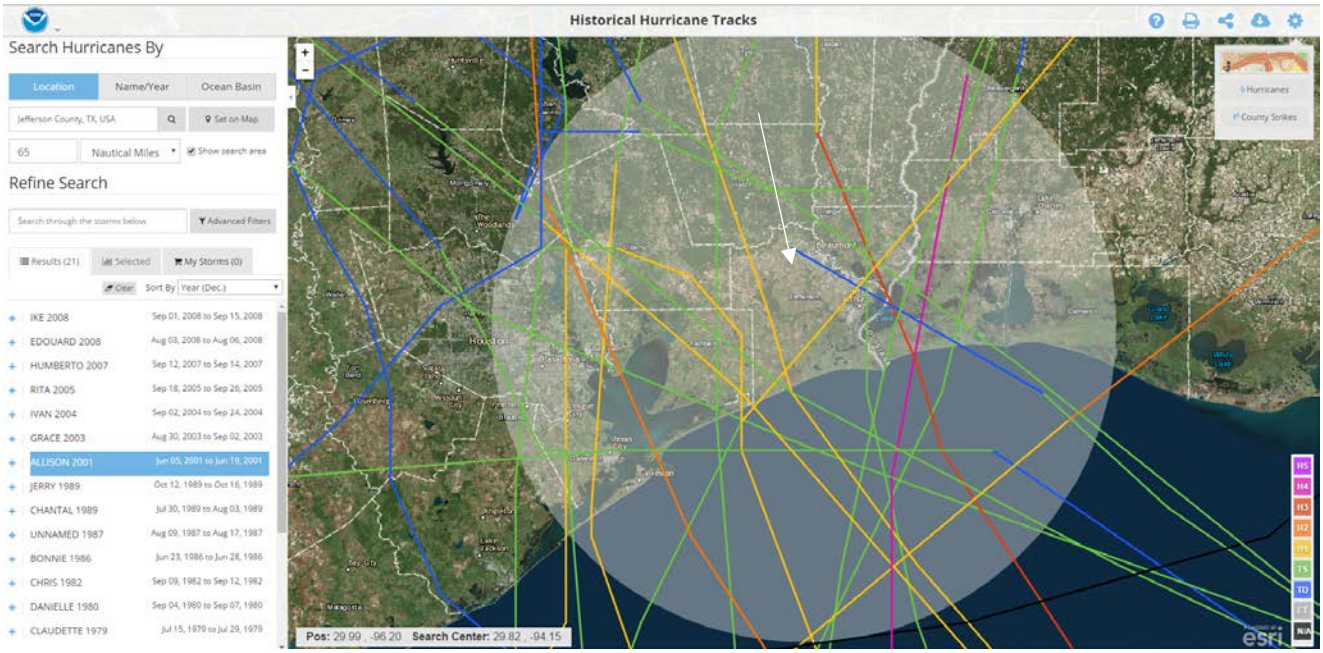
Table 13 – Saffir/Simpson Hurricane Scale

Storm Category	Central Pressure	Sustained Winds	Storm Surge	Potential Damage
1	> 980 mbar	74 - 95 mph	4 – 5 ft	**Minimal**
2	965 – 979 mbar	96 - 110 mph	6 – 8 ft	**Moderate**
3	945 – 964 mbar	111 – 130 mph	9 – 12 ft	**Extensive**
4	920 – 944 mbar	131 – 155 mph	13 – 18 ft	**Extreme**
5	**< 920 mbar**	**> 155 mph**	**> 18 ft**	**Catastrophic**

PREVIOUS OCCURRENCES OF HURRICANES AND TROPICAL STORMS

The NCDC database was queried for previous events, but only six were shown, so the National Hurricane Center's (NHC) Historical Hurricane Tracker was used. This hurricane tracker showed ten hurricanes and 11 tropical storms within 65 nautical miles of Jefferson County between 1950 and 2016. There have been no hurricanes or tropical storms experienced by DD6 since the last version of this plan. There is not specific data for just DD6, but it is reasonable to assume that if a hurricane or tropical storm effected the county, it would also effect DD6 because of the size and magnitude of the hazard. The six events shown on the NCDC database were from 1998 to 2008 and caused $1.255 Billion in property damage. The 21 events from the NHC are shown below in Figure 6.

Figure 6 – Historical Hurricane Tracks for Jefferson County TX (National Hurricane Center)



HURRICANE AND TROPICAL STORM PROBABILITY

DD6 has experienced 21 tropical storms and hurricanes between 1950 and 2016. Even though DD6 has not experienced a hurricane or tropical storm in over seven years, it is reasonable to assume that one such storm will affect the planning area once every three years or so.

Table 14 – Frequency of Tropical Storm and Hurricane Occurrence

Frequency of Occurrence:
☐Highly likely: Event probable in next year
☒Likely; Event probable in next three years
☐Occasional; Event possible in next five years
☐Unlikely; Event possible in next ten years

It should be noted that due to DD6's missions and jurisdictional authority being explicitly limited to activities related to controlling floods, they only have the authority to mitigate the flood portion of the hurricane and tropical storm hazard except where it is related to District owned facilities and property.

HURRICANE AND TROPICAL STORM IMPACT AND VULNERABILITY

DD6's missions and jurisdictional authority being explicitly limited to activities related to controlling floods, they only have the authority to mitigate the effect of hurricanes and tropical storms on District owned facilities and personnel. The FEMA software used for assessing hurricane and tropical storm wind risk is based exclusively on life safety. Since the last version of the plan, DD6 built a 3,000 sq. ft. tornado and hurricane shelter built to house District Staff

during a tornado or hurricane event, in accordance with FEMA 361 - Design and Construction Guidance for Community Shelters. DD6 also installed hurricane shutters on their administrative building and their engineering building. Hurricane and tropical storm events have a very long warning time, so when an event is expected to hit, all employees will be evacuated other than essential personnel. That essential personal can easily stay within the hurricane shelter throughout the duration of an event. Considering the analysis is based entirely on avoided injuries and fatalities, the hurricane risk for DD6 is considered $0. Even though District facilities and personnel are not vulnerable to hurricanes, based on our analysis, other District assets such as tractors, bulldozers, dump trucks, excavators and many other vehicles totaling to $18,551,880 in insured value, may still have some risk of being damaged by hurricanes either while in storage or on project sites. However, the size and number of vehicles owned by the District make trying to protect all of them from hurricanes infeasible. DD6 closely monitors the weather and takes proactive steps, when possible, to move vulnerable equipment to higher ground when equipment is being operated or staged in a floodprone area. The District's vulnerability is considered Low as defined in Table 8.

SEVERE THUNDERSTORMS AND HIGH WINDS

Several meteorological conditions can result in winds severe enough to cause property damage. High winds have been associated with extreme hurricanes traveling inland, tornadoes, and locally strong thunderstorms. Thunderstorms are the by-products of atmospheric instability, which promotes vigorous rising of air particles. A typical thunderstorm may cover an area three miles wide. The National Weather Service considers a thunderstorm "severe" if it produces tornadoes or winds of 58 miles per hour or more. Structural wind damage may imply the occurrence of a severe thunderstorm.

SEVERE THUNDERSTORM AND HIGH WIND LOCATION

Figure 7 - Vicinity Map: State of Texas (Source: Mapquest)

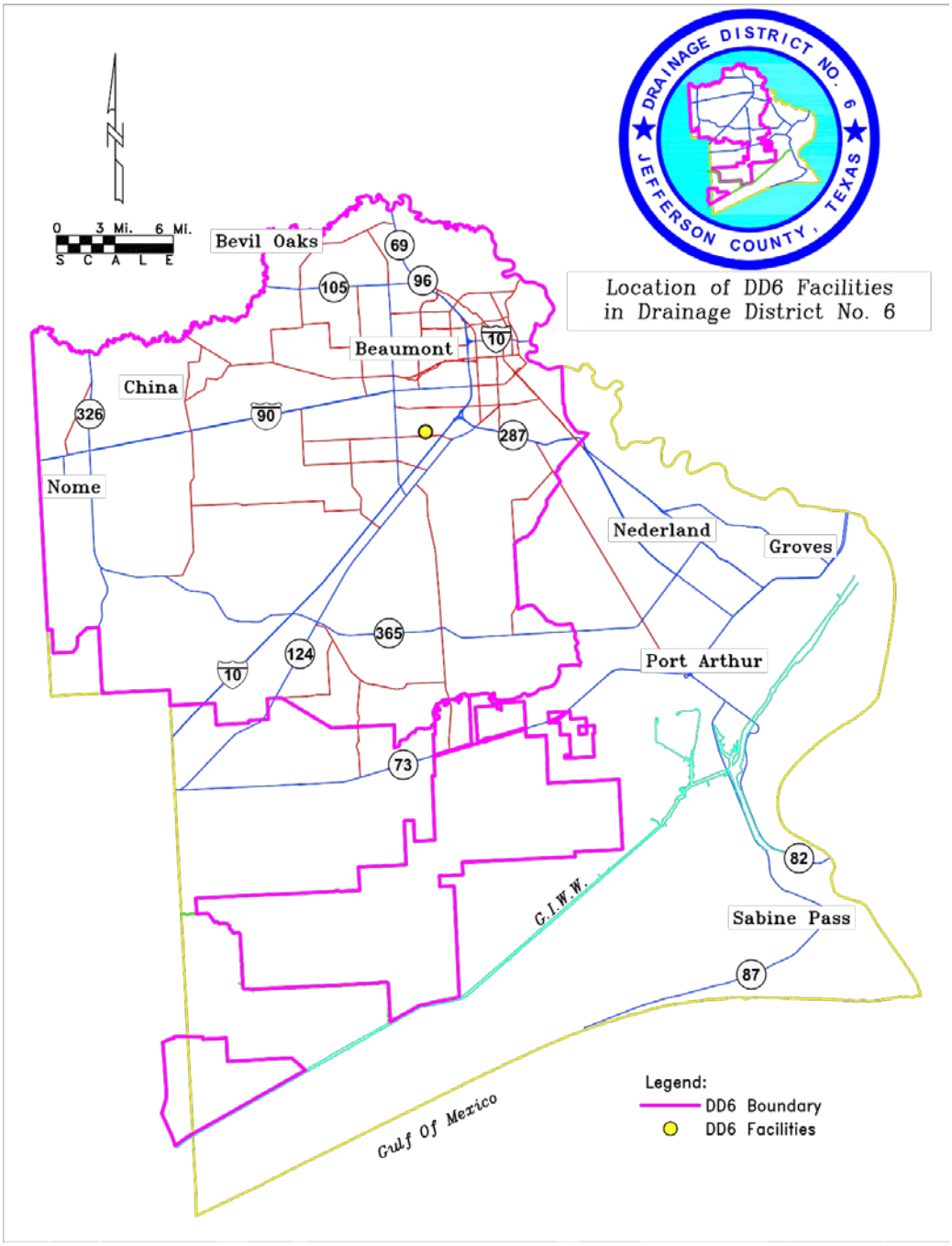


Figure 8 illustrates the minimum wind speed that buildings should be designed to withstand for buildings in Texas according to the International Building Code. As you can see below, new construction in DD6 should be built to withstand three-second gusts up to at least 140 MPH in some places and 150 MPH in others.

Figure 8 – Basic Design Wind Speed (Source: International Building Code)

Notes:
1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).

SEVERE THUNDERSTORM AND HIGH WIND EXTENT

The most widely accepted extent scale for wind is the Beaufort Wind Scale. The table below shows the force of the storm and the wind speed, classification and appearance that that is associated with each force. In the planning area we can expect to experience wind events ranging from light winds to hurricane force winds.

Table 15 – Beaufort Wind Scale (Source: National Oceanic and Atmospheric Administration)

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (18-25 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (29-41 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

SEVERE THUNDERSTORM AND HIGH WIND PREVIOUS OCCURRENCE

According to the NCDC database, Jefferson County experienced 201 events between 1950 and 2016, 83 of which had wind above 50 kts (experiencing 11 such events since the last planning effort was underway). There is not specific data for just Jefferson County DD6, but the hazard is reasonably predicted to have uniform probability of occurrence across the entire planning area. For these events, the NCDC database reported one death, 12 injuries and just $3.128 Million in damages. There have been 83 events over 50 kts and 21 events that resulted in at least $25,000 in property damage. Table 16 summarizes the 21 events that resulted in at least $25,000 in damages.

Table 16 – Severe Thunderstorm and High Wind Events in Jefferson County with at Least $25,000 in Property Damage (Source: NCDC Storm Events Database)

Location	County/Zone	Date	Type	Mag	Dth	Inj	PrD
Totals:					1	12	3.128M*
GROVES	JEFFERSON CO.	07/16/2002	Thunderstorm Wind	65 kts. E	0	0	1.500M
JEFFERSON (ZONE)	JEFFERSON (ZONE)	10/09/2009	High Wind	56 kts. EG	0	0	200.00K
CHINA	JEFFERSON CO.	07/14/1998	Thunderstorm Wind		0	0	150.00K
PORT ARTHUR	JEFFERSON CO.	03/16/1998	Thunderstorm Wind		0	0	100.00K
BEAUMONT	JEFFERSON CO.	05/10/1999	Thunderstorm Wind		0	0	100.00K
GROVES	JEFFERSON CO.	08/03/1999	Thunderstorm Wind		0	0	100.00K
JEFFERSON (ZONE)	JEFFERSON (ZONE)	12/16/2000	High Wind		0	0	100.00K
BEAUMONT	JEFFERSON CO.	08/14/1998	Thunderstorm Wind		1	1	75.00K
Port Arthur	JEFFERSON CO.	03/13/1995	Thunderstorm Wind	70 kts.	0	2	70.00K
Beaumont	JEFFERSON CO.	03/09/1994	Thunderstorm Wind	0 kts.	0	0	50.00K
NEDERLAND	JEFFERSON CO.	12/03/1997	Thunderstorm Wind		0	1	50.00K
BEAUMONT	JEFFERSON CO.	08/29/1998	Thunderstorm Wind		0	0	50.00K
BEAUMONT	JEFFERSON CO.	08/20/1999	Thunderstorm Wind		0	0	50.00K

HAMSHIRE	JEFFERSON CO.	04/29/2006	Thunderstorm Wind	50 kts. EG	0	0	50.00K
BEAUMONT	JEFFERSON CO.	08/31/1999	Thunderstorm Wind		0	0	25.00K
NOME	JEFFERSON CO.	02/28/2001	Thunderstorm Wind		0	0	25.00K
LA BELLE	JEFFERSON CO.	05/17/2002	Thunderstorm Wind		0	0	25.00K
BEAUMONT	JEFFERSON CO.	08/26/2002	Thunderstorm Wind		0	0	25.00K
BEAUMONT	JEFFERSON CO.	05/11/2004	Thunderstorm Wind	50 kts. EG	0	0	25.00K
BEAUMONT	JEFFERSON CO.	05/29/2005	Thunderstorm Wind	50 kts. EG	0	0	25.00K
BEAUMONT	JEFFERSON CO.	08/16/2010	Thunderstorm Wind	52 kts. EG	0	1	25.00K
Totals:					1	12	3.128M*

*Property damage total is the total for all events, not just those with at least $25,000 worth of damage.

SEVERE THUNDERSTORM AND HIGH WIND PROBABILITY

Jefferson County DD6 has experienced 201 severe thunderstorm and high wind events between 1950 and 2016, 83 of which had wind speeds of at least 50 kts. With so many events occurring, a severe thunderstorm or high wind event is:

Table 17 – Frequency of Severe Thunderstorms and High Wind

Frequency of Occurrence:
☒Highly likely: Event probable in next year
☐Likely; Event probable in next three years
☐Occasional; Event possible in next five years
☐Unlikely; Event possible in next ten years

It should be noted that due to DD6's missions and jurisdictional authority being explicitly limited to activities related to controlling floods, they only have the authority to mitigate high wind on District owned facilities and property.

SEVERE THUNDERSTORM AND HIGH WIND IMPACT AND VULNERABILITY

DD6's missions and jurisdictional authority being explicitly limited to activities related to controlling floods, they only have the authority to mitigate the effects of severe thunderstorms and high wind on District owned facilities and personnel. The FEMA software used for assessing

high wind risk is based exclusively on life safety. Since the last version of the plan, DD6 built a 3,000 sq. ft. tornado and hurricane shelter built to house District Staff during a tornado or other high wind event, in accordance with FEMA 361 - Design and Construction Guidance for Community Shelters. DD6 also installed hurricane shutters on their administrative building and their engineering building. Between these three buildings, all District staff can remain inside and safe during a severe thunderstorm or high wind event. Considering the analysis is based entirely on avoided injuries and fatalities, the severe thunderstorm and high wind risk for DD6 is considered $0. Even though District facilities and personnel are not vulnerable to severe thunderstorms and high winds, based on our analysis, other District assets such as tractors, bulldozers, dump trucks, excavators and many other vehicles totaling to $18,551,880 in insured value, may still have some risk of being damaged by severe thunderstorms and high winds either while in storage or on project sites. However, the size and number of vehicles owned by the District make trying to protect all of them from severe thunderstorms and high winds infeasible. The District's vulnerability is considered Low as defined in Table 8.

FLOOD

Flooding is the accumulation of water within a water body (e.g., stream, river, lake, or reservoir) and the overflow of excess water onto adjacent floodplains. Floodplains are usually lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected. Nationwide, hundreds of floods occur each year, making them one of the most common hazards in the U.S.

Floods result from rain events, whether short and intense, or long and gentle. Flood hazards are categorized as follows:

- Flash floods not only occur suddenly, but also involve forceful flows that can destroy buildings and bridges, uproot trees, and scour out new channels. Most flash flooding is caused by slow-moving thunderstorms, repeated thunderstorms in a local area, or heavy rains from hurricanes and tropical storms. Although flash flooding occurs often along mountain streams, it is also common in urban areas, where much of the ground is covered by impervious surfaces and drainage ways are designed for smaller flows. Flood Insurance Rate Maps typically show the 1%-annual-chance (100-year) floodplain for waterways with at least 1 square mile of drainage area. The flood hazard areas for waterways with less than one square mile of drainage area typically are not shown.
- Riverine floods are a function of precipitation levels and water runoff volumes, and occur when water rises out of the banks of the waterway. Flooding along waterways that drain larger watersheds often can be predicted in advance, especially where it takes 24 hours or more for the flood crest (maximum depth of flooding) to pass. In Jefferson County, riverine flooding is caused by large rainfall systems and thunderstorm activity associated with seasonal cold fronts. These systems can take as long as a day to pass,

giving ample opportunity for large amounts of rain to fall over large areas. The Flood Insurance Rate Maps show the 1%-annual-chance floodplains.

- Urban drainage flooding occurs where development has altered hydrology through changes in the ground surface and modification of natural drainage ways. Urbanization increases the magnitude and frequency of floods by increasing impervious surfaces, increasing the speed of drainage collection, reducing the carrying capacity of the land, and, occasionally, overwhelming sewer systems. Localized urban flooding is not usually shown on the Flood Insurance Rate Maps in areas with less than one square mile of contributing drainage area.

The Flood Insurance Rate Maps (FIRMs) prepared by FEMA offer the best overview of flood risks. FIRMs are used to regulate new development and to control the substantial improvement and repair of substantially damaged buildings. Flood Insurance Studies (FISs) are often developed in conjunction with FIRMs. The FIS typically contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRMs. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.

The revised FIS' for both the City of Beaumont and Jefferson County are dated August 6, 2002. These FIS' compile all previous flood information and include data collected on numerous waterways. Both FIS' indicate that riverine flooding results primarily from overflow of the streams and drainage ditches caused by rainfall runoff, ponding, and sheet flow. Storms occurring during the summer months are often associated with tropical storms moving inland from the Gulf of Mexico. Thunderstorms are common throughout the spring, summer, and fall months. The frequent hurricanes and tropical storms interrupt the summer with high winds, heavy rainfalls, and high storm surges. FIRM maps for the City of Beaumont and Jefferson County show flood zones:

- AE Zones along rivers and streams for which detailed engineering methods were used to determine Base Flood Elevations (BFEs). AE Zones (or A1-30 Zones) are shaded in gray.
- A Zones, which are areas inundated by the 100-year flood for which BFEs and Flood Hazard Factors (FHFs) have not been determined
- AH Zones, which are areas inundated by types of 100-year shallow flooding where depths are between one and three feet, and for which BFEs are shown, but no FHFs are determined.
- V Zones are areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- VE Zones are areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. Base Flood

Elevations (BFEs) derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

- B Zones and Shaded X Zones, which are areas of "moderate" flood hazard, typically associated with the 500-year flood (or 0.2% annual chance).
- C Zones and Unshaded X Zones are areas of "minimal" flood hazard, typically considered to be "out of the floodplain." Although local drainage problems and ponding may still occur, these minor flood problems typically are not shown on the FIRM.

FLOOD LOCATION

Figure 9 identifies the 100-year floodplain (shaded light blue) for Jefferson County DD6. The map shows the 100-year floodplain is predominately found along the southern half of DD6 near the Gulf of Mexico, the western edge of Sabine Lake and the tributaries leading into the Gulf.

Figure 9 – Jefferson County DD6 – 100-year Floodplain Map (Source: FEMA National Flood Insurance Program (NFIP) December 2009)

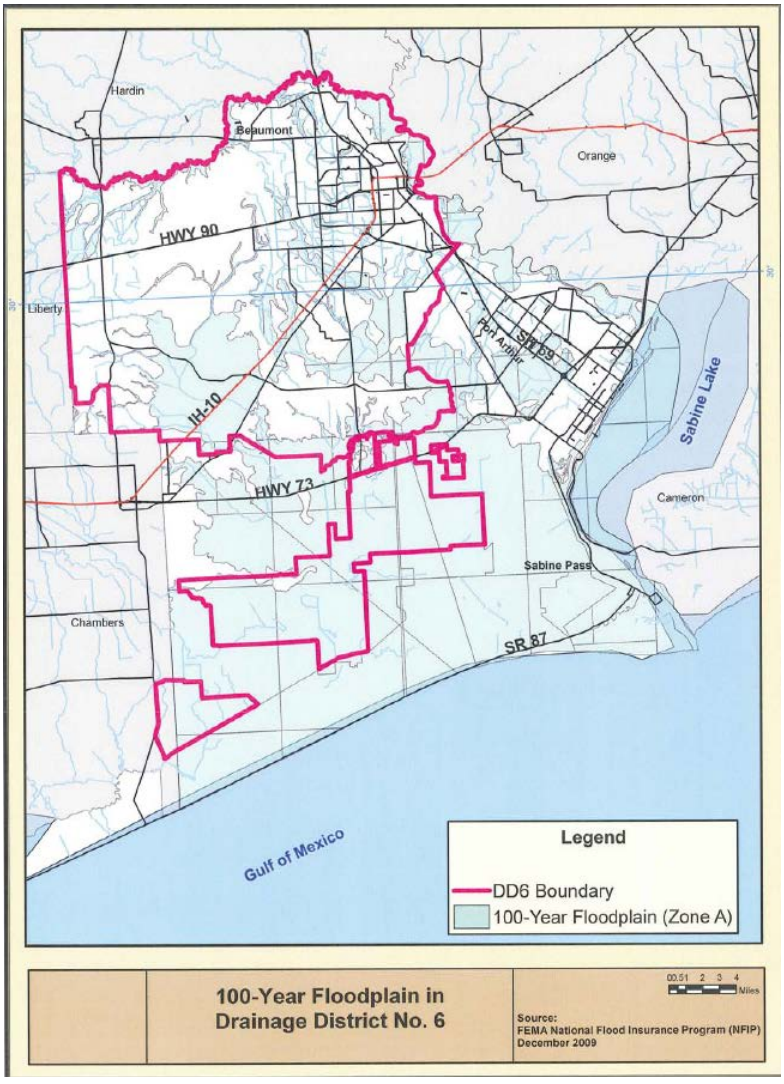
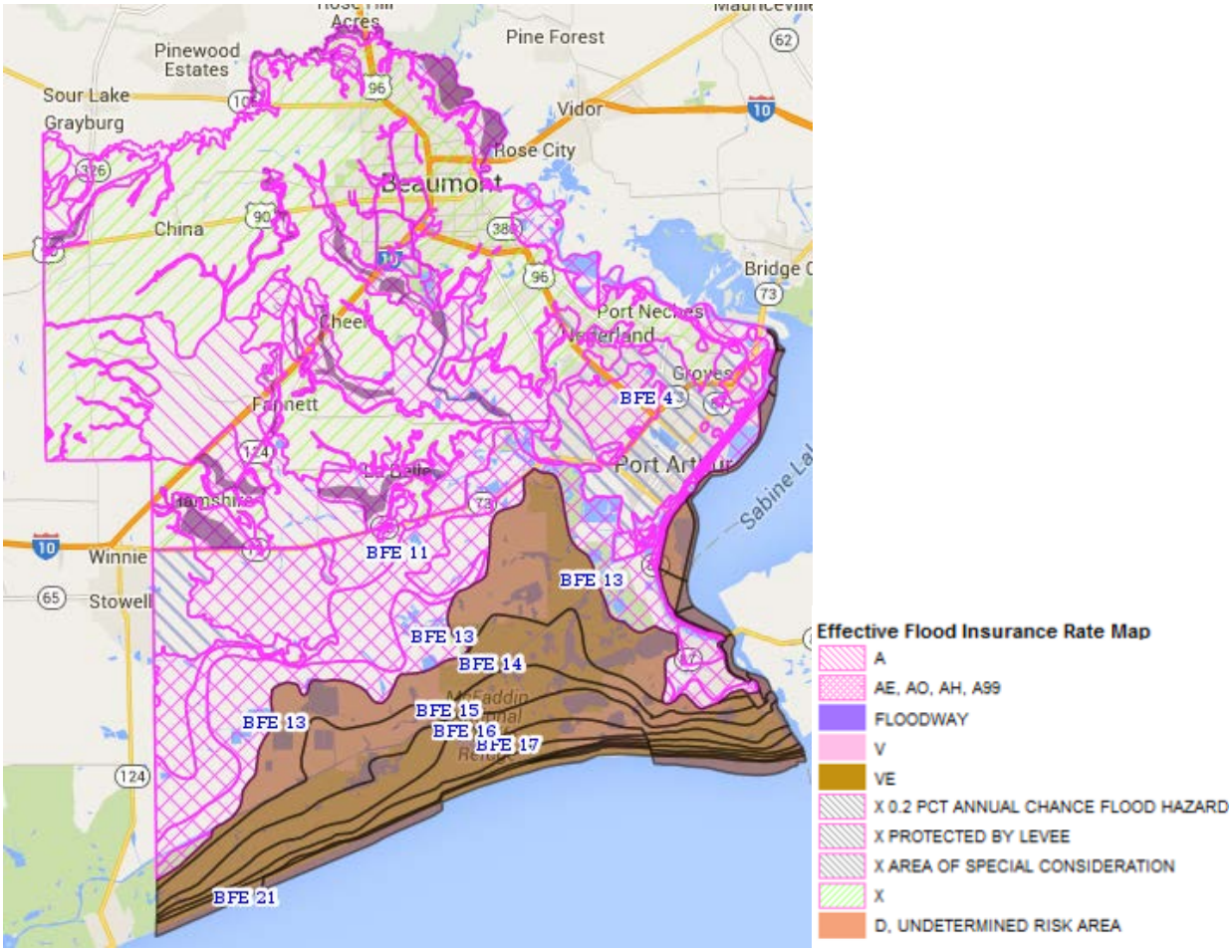


Figure 10 – Jefferson County TX Effective Flood Insurance Rate Map (Source: RiskMap6 Effective FIRM)



FLOOD EXTENT

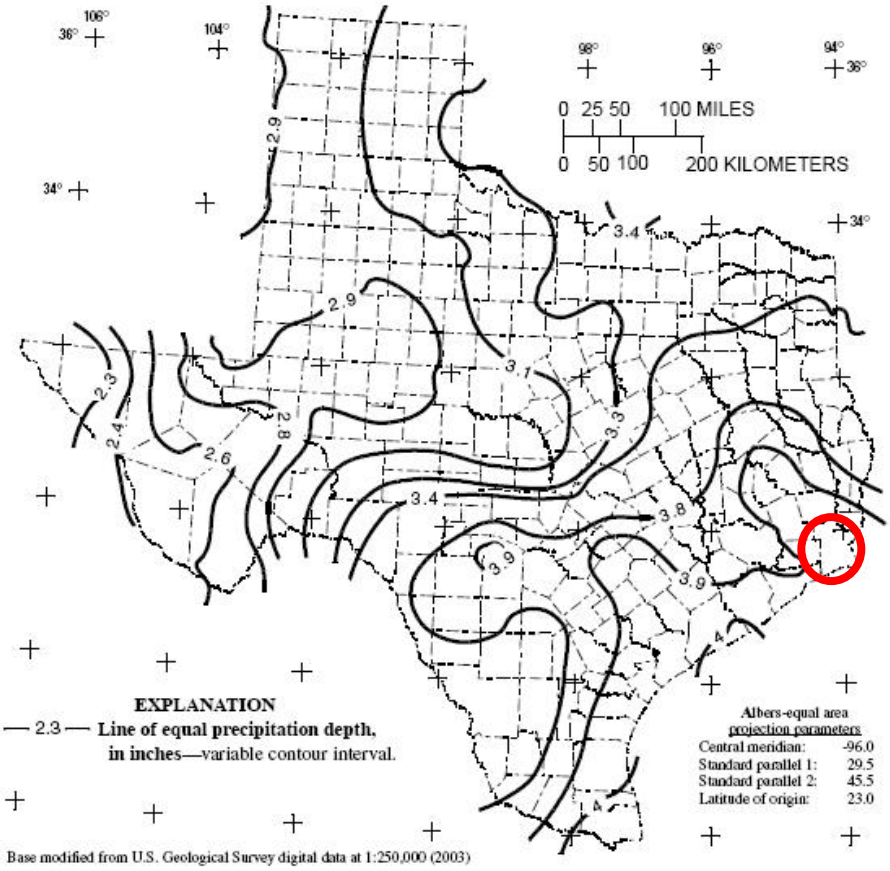
Flood severity is measured in various ways, including frequency, depth, velocity, duration and contamination, among others. In DD6, characterizing the severity of the flood hazard depends on what part of the District is being considered, but generally speaking the issues relate to how often floods occur. Historically, floods are and continue to be the most frequent, destructive, and costly natural hazard facing the State of Texas. This is also the case within the District.

In DD6, the kind of rainfall that causes flash flooding almost always comes from. This area receives the second greatest frequency of thunderstorms in the United States and is also favorable to frequent heavy rainfall, supporting an annual rainfall of approximately 60 inches. The flooding problems in the County are considered severe in some areas. The flat terrain and clay soils (which do not readily absorb water) found in this area contribute to the flood problem. In the District, there are nearly 8,000 active flood insurance policies, many of which sit within the floodplain.

Flooding can occur during any month of the year in DD6; however, the greatest likelihood of the occurrence is mid-summer to early winter. Mid-summer flooding (July, August, and September) is most likely to result from tropical storm and hurricane development. Flooding in the fall to early winter (October, November and December) usually results from stationary weak cold fronts.

DD6 has been actively pursuing projects to reduce the severity of flooding in the area. The majority of these projects have been drainage projects including detention basins, ditch improvements and floodwater diversions. Many of these projects have already reduced the 100-year flood levels in the project areas.

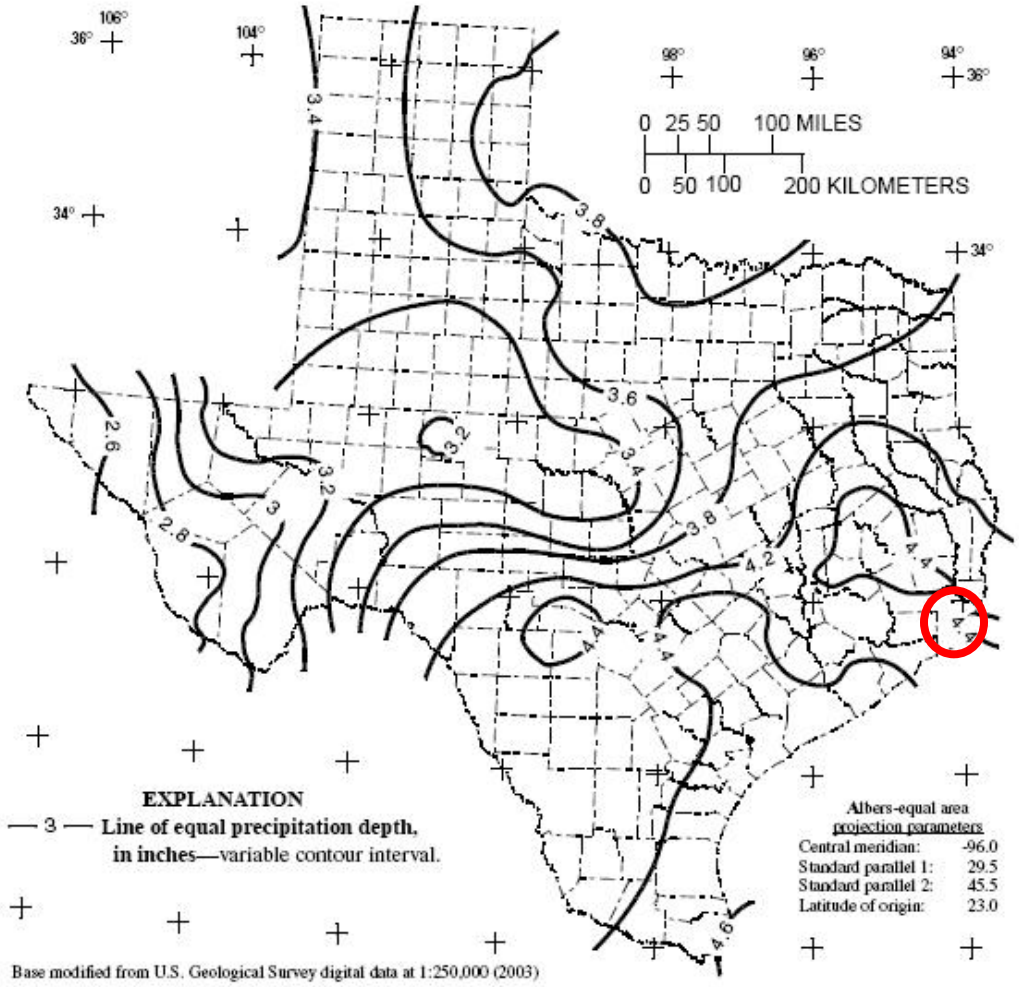
Figure 11 – Depth of Precipitation for 50-year Storm for 1-hour duration in Texas (Source: United States Geological Survey (USGS))



Depth of precipitation for 50-year storm for 1-hour duration in Texas.

Based on the above USGS map, the planning (in the red circle) area can expect, on average, an increase of 4.0" of water in one hour on the ground in a 50-year event.

Figure 12 – Depth of Precipitation for 100-year Storm for 1-hour duration in Texas (Source: USGS)



Depth of precipitation for 100-year storm for 1-hour duration in Texas.

Based on the above USGS map, the planning area (in the red circle) can expect, on average, an increase of 4.4" of water in one hour on the ground in a 100-year event.

FLOOD PREVIOUS OCCURRENCE

The NCDC indicates that Jefferson County and DD6 have experienced 61 flood events between 1996 and 2016. Of this total, 23 flood events have occurred since the last planning effort was underway. The NCDC database provides no indication as to why there are no events prior to 1996, although presumably occurrences follow the same pattern and frequency as shown in the NCDC list. Property damages for these events totaled just over $18.504 million. The NCDC reported two deaths and no injuries from the 61 flood events. The 23 flood events that have occurred since the last planning effort was under way are listed below.

Table 18 – Jefferson County Flood Events since Last Planning Effort (Source: NCDC Storm Events Database)

Location	County/Zone	Date	Type	Mag	Dth	Inj	PrD
Totals:					2*	0	18.504M*
CHINA	JEFFERSON CO.	01/04/2009	Flash Flood		0	0	5.00K
FANNETT	JEFFERSON CO.	04/18/2009	Flash Flood		0	0	20.00K
(BPT)BEAUMONT-PT ART	JEFFERSON CO.	04/27/2009	Flash Flood		0	0	5.00K
GILLBURG	JEFFERSON CO.	09/09/2009	Flood		0	0	0.00K
GILLBURG	JEFFERSON CO.	10/22/2009	Flash Flood		0	0	100.00K
FT ACRES	JEFFERSON CO.	10/22/2009	Flash Flood		0	0	10.00K
AMELIA	JEFFERSON CO.	10/26/2009	Flood		0	0	10.00K
GUFFEY	JEFFERSON CO.	08/17/2010	Flash Flood		0	0	1.00K
PEAR RIDGE	JEFFERSON CO.	07/19/2011	Flash Flood		0	0	10.00K
GUFFEY	JEFFERSON CO.	01/25/2012	Flash Flood		0	0	1.00K
BEVIL OAKS	JEFFERSON CO.	03/20/2012	Flash Flood		0	0	10.00K
GALLOWAY	JEFFERSON CO.	07/13/2012	Flash Flood		0	0	2.00K
HOLLYWOOD	JEFFERSON CO.	01/09/2013	Flash Flood		0	0	0.00K
GILLBURG	JEFFERSON CO.	05/10/2013	Flash Flood		0	0	50.00K
GILLBURG	JEFFERSON CO.	10/31/2013	Flash Flood		0	0	50.00K
PORT NECHES	JEFFERSON CO.	07/18/2014	Flash Flood		0	0	0.00K
(BPT)BEAUMONT-PT ART	JEFFERSON CO.	03/21/2015	Flash Flood		0	0	15.00K
FT ACRES	JEFFERSON CO.	04/16/2015	Flash Flood		0	0	0.00K
BEAUMONT	JEFFERSON CO.	05/12/2015	Flash Flood		0	0	10.00K
AMELIA	JEFFERSON CO.	05/21/2015	Flash Flood		0	0	5.00K
AMELIA	JEFFERSON CO.	05/27/2015	Flash Flood		0	0	0.00K

GUFFEY	JEFFERSON CO.	06/17/2015	Flash Flood		0	0	1.00K
PORT ARTHUR	JEFFERSON CO.	11/07/2015	Flash Flood		0	0	0.00K
Totals:					2*	0	18.504M*

*Property damage and death total is the total for all events, not just those since the last planning effort.

FLOOD PROBABILITY

Jefferson County and DD6 have experienced 61 floods between 1996 to 2016. With so many events occurring, future probability of a flood is:

Table 19 – Flood Frequency of Occurrence

Frequency of Occurrence:
☒Highly likely: Event probable in next year
☐Likely; Event probable in next three years
☐Occasional; Event possible in next five years
☐Unlikely; Event possible in next ten years

FLOOD IMPACT AND VULNERABILITY

To develop more specific data about flood-prone buildings, as part of the original Plan development DD6 worked with Jefferson County Engineering, Jefferson County Appraisal District (JCAD) and the City of Beaumont, who have access to a Geographic Information System (GIS) database. The tool that makes this possible is the GIS computer software application that relates physical features on the ground in mapping applications and analyses. The number of flood-prone residential and commercial buildings was re-evaluated in January, 2010, and again in April 2016. Updated figures are included in the building characterizations described below.

Flood insurance policies and claims information can be used to identify buildings in mapped floodplains (where lenders require insurance) and where flooding has occurred (where owners are sufficiently concerned that they purchase flood insurance even if not required). This characterization of flood risk is described below.

Data provided by FEMA indicate that as of January 1, 2016, federal flood insurance policies were in-force on 7,896 buildings in the City of Beaumont, Bevil Oaks, Nome, China and unincorporated Jefferson County. These insurance policies are administered by the National Flood Insurance Program (NFIP). Of those 7,896 buildings with NFIP policies still in force (active policies), 61 are Repetitive Loss structures and 19 (there are 37 SRLs in total but only 19 are currently insured) are Severe Repetitive Loss structures. The District's vulnerability to flood is considered very high according to table 8.

NFIP REPETITIVE LOSS PROPERTIES

In recent years, FEMA has focused considerable attention on the Repetitive Loss (RL) subset of insured buildings. These properties have received two or more claim payments of at least $1,000 over a ten-year period. FEMA's database identifies 293 properties as Repetitive Loss properties in DD6 (this number includes properties with active flood insurance policies as well as those with inactive policies). Collectively, they had received claim payments of almost $20 million (includes payments for building damage and contents damage).

As of January 1, 2016, repetitive loss statistics for areas within DD6 (including unincorporated Jefferson County as a whole) showed 293 Repetitive Loss properties. Of this total, 264 were categorized as residential properties and 29 were non-residential.

The RL data for Jefferson County was broken down by eliminating the properties located in the incorporated areas outside of DD6. Although it is not possible to extract only the Jefferson County DD6 RL properties, by removing the incorporated areas outside DD6 this leaves only the properties located within the incorporated areas of DD6 and the unincorporated areas for all of Jefferson County. The population data indicates that the majority of the population within Jefferson County is located within DD6, and therefore this approach provides the closest method for estimating the RL properties in DD6. Table 20 summarizes the residential and non-residential properties for each municipality within DD6.

Table 20 - Summary of Residential and Non-Residential NFIP Repetitive Loss Statistics, Jefferson County DD6, ordered by Municipality (Source: FEMA NFIP query January 1, 2016)

Municipality	Properties	Building	Contents	Total	# of claims	Average
Beaumont	191	$7,713,913.72	$2,791,355.04	$10,505,459.76	620	$16,944.29
Bevil Oaks	11	$1,193,123.49	$499,684.68	$1,692,819.17	33	$51,297.22
Jefferson County	91	$4,806,661.38	$1,661,362.53	$6,468,023.91	327	$19,780.17
Grand Total	**293**	**$13,713,698.59**	**$4,952,402.25**	**$18,666,393.84**	**980**	**$19,047.34**

As indicated above, it is estimated there are 264 residential RL properties in Jefferson County DD6. Table 21 summarizes the RL claims data by municipality. The table shows that the majority of the residential RL properties are located within the City of Beaumont. As of January 1, 2016, claim payments for all 264 residential properties totaled over $13 million.

Table 21 - Summary of Residential NFIP Repetitive Loss Statistics, Jefferson County DD6, ordered by Municipality (Source: FEMA NFIP query January 1, 2016)

Municipality	Properties	Building	Contents	Total	# of claims	Average
Beaumont	167	$4,288,851.97	$1,116,889.52	$5,405,741.49	513	$6,278.45
Bevil Oaks	11	$1,193,123.49	$499,684.68	$1,692,808.17	33	$51,297.22
Jefferson County	86	$4,583,726.25	$1,546,725.90	$6,130,452.15	315	$19,461.75
Grand Total	**264**	**$10,065,701.71**	**$3,163,300.10**	**$13,229,001.81**	**861**	**$15,364.69**

Table 22 - Summary of Non-Residential NFIP Repetitive Loss Statistics, Jefferson County DD6, ordered by Municipality (Source: FEMA NFIP query January 1, 2016)

Municipality	Properties	Building	Contents	Total	# of claims	Average
Beaumont	24	$3,425,059.75	$1,674,465.52	$5,099,525.27	67	$76,112.32
Jefferson County	5	$222,935.13	$114,646.63	$337,571.76	12	$28,130.98
Grand Total	**29**	**$3,647,994.88**	**$1,789,102.15**	**$5,437,097.03**	**119**	**$45,689.89**

The RL claims can be further broken down from listing by municipality to focusing on individual street level data. Table 23 provides a summary of residential repetitive flood insurance claims for individual streets within Jefferson County DD6 that include two or more repetitive loss properties. The data displayed in the table summarizes the NFIP repetitive loss data for 37 individual streets in DD6 that include two or more repetitive loss property. For each street, the building, contents, and total claims data has been combined. Note that by selecting only streets with two or more repetitive loss properties, the table only includes 146 of the 264 residential RL properties estimated within Jefferson County DD6.

The table shows that for these 146 RL properties, claim payments totaled approximately $9.5 million as of January 1, 2016. The data shows that Crow Road clearly has the street with the most repetitive loss properties in Jefferson County DD6. Address data about individual sites is omitted for reasons of confidentiality.

Table 23 – Summary of Residential NFIP Repetitive Loss Statistics, Jefferson County DD6, ordered by number of Properties on Each Street (Source: FEMA NFIP query January 1, 2016)

Street Name	Municipality	Properties	Building	Contents	Total	# of Claims	Average (Per Claim)
Alford Oaks Dr	Jefferson County	3	$415,867.20	$155,164.83	$571,032.03	15	$38,068.80
Blossom Dr	Beaumont, TX	3	$24,165.48	$11,160.40	$35,325.88	8	$4,415.74
Brockman St	Beaumont, TX	3	$121,898.90	$42,397.59	$164,296.49	10	$16,429.65
CARNAHAN PL	Beaumont, TX	3	$54,773.31	$9,550.02	$64,323.33	11	$5,847.58
Central Blvd	Jefferson County	10	$322,946.58	$165,295.43	$488,242.01	26	$18,778.54
Cherokee Ln	Beaumont, TX	3	$127,952.86	$55,199.47	$183,152.33	8	$22,894.04
Concord Rd	Beaumont, TX	2	$26,965.30	$10,019.50	$36,984.80	5	$7,396.96
Coolidge St	Beaumont, TX	7	$329,727.28	$51,969.70	$381,696.98	26	$14,680.65
Crow Rd	Beaumont, TX	24	$427,472.08	$11,860.89	$439,332.97	60	$7,322.22
Downs Rd	Beaumont, TX	2	$19,443.27	$0	$19,443.27	4	$4,860.82
Elinor St	Beaumont, TX	2	$62,496.90	$15,299.51	$77,796.41	8	$9,724.55
FM 365	Jefferson County	2	$127,160.97	$29,679.21	$156,840.18	4	$39,210.05
Folsom Dr	Beaumont, TX	2	$67,453.36	$7,914.05	$75,367.41	6	$12,561.24
Forsythe St	Beaumont, TX	2	$43,262.55	$18,734.76	$61,997.31	6	$10,332.89
Galveston St	Beaumont, TX	4	$128,254.58	$29,126.32	$157,380.90	16	$9,836.31
Heartfield Ln	Beaumont, TX	2	$37,001.13	$1,564.62	$38,565.75	4	$9,641.44
Hillebrandt Acres	Jefferson County	11	$624,102.15	$310,498.36	$934,600.51	70	$13,351.44
Jerry Dr	Jefferson County	3	$405,481.89	$151,959.96	$557,441.85	9	$61,937.98
Kenner Rd	Jefferson County	2	$64,365.35	$2,827.20	$67,192.55	4	$16,798.14
Madison St	Jefferson County	2	$51,468.59	$20,847.34	$72,315.93	7	$10,330.85
Marsh Rd	Jefferson County	3	$259,317.65	$92,517.30	$351,834.95	13	$27,064.23

Street Name	Municipality	Properties	Building	Contents	Total	# of Claims	Average (Per Claim)
N 2nd Ave	Jefferson County	2	$95,624.21	$25,484.44	$121,108.65	4	$30,277.16
N Killarney Dr	Jefferson County	2	$65,395.25	$4,485.73	$69,880.98	10	$6,988.10
Park St	Beaumont, TX	8	$232,030.82	$88,930.65	$320,961.47	29	$11,067.64
Phelan Blvd	Beaumont, TX	2	$13,914.07	$2,308.37	$16,222.44	6	$2,703.74
Pipkin St	Beaumont, TX	2	$62,685.20	$20,832.14	$83,517.34	7	$11,931.05
Rainbow Ln	Jefferson County	2	$182,443.62	$48,343.30	$230,786.92	6	$38,464.49
Redwood Dr	Beaumont, TX	2	$45,184.68	$6,772.04	$51,956.72	4	$12,989.18
River Bend Dr	Bevil Oaks, TX	6	$1,040,460.30	$392,753.84	$1,433,214.14	21	$68,248.29
River Rd	Bevil Oaks, TX	2	$111,927.91	$59,805.04	$171,732.95	4	$42,933.24
Roberts St	Beaumont, TX	4	$129,777.03	$59,057.41	$188,834.44	10	$18,883.44
Rockwell St	Beaumont, TX	6	$135,719.39	$44,328.45	$180,047.84	17	$10,591.05
S Major Dr	Beaumont, TX	2	$47,396.22	$9,263.98	$56,660.20	8	$7,082.53
Thomas Rd	Beaumont, TX	2	$37,802.92	$550	$38,352.92	5	$7,670.58
Vernon St	Jefferson County	3	$207,742.50	$40,615.91	$248,358.41	18	$13,797.69
W Euclid St	Beaumont, TX	4	$157,623.00	$79,591.79	$237,214.79	15	$15,814.32
W Lucas Dr	Beaumont, TX	2	$18,008.74	$0	$18,008.74	4	$4,502.19
Total		**146**	**$6,325,313.24**	**$2,076,709.55**	**$8,402,022.79**	**488**	**$17,217.26**

FLOOD RISK TO RESIDENTIAL REPETITIVE LOSS PROPERTIES

Jefferson County DD6 has an extensive history of repetitive loss flood claims, so it is possible to perform a relatively simple statistical risk assessment using average annual losses and a present value coefficient calculation to project losses over a planning horizon. Residential flood risk is calculated by a simple methodology that uses the FEMA default present-value coefficients from the benefit-cost analysis software modules. To perform this calculation, the repetitive loss data were reviewed to determine an approximate period over which the claims occurred. This method should not be used for risk assessments for individual properties because of the generalizations that are used, but the method is appropriate for larger numbers of properties and policies that are spread over an entire jurisdiction. It is presumed that more accurate

figures would be somewhat higher because the underlying statistics are for properties that had flood insurance, were flooded, and had paid claims. There are nearly always some properties in a jurisdiction that are flooded in big events, and do not have flood insurance (or did not make claims), and are thus not represented in the sample.

Most of the flood claims in this query occurred between 1979 and 2015, a period of 36 years. As shown in Table 24, there have been 901 claims in the 36-year period, for an average number of 25.03 claims per year. Based on a 100-year horizon and a present value coefficient of 14.27 (the coefficient for 100 years using the mandatory Office of Management and Budget (OMB) discount rate of 7.0 percent), the projected flood risk to these properties is shown at the bottom of the table. It must be understood that individuals can obtain and cancel flood insurance policies, and the flood hazard depends on many variables, including the weather, so this projection is simply an estimate of potential damages. Nevertheless, it offers a useful metric that can be used in assessing the potential cost effectiveness of mitigation actions.

Table 24 – Projected 100-year Flood Risk in Jefferson County DD6 Repetitive Loss Areas (Source: FEMA NFIP query January 1, 2016)

Data	Value
Period in years	36
Number of claims	901
Average claims per year	25.03
Total value of claims	$14,335,517.19
Average value of claims per year	$398,208.81
Projected risk, 100-year horizon	**$5,682,439.73**

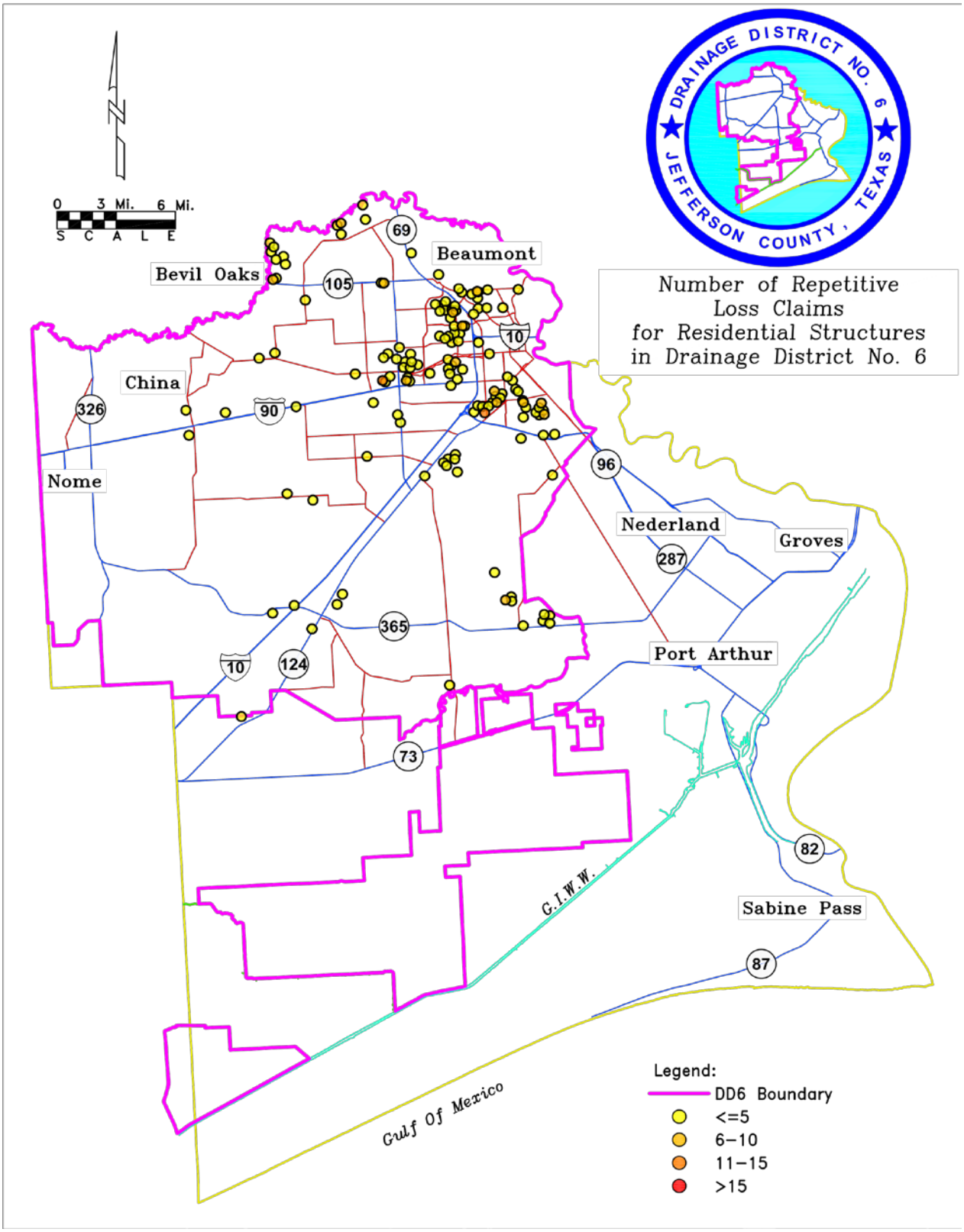
The risk assessment for residential repetitive loss properties can be further broken down to the street level. Streets in Jefferson County with ten or more repetitive loss claims were considered to have sufficient claims history to perform a risk assessment. Table 25 displays the annual and 100-year risk for streets in Jefferson County with ten or more NFIP claims. The table shows that Hillebrandt Acres in Jefferson County is the street with the highest number of claims. Although Hillebrandt Acres has the highest number of claims, River Bend Dr in Bevil Oaks has the highest 100-year risk totaling $568,110.16.

Table 25 – Projected Future Damages (Risk) to NFIP Repetitive Flood Loss Properties in Jefferson County DD6, ordered by 100-year Risk (Source: FEMA NFIP query January 1, 2016)

Street Name	Municipality	Properties	# of Claims	Total Paid	Average (Per Policy)	Annual Risk	100-year Risk
Alford Oaks Dr	Jefferson County	3	15	$571,032.03	$38,068.80	$15,862.00	$226,350.75
Anita St	Beaumont, TX	1	12	$155,860.06	$12,988.34	$4,329.45	$61,781.20
Brockman St	Beaumont, TX	3	10	$164,296.49	$16,429.65	$4,563.79	$65,125.30
Carnahan Pl	Beaumont, TX	3	11	$64,323.33	$5,847.58	$1,786.76	$25,497.05
Central Blvd	Jefferson County	10	26	$488,242.01	$18,778.54	$13,562.28	$193,533.71
Coolidge St	Beaumont, TX	7	26	$381,696.98	$14,680.65	$10,602.69	$151,300.44
Crow Rd	Beaumont, TX	24	60	$439,332.97	$7,322.22	$12,203.69	$174,146.71
Galveston St	Beaumont, TX	4	16	$157,380.90	$9,836.31	$4,371.69	$62,384.04
Hillebrandt Acres	Jefferson County	11	70	$934,600.51	$13,351.44	$25,961.13	$370,465.26
Josey St	Beaumont, TX	1	11	$69,926.81	$6,356.98	$1,942.41	$27,718.21
Marsh Rd	Jefferson County	3	13	$351,834.95	$27,064.23	$9,773.19	$139,463.46
N Kilarney	Jefferson County	2	10	$69,880.98	$6,988.10	$1,941.14	$27,700.04
Park St	Beaumont, TX	8	29	$320,961.47	$11,067.64	$8,915.60	$127,225.56
River Bend Dr	Bevil Oaks, TX	6	21	$1,433,214.14	$68,248.29	$39,811.50	$568,110.16
Roberts St	Beaumont, TX	4	10	$188,834.44	$18,883.44	$5,245.40	$74,851.87
Rockwell St	Beaumont, TX	6	17	$180,047.84	$10,591.05	$5,001.33	$71,368.96
Vernon St	Jefferson County	3	18	$248,358.41	$13,797.69	$6,898.84	$98,446.51
W Euclid St	Beaumont, TX	4	15	$237,214.79	$15,814.32	$6,589.30	$94,029.31
Total		**103**	**390**	**$6,457,039.11**	**$16,556.51**	**$179,362.20**	**$2,559,498.56**

Figure 13 shows the locations of the residential repetitive loss properties in Jefferson County DD6. The map highlights the total number of residential repetitive loss flood insurance claims per property in DD6. The map shows that the residential RL properties in DD6 are mainly concentrated within the City of Beaumont.

Figure 13 – Number of NFIP Flood Insurance Claims Per Residential Repetitive Loss Property in Jefferson County DD6 (Source: FEMA/NFIP, Query January 1, 2016; Plotted by DD6)



NON-RESIDENTIAL REPETITIVE LOSS PROPERTIES

As noted earlier, as of January 1, 2016, Jefferson County DD6 had an estimated 29 non-residential repetitive loss properties in the NFIP database. Table 26 provides a summary of non-residential repetitive loss claims for individual streets in Jefferson County with at least five claims. The building, contents, and total claims data has been combined for streets that include more than one repetitive loss property. Similar to the residential repetitive loss data, address data about individual sites is omitted for reasons of confidentiality.

The Table shows that Calder and 11th Streets have the most non-residential repetitive losses in Jefferson County DD6. The data shows that these two streets rank highest in total paid claims (both building and contents combined) and number of past claims, indicating a significant history of flooding at these sites. Jefferson County DD6 has completed a drainage improvement project in the Hillebrandt Bayou watershed that includes areas of Calder Street and is nearing completion of a drainage improvement project on 11th St. Upon completion, the future risk in this area will be substantially reduced. Additional details about this project can be found in later in this Plan.

Table 26 – Projected 100-year Flood Risk, Non-Residential Repetitive Loss Properties in Jefferson County DD6 (Source: FEMA NFIP query January 1, 2016)

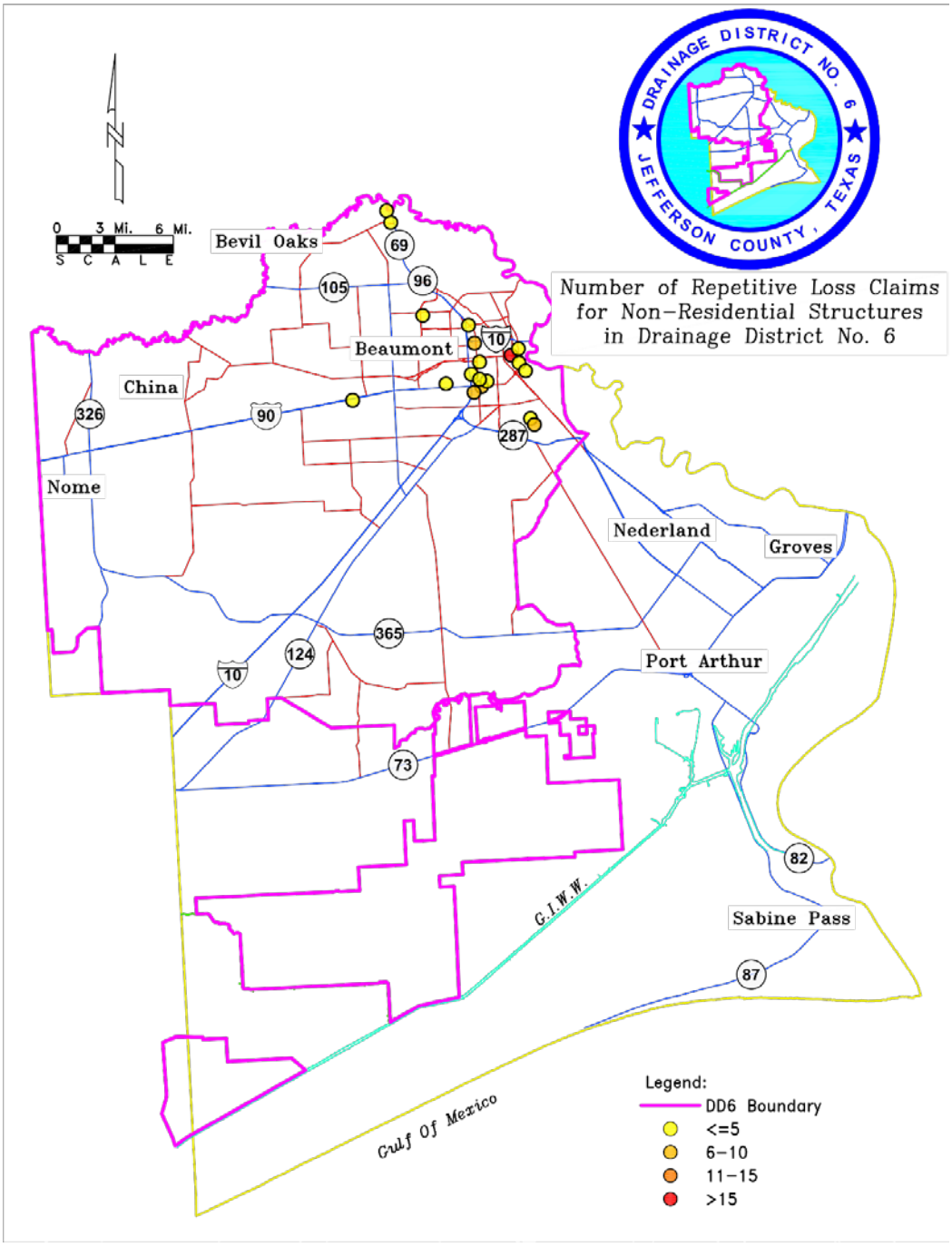
Street Name	Municipality	Claims	Properties	Total Claims ($)	Annual Risk	100-year risk
College St	Beaumont, TX	6	1	$37,456.78	$1,040.47	$14,847.45
Calder St	Beaumont, TX	26	1	$1,464,159.10	$40,671.09	$580,376.40
Milam St	Beaumont, TX	6	1	$60,751.68	$1,687.55	$24,081.29
Park St	Beaumont, TX	5	1	$24,201.32	$672.26	$9,593.13
N 11th St	Beaumont, TX	19	3	$1,461,014.50	$40,583.74	$579,129.91
Cheek St	Beaumont, TX	5	1	$300,016.08	$8,333.78	$118,923.04
Woodrow St	Beaumont, TX	6	1	$247,669.06	$6,879.70	$98,173.26
Total		**73**	**9**	**$3,595,268.52**	**$99,868.57**	**$1,425,124.49**

It should be noted that some of the non-residential properties on this list may be at far greater flood risk than indicated, because there may be have been periods where the owner(s) did not carry flood insurance, with the result that they may have been damaged but there is no record of it. This type of analysis is not totally conclusive. It would be possible to perform relatively simple engineering studies to better assess risks for properties with just a few claims, but where data suggests that sites may be vulnerable to additional flood-related losses.

The information in this section should be used for planning purposes only, i.e. as the basis for additional steps in risk assessment, and eventually (where warranted) targeted mitigation

actions to reduce the risk. For example, a property that has received a number of claim payments not much higher than $1,000 would be considered an unlikely candidate for mitigation using public funds. It may, however, be an excellent candidate for damage-reduction actions taken by the owner.

Figure 14 – Number of NFIP Flood Insurance Claims Per Non-Residential Repetitive Loss Property in Jefferson County DD6 (Source: FEMA/NFIP, Query January 1, 2016; Plotted by DD6)



NFIP SEVERE REPETITIVE LOSS PROPERTIES

In 2004 FEMA began to develop the Severe Repetitive Loss (SRL) Grant Program in an effort to reduce or eliminate flood damages to residential properties that met certain minimum requirements. FEMA initiated the program early in 2008. The SRL Grant Program has since been included in the FMA Grant Program, with SRL properties being a top priority. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
- for which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

SRL properties are a subset of the RL list and include only residential structures. As of January 1, 2016, Jefferson County had 37 properties on the SRL list all of which are located in either unincorporated Jefferson County, the City of Beaumont or the City of Bevil Oaks.

Table 27 provides loss estimates for SRL properties in DD6 summarized at the street level, as calculated by FEMA and the NFIP. The table shows that within Jefferson County, Hillebrandt Acres has the highest number of SRL properties.

Table 27 – Projected 100-year Flood Risk, Severe Repetitive Loss Properties in Jefferson County DD6 (Source: FEMA/NFIP, Query January 1, 2016)

Street Name	Municipality	Claims	Properties	Total Claims ($)	Annual Risk	100-year risk
Alford Oaks Dr	Jefferson County	9	1	$368,135.66	$10,225.99	$145,924.89
Anita St	Beaumont, TX	12	1	$155,860.06	$4,329.45	$61,781.20
Boussard St	Beaumont, TX	6	1	$120,317.15	$3,342.14	$47,692.38
Brockman St	Beaumont, TX	8	2	$157,817.39	$4,383.82	$62,557.06
Cherokee Ln	Beaumont, TX	4	1	$103,456.78	$2,873.80	$41,009.12
Coolidge St	Beaumont, TX	6	1	$127,564.16	$3,543.45	$50,565.02
Corley St	Beaumont, TX	7	1	$100,985.69	$2,805.16	$40,029.61
Crow Rd	Jefferson County	4	1	$43,251.86	$1,201.44	$17,144.56

Elinor St	Beaumont, TX	5	1	$54,052.98	$1,501.47	$21,426.00
Euclid St	Beaumont, TX	7	1	$67,212.73	$1,867.02	$26,642.38
Galveston St	Beaumont, TX	6	1	$49,013.39	$1,361.48	$19,428.36
Gross St	Beaumont, TX	4	1	$78,260.48	$2,173.90	$31,021.58
Highway 105	Jefferson County	5	1	$84,857.66	$2,357.16	$33,636.63
Hillebrandt Acres	Jefferson County	51	5	$739,156.93	$20,532.14	$292,993.59
Iola St	Beaumont, TX	6	1	$41,589.97	$1,155.28	$16,485.80
Josey St	Beaumont, TX	11	1	$69,926.81	$1,942.41	$27,718.21
Marsh Rd	Jefferson County	4	1	$142,388.59	$3,955.24	$56,441.25
N 23Rd	Beaumont, TX	7	1	$100,269.41	$2,785.26	$39,745.68
N Kilarney	Jefferson County	8	1	$66,827.36	$1,856.32	$26,489.62
Ogden Ave	Beaumont, TX	7	1	$64,850.79	$1,801.41	$25,706.13
Park St	Beaumont, TX	11	2	$221,265.97	$6,146.28	$87,707.37
Pinkstaff	Beaumont, TX	2	1	$96,334.04	$2,675.95	$38,185.74
River Bend	Bevil Oaks, TX	15	3	$1,178,926.34	$32,747.95	$467,313.30
Roberts St	Beaumont, TX	3	1	$101,464.40	$2,818.46	$40,219.36
Saratoga Cir	Beaumont, TX	4	1	$49,100.82	$1,363.91	$19,463.02
Sour Lake	Jefferson County	5	1	$78,867.25	$2,190.76	$31,262.10
Stratton Ln	Jefferson County	6	1	$166,605.66	$4,627.94	$66,040.63
W Lynwood	Beaumont, TX	4	1	$49,085.19	$1,363.48	$19,456.82

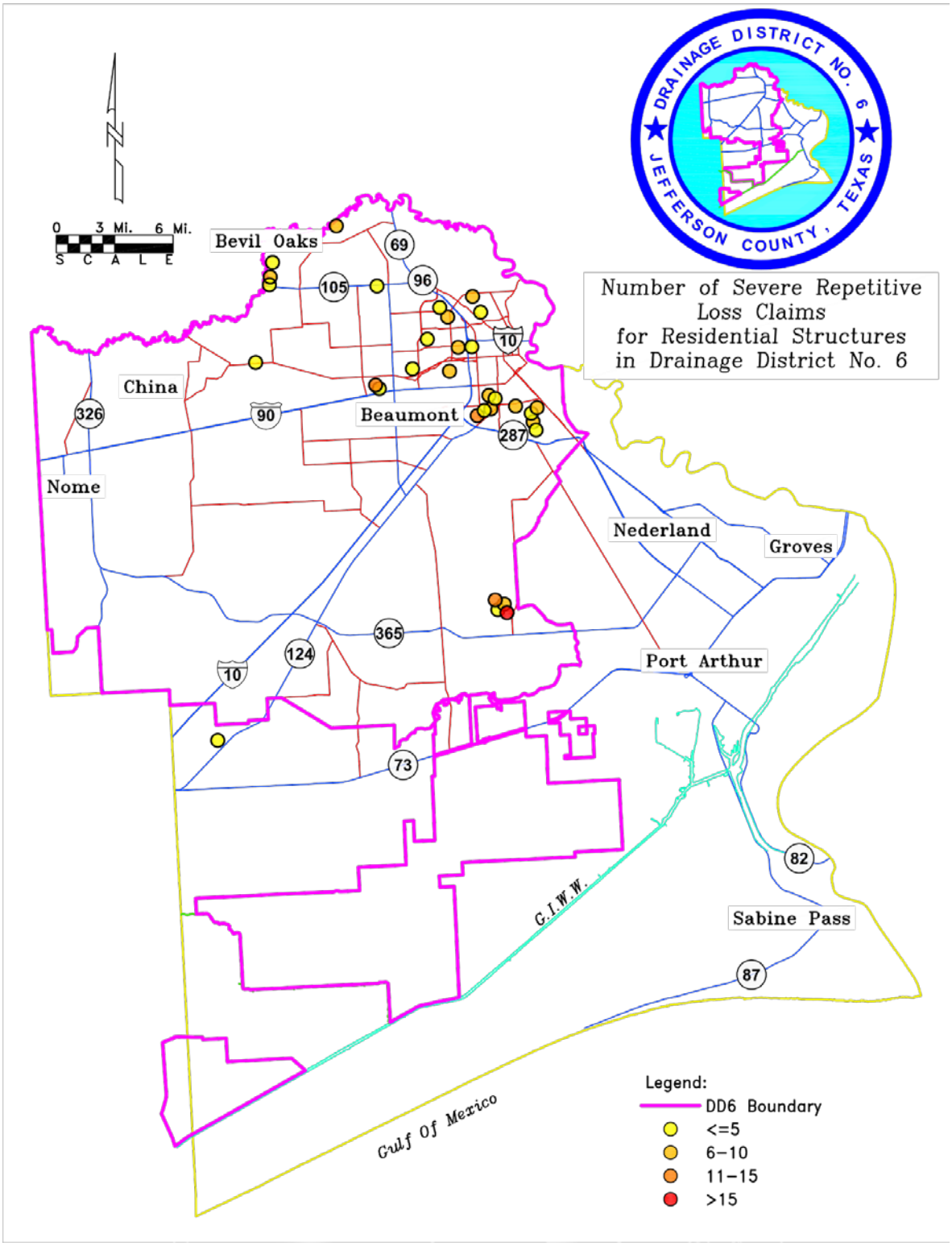
Westmoreland St	Beaumont, TX	5	1	$101,539.25	$2,820.53	$40,249.03
Total		**232**	**37**	**$4,778,984.77**	**$132,749.58**	**$1,894,336.46**

It should be noted that some of the properties on this list may be at far greater flood risk than indicated, because there may be have been periods where the owner(s) did not carry flood insurance, with the result that they may have been damaged but there is no record of it. This type of analysis is not totally conclusive. It would be possible to perform relatively simple engineering studies to better assess risks for properties with just a few claims, but where data suggests that sites may be vulnerable to additional flood-related losses.

The information in this section should be used for planning purposes only, i.e. as the basis for additional steps in risk assessment, and eventually (where warranted) targeted mitigation actions to reduce the risk.

The SRL properties can also be mapped to identify the floodprone areas of DD6. Figure 15 highlights the total number of NFIP severe repetitive loss flood insurance claims per property in Jefferson County DD6. The map shows that the SRL properties in DD6 are mainly concentrated within the City of Beaumont.

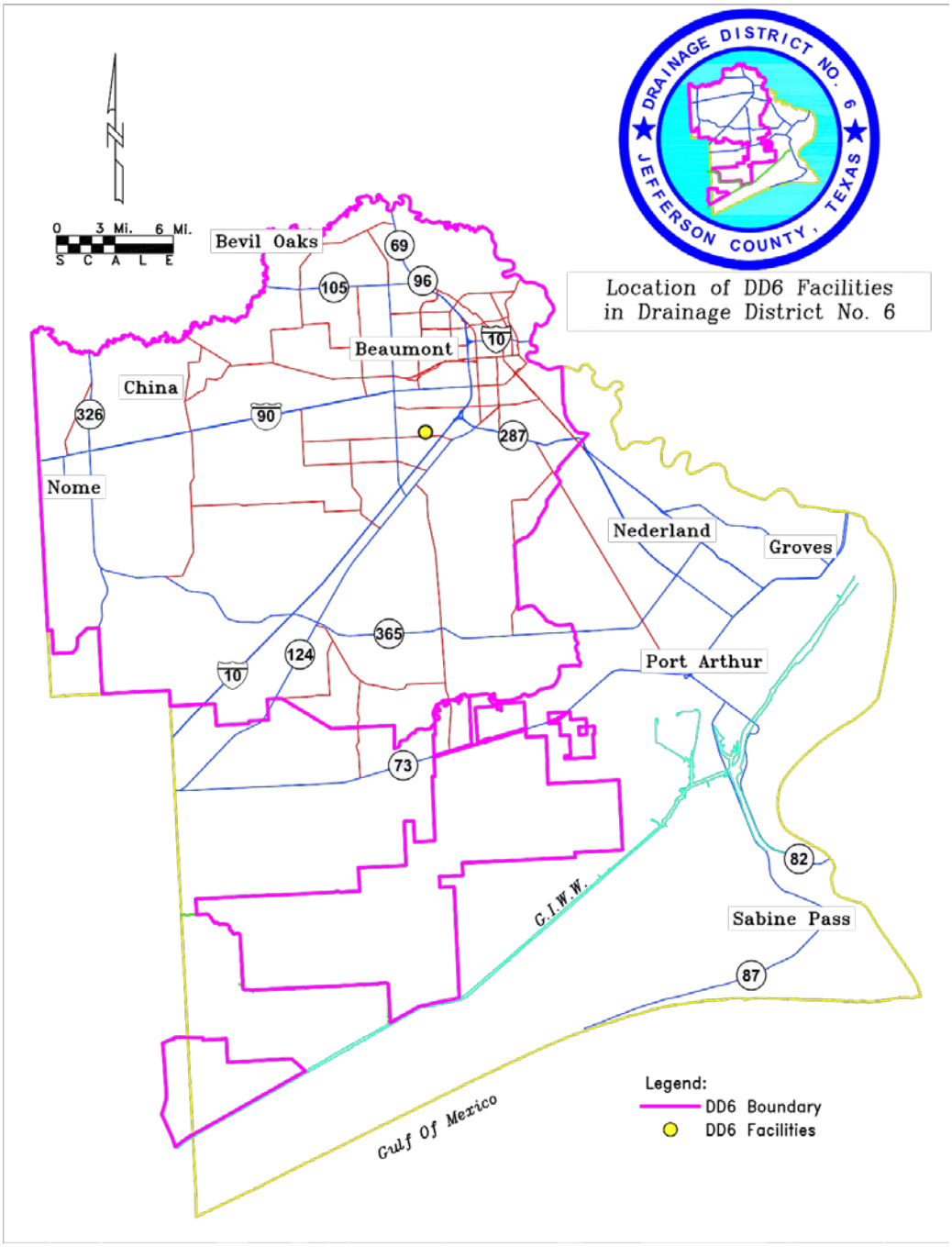
Figure 15 – Number of NFIP Flood Insurance Claims Per Severe Repetitive Loss Property in Jefferson County DD6 (Source: FEMA/NFIP, Query January 1, 2016; Plotted by DD6)



FLOOD RISKS – PUBLIC BUILDINGS

DD6 owns just one complex of buildings, on Walden Road. These buildings are not located in the Special Flood Hazard Area and have never experienced flooding. The other plotted structure is a salt water intrusion.

Figure 16 – DD6 Owned Facilities



Public Schools. The Beaumont Independent School District (BISD) owns all of the areas 32 public schools. A review of the FIRM indicates none of these are in the mapped floodplain. As part of the 2016 Plan update, the FIRM maps were again reviewed and verified that none of the 32 schools within the BISD are located within the floodplain.

FLOOD RISKS – DISTRICT ASSESTS

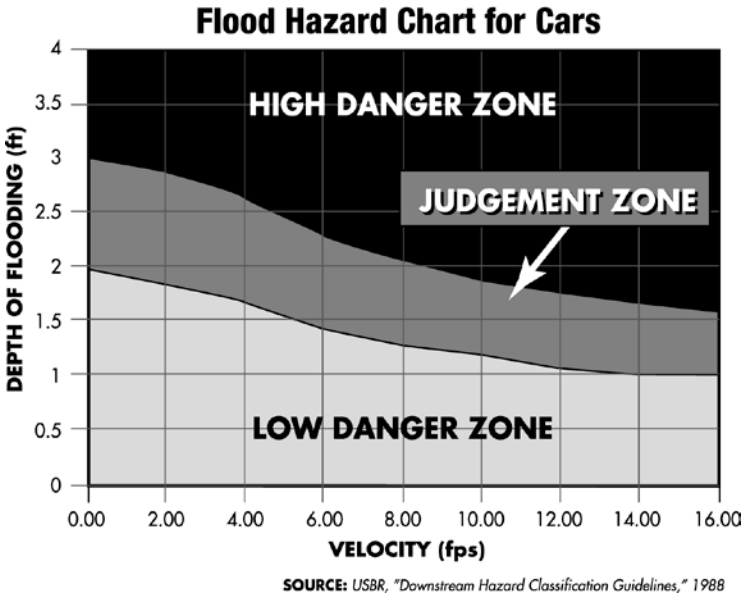
Aside from District facilities, DD6 also owns other assets such as tractors, bulldozers, dump trucks, excavators and many other vehicles totaling to $18,551,880 in insured value. Those vehicles are mainly stored on District property, far from the floodplain. However, some of these vehicles are often in use and at various project sites that may sit in a floodprone area. DD6 closely monitors the weather and takes proactive steps, when possible, to move vulnerable equipment to higher ground when equipment is being operated or staged in a floodprone area.

FLOOD RISKS – ROADS

Nationwide, flooded roads pose the greatest threat to people during floods. Most of the more than 200 people who die in floods each year are lost when they try to drive across flooded roads. Driving into water is the number one weather-related cause of death in Central Texas. Statewide, between 1960 and 1996, 76% of flood-related deaths were vehicle-related.

As illustrated in Figure 17, flood hazards for cars vary with both velocity and depth of floodwaters. Many cars will float in less than 24 inches of water. Fast-moving water can quickly wash cars off the road or wash out a low section of road.

Figure 17 – Flood Hazard Chart for Cars (Source: Downstream Hazard Classification Guidelines)



Although most roads in the area are unlikely to have deep or fast-moving water during flood conditions up to the level of the 100-year flood, many are still known to flood regularly. Within the City of Beaumont and Jefferson County there are approximately 1,165 miles of roads (750 miles within the City, and 415 within the County).

The Texas Department of Transportation (TXDOT) maintains the freeways that run through the City and County. These major roadways include the following

- Cardinal
- I-10
- East Tex
- College (90) – (from I-10 to the west)
- Fannett Rd (from Cardinal to the west)
- Martin Luther King (from I-10 to the south)

Due to the extensive and common road flooding in DD6, it would be nearly impossible to generate a list of flood-prone roads. Members of the planning committee responded to the question of which roads in the area are flood-prone with the answer, "all of them". Due to this reason, the City and County do not close roads due to flooding. However, the City does close major underpasses where water tends to get much deeper. This is accomplished by waiting until the water is deep enough to warrant the closure. There are water depth signs at these major underpasses.

When building new State roads or upgrading existing roads, TxDOT considers the NFIP's floodplain and floodway requirements to evaluate the impact of new and replacement structures. The City and County consider floodplain and floodway impacts in its planning and design for area roads. Within the City of Beaumont, developers must satisfy the City's drainage criteria and other aspects of road designs in order for the City to accept ownership.

Replacing roads and bridges damaged or washed out by floods costs millions of dollars each year. If the damage is caused by a Presidentially-declared disaster, FEMA may pay up to 75% of the repair or replacement costs, with the remaining 25% covered by the State and local governments. The full costs of a damaging event that is not declared a major disaster must be borne by the State and local communities.

TXDOT inspects State bridges for structural integrity and to determine if erosion is a risk. Where erosion has been identified, stabilization measures have been put into place.

Roads and drainage structures in the area have sustained limited erosion damage due to flooding. Damage has occurred to two bridges in area, the bridge on Phelan, and the Bridge on Longhorn Rd. Staff interviews resulted in the following characterizations of past road flooding:

- Most roads in the area are designed to carry water and, therefore, flood even in small events.

- The worst street flooding tends to be on feeder roads.

FLOOD RISKS – LOCAL DRAINAGE

Many areas and streets experience accumulations of rainfall that are slow to drain away, which may cause disruption of normal traffic, soil erosion, and water quality problems. Local drainage problems contribute to the frequency of flooding, increase ditch maintenance costs, and are perceived to adversely affect the quality of life in some neighborhoods.

Many areas prone to shallow, local drainage flooding are not shown on the City or County's Flood Insurance Rate Maps. One measure of the magnitude of this problem is the number of flood insurance policies in-force on buildings that are outside of the mapped floodplain. Local drainage flooding throughout some subdivisions in DD6 is a problem, even during frequent rainstorms. It is a concern because access for emergency services (fire, emergency medical) can be limited. While the depth of water generally is relatively shallow, a number of homes have been flooded repetitively and are identified by FEMA as repetitive loss properties.

SECTION 3 – MITIGATION STRATEGY

DD6'S MITIGATION GOALS

State and federal guidance and regulations pertaining to mitigation planning require the development of a mitigation goal statement that is consistent with other goals, mission statements and vision statements. To do so, the MPC reviewed FEMA's national mitigation goals, several examples of goal statements from other states and communities, and the State of Texas' Mitigation Goal. The committee also considered information about natural hazards that may occur in the area and their potential consequences and losses.

As part of the Plan update, DD6's mitigation goal statement from the previous HMP was reviewed by the MPC during the initial meeting held on February 26, 2016. The MPC determined that the mitigation goal statement remains current as is with no changes or modifications. The mitigation goal statement remains as follows:

DD6'S MITIGATION GOAL STATEMENT

The mitigation goals of DD6 are:

- To protect public health, safety, and welfare;
- To reduce losses due to hazards by identifying hazards, minimizing exposure of citizens and property to hazards, and increasing public awareness and involvement;
- To facilitate the development review and approval process to accommodate growth in a practical way that recognizes existing stormwater and floodplain problems while avoiding creating new problems or worsening existing problems; and
- To seek solutions to existing problems.

STATE OF TEXAS MITIGATION GOALS

The Texas Division of Emergency Management (TDEM) is designated by the Governor as the state's coordinating agency for disaster preparedness, emergency response, and disaster recovery assistance. TDEM also is tasked to coordinate the state's natural disaster mitigation initiatives and administer grant funding provided by FEMA. A key element in that task is the preparation of the State of Texas Hazard Mitigation Plan. The State's 2007 plan includes a series of mitigation goals. As part of the 2013 State of Texas HMP update, the goals from the previous State Plan were re-assessed by the planning committee. TDEM reviewed the goals and added Goal 5 and Goal 6 to their Plan Update.

Goal 1 Reduce or eliminate hazardous conditions that may cause loss of life

Goal 2 Reduce or eliminate hazardous conditions that may inflict injuries

Goal 3 Reduce or eliminate hazardous conditions that can cause property damages

Goal 4 Reduce or eliminate hazardous conditions that degrade important natural resources

Goal 5 Reduce or eliminate repetitive losses due to frequent probability of occurrence

Goal 6 Lessen economic impact within communities when hazards occur

FEMA'S MITIGATION GOAL

FEMA's mitigation strategy is set forth in a document originally prepared in the late 1990s. This strategy is the basis on which FEMA implements mitigation programs authorized and funded by the U.S. Congress. The national mitigation goal Statement is as follows:

To engender fundamental changes in perception so that the public demands safer environments in which to live and work; and

To reduce, by at least half, the loss of life, injuries, economic costs, and destruction of natural and cultural resources that result from natural disasters.

IDENTIFYING PRIORITY ACTIONS

The 2011 DD6 Plan had 26 mitigation actions. At the time of this Plan Update, many of those actions have been completed and their statuses are listed below. As part of this Plan update, the mitigation actions items from the 2011 Plan were updated to reflect DD6's current priorities for specific activities to achieve the goals discussed above. Each action item identifies an appropriate lead person for each action, cost effectiveness, a schedule for completion and suggested funding sources. For this Plan update, the MPC kept the same priorities and used the (STAPLEE) methodology to prioritize mitigation actions. STAPLEE assesses actions based on six general criteria: Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Table 28 describes the criteria used in the STAPLEE methodology.

Table 28 – STAPLEE Methodology Criteria

STAPLEE	Criteria Explanation
S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide long- term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

The Mitigation Planning Committee members developed and prioritized the actions using the STAPLEE criteria. As part of the Plan update, the action tables from the 2011 version were distributed to the MPC and members were requested to update and provide comments. The updates and comments received were integrated into the Action Table for the Plan update. The updated high priority action items in Table 29 were prioritized by the MPC based on the STAPLEE criteria and their potential to reduce risk to DD6, including its operations, and physical

assets. The highest priority actions are generally those that are most effective in reducing risks to multiple assets simultaneously.

The Planning Committee defined High, Medium, and Low priorities in the Action Plan as follows:

- High: Meets five of the seven STAPLEE criteria
- Medium: Meets four of the seven STAPLEE criteria
- Low: Meets three of the seven STAPLEE criteria

These priorities were applied to update the action items. In addition, new actions were identified. The STAPLEE criteria to prioritize also was used but they were not incorporated into the existing list as those projects are completed or ongoing. The new action were prioritized, ranked, with an estimated cost and impact on new buildings and infrastructure (Table 30). The items were sorted by high, medium and low priority. A key criterion in DD6's prioritization of actions was the cost-effectiveness of actions and projects. Cost effectiveness will continue to be central to DD6's decision-making processes in identifying and funding mitigation actions.

DD6'S CURRENT MITIGATION ACTIONS

Table 29 – Status of Mitigation Actions from the 2011 Plan

No.	Action Item Description / Benefits	Hazard	Status as of 2016
1	Work with National Weather Service to augment and perfect Pine Island Bayou Modeling.	Flood	Complete. DD6 coordinated closely with the NWS to correlate known flood water surfaces in Bevil Oaks to the NWS forecasting station in Sour Lake. The NWS now has a monitoring station on their website that uses DD6 data at Bevil Oaks which is the populated area affected. Additionally, DD6 has installed a site gauge accessible to the residents to aid in their interpretation of the NWS forecast.
2	Hurricane Shutters DD6 desires to harden their administration and engineering building to make a safe harbor for any person that so chooses to stay in these buildings during an event.	Hurricanes and tropical Storms, Thunderstorms/High Winds	Complete.
3	Tyrell Park Drainage Project The proposed project is to construct two small detention basins (14 acre feet), and increase the size of a road crossing. The net result of this effort will be a lower 100-year water surface in the area, and a significant reduction in flooding.	Flood	Complete.

4	Lawhon Detention In order to relieve flooding, a detention basin is proposed to be constructed along Bayou Din.	Flood	Complete.
5	Hillebrandt Floodwater Diversion Under Calder	Flood	Complete.
6	Replace 10 wooden flood gates at the very bottom of Taylor's Bayou watershed with 4 concrete and steel tainter gates.	Flood	Complete. In addition, four additional tainter gates have been added to an existing seven gate structure. This brings the capacity of the total outfall conveyance structures up to the capacity of the receiving streams (19 gates and a navigation lock).
7	Improvements on Ditch 100-D (Cartwright Corley Area) This mitigation project will remove the existing box culverts and excavate two detention basins on the land that the box culverts cross and adjacent lands. In addition, in order to bring water more efficiently to the new detention basins, an existing man-made ditch will be enlarged, a culvert will be bored under an existing crossing, and a 2,600-foot culvert will be placed along Corley Street.	Flood	Complete.
8	Ditch 104B Improvement Project (Park St. and Saxe Ave. of the City of Beaumont and surrounding subdivisions)	Flood	Complete.

	This mitigation alternative is to bore two 84" pipes under an existing crossing and enlarge 7,200 linear feet of an existing man-made ditch for erosion control.		
9	Ditch 104 Detention Basin – (Highland Park Addition and surrounding subdivisions) This mitigation project is to construct a detention basin project whereby 117 acre-feet of detention will be excavated in a series of basins that are connected by culverts.	Flood	Complete.
10	Upgrade / Repair Floodgates at Taylors Bayou Navigation District Facility.	Flood	Complete. Addressed as part of item 6.
11	Construction of Disaster Shelter at DD6 Facility This shelter will be 3,000 sf in area, house up to 30 people and will be built in accordance with FEMA 361 - Design and Construction Guidance for Community Shelters.	Flood, hurricanes and tropical storms, and, tornado	Complete.
12	Control/Shelter Room at the Flood Control Gates on Taylors Bayou.	Flood	Complete. The Sabine Neches Navigation District has constructed state of the art computer operated controls on all 19 gates and the navigation lock which are housed in a hurricane proof elevated room. Emergency back-up power is included. The SNND is currently working to install a fiber optic line to their office whereby all of the gates can be remotely operated from there also.

13	Implement 800 MHz radio system District-wide.	Hurricanes and Tropical Storms, Tornadoes, Thunderstorms/High Winds	Complete.
14	Enhance DD6's internal GIS capabilities.	Flood and Hurricanes/ Tropical Storms	Ongoing. The District has been researching the best, most cost effective way to enhancing our GIS capabilities. They have purchased approximately $20,000.00 worth of scanner and computer equipment to scan maps and begin our GIS database. They are currently researching programs and hardware options.
15	Greenpond Gully Drainage Project Ditch 600 needs to be widened in order to convey the flood flows delivered by the fields and tributaries, and the crossings need to be replaced with longer bridges that are constructed up and out of the flood flows.	Flood	Almost Complete. A $13.5 million FMA grant was awarded. Construction on this very complicated project has been going well, and the project will be completed this August. This project will help protect approximately 100 homes, thousands of acres of farmland, and miles of roads.
16	Create severe weather action plan, conduct drills, identify and promulgate evacuation and sheltering options.	Floods, Hurricanes and Tropical Storms, Tornadoes, Severe Thunderstorms/High Winds	Ongoing. A 2,800 sq. ft. building has been constructed at Jefferson County Drainage District No. 6's facility. This building was constructed using all concrete construction that will withstand 150 mph winds. The building will be the team evacuation shelter and used as a command point to work from immediately after hurricanes and storm events. Storm shutters have been installed on all the operation buildings, a diesel generator has been purchased and installed to run all operations during time of power

			outages. This generator will also power the underground fuel tanks.
17	Increase coordination with the City and County regarding flood predictions and post event recovery.	Flood	Ongoing. Started to coordinate in 2015. DD6 coordinated with the Jefferson County Emergency Management during a flood in Bevil Oaks last summer in order to plan relief efforts and warning.
18	Increase flood predictive capability for streams and creeks that affect DD6 (stream gauges, to include adding prior flood levels to current gauges).	Flood	Ongoing. At least 20 ALERT stations have been added throughout our Jefferson County Drainage District No. 6's district to monitor rainfall and water levels. Jefferson County Drainage District No. 6 has also worked with the National Weather Service to help citizens of the Bevil Oaks community better understand the flood warnings and predictions.
19	Develop distribution centers in local libraries, DD6 facilities, DD6 website and other public buildings where information and safety guidance on natural and manmade hazards as well as ways to mitigate hazards can be provided to citizens	Flood, Hurricanes and Tropical Storms, Tornadoes, and Severe Thunderstorms/High Winds	To be completed.
20	Ditch No. 901 Re-routing	Flood	Ongoing. Subdivision road flooding. The City of Beaumont study is underway for this and other area flooding to determine how best to mitigate. Once the study is complete, will work with City to determine next steps for a project.
21	Periodically perform engineering and structural surveys on DD6 Facilities (e.g. command and control facilities) to ensure		Ongoing. Structures are surveys after an event comes through if there are issues, they are fixed to continue to protect against the effects of wind and rain.

	that they are sufficiently protected from effects of hazards		
22	Undertake periodic informational mailings to at risk property owners (flood insurance, maintain drainage, flood safety, easy mitigation measures, permit requirements) Include information on other relevant hazards as appropriate	Flood, Hurricanes and Tropical Storms, Tornadoes, and Severe Thunderstorms/High Winds	Remove. Will be removed from actions in the next plan update. DD6 determined that this work should be Cities and not Drainage District outreach.
23	Conduct homeowner workshops on retrofitting and low cost measures	Flood, Hurricanes and Tropical Storms, Tornadoes, and Severe Thunderstorms/High Winds	Remove. Will be removed from actions in the next plan update. DD6 determined that this work should be Cities and not Drainage District outreach.
24	Collect sunny day data for at risk buildings	Flood	Remove. Will be removed from actions in the next plan update. Specific project identifications calls for this kind of data collection and there are not enough resources to collect data for every building, rather when a building is to be included in a project.
25	Identify whether hazardous materials handlers/waste sites are in mapped flood plain; notify company and encourage protective measures	Flood	Remove. Will be removed from actions in the next plan update. DD6 determined that this work should be Cities, County or private entities responsibility and not Drainage District outreach.

26	Formalize procedures on DD6 roles and responsibilities before, during and after a hazard event.	Flood, Hurricanes and Tropical Storms, Tornadoes, and Severe Thunderstorms/High Winds	Ongoing. Determining SOPs and roles and responsibilities are extremely helpful when an event occurs. DD6 will continue to work on formalizing SOPs and roles and responsibilities to be ready before, during and after a hazard event.

Table 30 – DD6 NEW 2016 Mitigation Actions

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
1	Detention project to help mitigate flooding on Delaware Street Implementation lead: DD6 Funding Sources: DD6 operating budget, grants, City support	DD6 Engineering/ Administration	Schedule 2016-2018 Staplee High/ Medium	Flood and hurricanes and tropical storms	Very Cost Effective	The last major rainfall highlighted an area of Delaware Street that suffers flooding and a detention project is being considered, along with the City of Beaumont, in a City park known as Wuthering Heights Park. High level engineering indicates very cost effective and would help protect structures on Delaware Street and in the Park which includes 50 homes, apartments, schools, a church, and approximately 10 businesses.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
2	Ditch 609 (South China Relief) 20,000 linear feet of open channel is planned to be enlarged as well as replacement of six crossings including an inverted siphon for a major Lower Neches Valley Authority (LNVA) canal. Also, a portion of a canal will be relocated to provide space for a much needed drainage ditch. Funding Sources: DD6 operating budget, grants	DD6 Engineering	Schedule 2017 - four years to complete Staple High	Flood and hurricanes and tropical storms	Very Cost Effective	Ditch No. 609 S. China Relief has now been studied in great detail, with project plans nearly completed, and a project cost estimate of $5,235,015.00 has been finalized. A Flood Mitigation Assistance(FMA) Grant Application has been completed and will be submitted this year. If the grant application is not successful, Jefferson County Drainage District No. 6 will attempt to complete this project over the next four years. Would protect 68 homes and some businesses.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
3	Ditch 100 A (East Calwood) 2,200 feet of unmaintainable channel is planned to be retrofitted with an underground culvert to allow for shaping and resizing the ditch to allow for continued maintenance. Funding Sources: DD6 operating budget, grants	DD6 Engineering	Schedule 2016-2017 Staplee High	Flood and hurricanes and tropical storms	Cost Effective	Right-of-way tracts have been purchased for the channel work, as well as an access and work area. This is an estimated $300,000.00 project that will begin this year and completed next year. Would protect approximately 40 homes and a Church.
4	Amelia Cutoff Diversion Funding Sources: DD6 operating budget, grants	DD6 Engineering	Schedule 2018 Staplee Medium	Flood and hurricanes and tropical storms	Cost Effective	This $2.4 million project has been planned and is waiting environmental permitting and funding. Since this project has environmental permitting issues, it has been tabled while other permit applications are processed. This project will be reinstated in 2018. Would protect approximately 408 homes.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
5	Taylor's Bayou Funding Sources: DD6 operating budget, grants	DD6 Engineering	Schedule 2017 Staplee High	Flood and hurricanes and tropical storms,	Cost Effective	This $13 million project has been permitted through the U.S. Army Corps of Engineers, 80% of the necessary right-of-way has been purchased, and a grant application has been submitted and will be resubmitted this year. If we are unsuccessful in obtaining a grant, Jefferson County Drainage District No. 6 will begin this 3-year project next year. Would protect approximately 227 homes and many businesses.
6	Ditch 607 Channel work and crossings Funding Sources: DD6 operating budget, grants	DD6 Engineering	Schedule 2019 Staplee Medium	Flood and hurricanes and tropical storms	Cost Effective	This $1.5 million estimated project is a rural project for the not too distant future, and it will likely begin in 2019. Would protect approximately 10 homes and many acres of agricultural land the miles of roads.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
7	Whites Ranch outfall structures four @ $250,000 each. One a year for four years. Funding Sources: DD6 operating budget, grants	DD6 Engineering/ Administration	Schedule 2016 Staplee High	Flood and hurricanes and tropical storms	Cost Effective	An engineering firm has been hired to design these structures for $50,000.00. The design is underway. One structure will be installed this year and three additional structures will be installed in the next three years. Would protect valuable agricultural land and miles of roadways.
8	Ditch 119 Drossings at Yount and Edson Funding Sources: DD6 operating budget, grants, City	DD6 Engineering	Schedule 2017 Staplee Medium/ High	Flood and hurricanes and tropical storms	Cost Effective	This will be a joint project with the City of Beaumont. The City will purchase the box culverts and Jefferson County Drainage District No. 6 will install them, along with the erosion control. Then, the City of Beaumont will reconstruct the street over the box culverts. The City of Beaumont's Engineering Department is currently considering eliminating the Yount Street crossing altogether and leaving an open channel with dead-end cul-de-sacs on each side. The City is performing traffic analysis and taking public input. This project will begin in 2017 and is currently estimated at $340,000.00. Would protect approximately 50 homes as well as help make a dangerous road that floods significantly become safer.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
9	JD Murphree Outfall Funding Sources: DD6 operating budget, grants	DD6 Engineering/ Administration	Schedule 2016-2017 Staplee High	Flood and hurricanes and tropical storms	Cost Effective	This project has required a tremendous amount of coordination with landowners, Texas Parks & Wildlife Department, US Fish & Wildlife Service, Ducks Unlimited, and Jefferson County. All agreements have been finalized and a $1 million grant has been obtained by Ducks Unlimited. A consulting engineer has been hired to design the structure for $80,000.00. The terms of the Ducks Unlimited grant state that the project will be completed by the summer of 2017, so this project is on the fast-tract to be designed, a contractor hired, and construction completed by that time. Would protect thousands of acres of fresh water marshland that is drowning from the floods.
10	Enhance DD6's internal GIS capabilities.	DD6 Engineering	Began in 2015. STAPLEE High	Flood and Hurricanes / Tropical Storms	Cost Effective	Much thought has been given and research has been accomplished to obtain a direction with regard to enhancing our GIS capabilities. We have purchased approximately $20,000.00 worth of scanner and computer equipment to scan maps and begin our GIS database. We are currently researching programs and hardware options.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
11	Greenpond Gully Drainage Project Ditch 600 needs to be widened in order to convey the flood flows delivered by the fields and tributaries, and the crossings need to be replaced with longer bridges that are constructed up and out of the flood flows.	DD6 Engineering	Began in 2015. STAPLEE High	Flood	2.9 BCA	A $13.5 million FMA grant was awarded. Construction on this very complicated project has been going well, and the project will be completed this August.
12	Create severe weather action plan, conduct drills, identify and promulgate evacuation and sheltering options.	DD6 Administration	2016 STAPLEE High	Floods, Hurricanes and Tropical Storms, Tornadoes, Severe Thunderstorms/High Winds	Cost effective	A 3,000 sq. ft. building has been constructed at Jefferson County Drainage District No. 6's facility. This building was constructed using all concrete construction that will withstand 150 mph winds. The building will be the team evacuation shelter and used as a command point to work from immediately after hurricanes and storm events. Storm shutters have been installed on all the operation buildings, a diesel generator has been purchased and installed to run all operations during time of power outages. This generator will also power the underground fuel tanks.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
13	Increase coordination with the City and County regarding flood predictions and post event recovery.	DD6 Administration	Began in 2015. High	Flood	Cost Effective	Ongoing. DD6 coordinated with the Jefferson County Emergency Management during a flood in Bevil Oaks last summer in order to plan relief efforts and warning.
14	Increase flood predictive capability for streams and creeks that affect DD6 (stream gauges, to include adding prior flood levels to current gauges).	DD6 Engineering	Began in 2015. High	Flood	Cost Effective	At least 20 ALERT stations have been added throughout our Jefferson County Drainage District No. 6's district to monitor rainfall and water levels. Jefferson County Drainage District No. 6 has also worked with the National Weather Service to help citizens of the Bevil Oaks community better understand the flood warnings and predictions.

No	Action Item Description / Benefits	Lead Manager	Schedule and Staplee Priority	Hazard	Est. Cost and Rank	Cost Benefit and Effect on Hazard on Existing or New Buildings and Infrastructure
15	Develop distribution centers in local libraries, DD6 facilities, DD6 website and other public buildings where information and safety guidance on natural and manmade hazards as well as ways to mitigate hazards can be provided to citizens	DD6 Administration	Six months from beginning. STAPLEE High	Flood, Hurricanes and Tropical Storms, Tornadoes, and Severe Thunderstorms/High Winds	Cost Effective	To be completed.
16	Procurement of NOAA All Hazard Radios and distribute them to key personnel	DD6 Administration	Six months from beginning. STAPLEE High	Flood, Hurricanes and Tropical Storms, Tornadoes, and Severe Thunderstorms/High Winds	Cost Effective	Acquiring NOAA All Hazard Radios will allow the District to prepare for and respond to hazards as efficiently as possible.

In addition to the actions above, after Hurricane Harvey, additional actions have been added:

Table 30-A– Post Harvey – Additional New Action Items

* A= Actions reducing risk to existing buildings and infrastructure
* B= Actions reducing risk to new development

Action #17

Title: Borley Heights Outfall Channelization and NLVA canal crossing addition			
Hazard	Description/Issue	Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Project will accelerate the floodwater out of the Borley Heights subdivision and across the Lower Neches Valley Authority BI Canal and into Griffin Ditch which was improved with an FMA grant (all of GD ditches were widened and all of its crossing enlarged)	JCDD6	
Cost Estimate/Funding	Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: $6,000,000 Funding: Grants and general operating budget	2020-2025	H	A
Cost and Benefits Considerations			
There are 250 homes in the area that have flooded in the past and this project could help mitigate future flooding. However, a full BCA would need to be done to determine costs and benefits.			

Action #18

Title: Neches River Diversion Project			
Hazard	Description/Issue	Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Divert flood flows out of the City of Beaumont and the Hillbrant watershed into the Neches River to relieve flooding in Beaumont and relieve Hillebrant Bayou downstream.	JCDD6 and City of Beaumont	
Cost Estimate/Funding	Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: 500,000,000 Funding: Federal Grants (e.g.. CDBG/FEMA HMGP)	2020-2025	H	A/B
Cost and Benefits Considerations			
This will protect half of the entire City of Beaumont from repetitive flooding.			

* A= Actions reducing risk to existing buildings and infrastructure * B= Actions reducing risk to new development Action #19				
Title: The Bayou Dinn Detention Basin				
Hazard	Description/Issue		Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Detain floodwater on Hillebrant Bayou and its tributaries to relieve flooding downstream and allow channelization projects upstream. This would Include Detention on Bayou Dinn as identified in the Bernard Johnson Incorporated Master Drainage Plan 1986.		JCDD6 and Jefferson County	
Cost Estimate/Funding		Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: $70,000,000 Funding: Federal Grants (e.g.. CDBG/FEMA HMGP)		2020-2025	H	A/B
Cost and Benefits Considerations				
Many houses will benefit in the south end of the Beaumont Texas as well as the rural area Fannett, Labelle, and Cheek.				

Action #20				
Title: Nome Relief				
Hazard	Description/Issue		Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Detain floodwaters on Taylors Bayou tributaries 804B and 804D to relieve flooding downstream and allow channelization projects upstream to relieve flooding in Nome Texas. Will include a detention basin.		JCDD6	
Cost Estimate/Funding		Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: $6,000,000 Funding: Grants and general operating budget		2020-2025	H	A
Cost and Benefits Considerations				
Relieves the frequency of flooding in the City of Nome. BCA would need to be completed.				

* A= Actions reducing risk to existing buildings and infrastructure
* B= Actions reducing risk to new development

Action #21

Title: China Relief			
Hazard	Description/Issue	Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Detain floodwaters on Taylors Bayou tributaries 600 and 609 to relieve flooding downstream and allow channelization projects upstream to relieve flooding in China Texas. Will include a detention basin.	JCDD6	
Cost Estimate/Funding	Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: $10,000,000 Funding: Grants and general operating budget	2020-2025	H	A
Cost and Benefits Considerations			
Relieves the frequency of flooding in the City of China. BCA would need to be completed.			

Action #22

Title: Study Ditch 505 Detention			
Hazard	Description/Issue	Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Detain floodwaters on Taylors Bayou tributary ditch 505 in order to provide flood relief downstream and allow channelization projects to relieve flooding in the Fannet area	JCDD6	
Cost Estimate/Funding	Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: $25,000,000 Funding: Grants and general operating budget	2020-2025	H	A
Cost and Benefits Considerations			
Relieves the frequency of flooding in Fannet. BCA would need to be completed.			

* A= Actions reducing risk to existing buildings and infrastructure
* B= Actions reducing risk to new development

Action #23

Title: Concrete line ditch assessment and repair			
Hazard	Description/Issue	Implementing Department	
Flood Hurricane/Tropical Storms Severe Thunderstorm/High Winds	Evaluate and characterize concrete lined ditch damage throughout the district to estimate repair costs and pursue opportunities for funding for rehabilitation of these channels in order to provide improved flood flow conveyance	JCDD6	
Cost Estimate/Funding	Time Frame	Priority	Risk Focus (A/B) *
Cost Estimate: $100,000,000 Funding: Grants, operating budget	2020-2025	H	A/B
Cost and Benefits Considerations			
Will provide additional capacity to remove floodwaters out the populated areas of the City of Beaumont.			

CONTINUED COMPLIANCE WITH THE NFIP

Participation in the National Flood Insurance Program (NFIP) is important to DD6 and its residents. This is evidenced by the Cities in the planning area, and the County's commitment to regulating development and redevelopment, by adoption of provisions that exceed the minimum requirements, and by its active pursuit of mitigation opportunities. The Cities and Jefferson County, with support from DD6, are firmly committed to continued compliance with the NFIP. It is important to note that DD6 cannot participate in the NFIP as Cities and Counties do. It cannot not apply for NFIP (Cities and County do) or CRS (Cities and County do) status. However, it supports the communities within its planning area in any way it can to keep its standing in the NFIP and CRS.

DD6 is a conservation and reclamation district and a political subdivision of the State of Texas. Considering DD6 is a separate entity and does not directly participate in the NFIP, specific actions will be determined by representatives and officials with the incorporated areas and Jefferson County within DD6. With this in mind, DD6 did not identify and prioritize NFIP actions as part of the planning process. DD6 will continue to work closely with the cities and Jefferson County to identify and recommend actions that will ensure continued compliance with the NFIP.

The City of Beaumont satisfied requirements for initial participation in the NFIP and joined the Emergency Program and ultimately the regular program in 1970. The City of China satisfied requirements for initial participation in the NFIP and joined the Emergency Program and ultimately the regular program in 2008. The City of Bevil Oaks satisfied requirements for initial participation in the NFIP and joined the Emergency Program and ultimately the regular program in 1983. The City of Nome satisfied requirements for initial participation in the NFIP and joined the Emergency Program and ultimately the regular program in 1990.

Jefferson County satisfied requirements for initial participation in the NFIP and joined the Emergency Program. Upon issuance and final approval of the Flood Insurance Rate Map in June of 1983, the County joined the Regular Program. The effective Flood Insurance Rate Map for the County has been revised a number of times to reflect more detailed information and changes to the floodplain, and is now used as the minimum flood hazard area within which development must conform to floodplain management regulations.

As mentioned at the beginning of this Section, DD6 is a conservation and reclamation district and a political subdivision of the State of Texas. Considering DD6 is a separate entity and does not directly participate in the NFIP, specific actions will be determined by representatives and officials with the incorporated areas and Jefferson County within DD6. With this in mind, GCCDD did not identify and prioritize NFIP actions as part of the planning process. DD 6will continue to work closely with the Cities and County to identify and recommend actions that will ensure continued compliance with the NFIP.

CHANGES IN DEVELOPMENT AND REVIEW OF LOCAL REGULATION AND DD6 RESOURCES

DD6 has no direct responsibility for oversight of development in the floodplain. When development is proposed within the Cities or County, within the floodplain, DD6 is asked to review and comment on the subdivision plans. The Cities have strong development and permitting requirements for development in and out of the floodplain. Since 2011, DD6 has reviewed approximately ten proposals.

Since the last plan, The City of China has passed a new permit ordinance, effective April 2016.

Construction permits. Table 31 lists the amount of building permits received by jurisdiction, by type of building (commercial/residential) demolition or construction.

Table 30 Permits

Beaumont Permits						
Type	2011	2012	2013	2014	2015	2016
Residential Building Permit	298	209	162	358	204	76
Commercial Building Permit	42	36	35	44	35	23
Demolition Residential Permit	39	320	120	342	351	73
Demolition Commerical Permit	282	32	20	36	24	9
China						2016
Residential						1
Commercial						0
Demolition						0
New Permit Ordinance effective April 2016						
Bevil Oaks						
Type	2011	2012	2013	2014	2015	2016
Residential Building Permit	3	2	4	3	3	0
Commerical Builidng Permit	0	0	0	0	1	0
Demolition Residential	1	0	0	1	1	0
Demolition Commerical	0	0	0	0	0	0

Inspections. DD6 has no inspectors and has no jurisdiction over inspection. However, DD6 relies on the Cities to provide the necessary inspections. To manage development in the floodplain, DD6 relies on the City engineers.

Per the US Census Bureau Quick Facts, the population percent change from 2010 until 2015 have gone up 0.7% in Beaumont and 0.8% in Jefferson County. The Census Bureau quick facts

only reports for cities with a population of 5,000 or more, so China and Bevil Oaks were not reported. Reviewing the population change with the permits, the development trend for the planning areas is only slightly growing and the Cities have strong development and permitting requirements for development in and out of the floodplain.

DD6 is comprised of Engineering, Operations and Administration. Through these departments, the master drainage plan is administered to protect the area. DD6 has GIS capabilities, engineering capabilities, financial and grant capabilities and operational and equipment capabilities to either complete projects completely or largely with its own resources. It has a close working relationship with the Cities and Counties to help get needed resources and projects complete to help protect the residents, infrastructure, businesses and property from future flooding.

These small changes in development along with the Jurisdictions' permitting processes and the many projects that DD6 has engaged in, have led to a decrease in the overall flood vulnerability to the Jurisdiction. The majority of these projects have been drainage projects including detention basins, ditch improvements and floodwater diversions. Many of these projects have already reduced the 100-year flood levels in the project areas.

APPENDIX 1 – MITIGATION PLANNING COMMITTEE MEETING MINUTES

Jefferson County Drainage District 6

MPC Meeting Minutes

February 25, 2016

Agenda for the February 25, 2016 Mitigation Planning Committee (MPC) meeting

MPC Meeting Number 1

Introductions

Karen Stewart Business Manager – DD6

Chuck Oakley CFO – DD6

Doug Canant District Engineer – DD6

Thomas Gill – City of Beaumont Streets and Drainage Manager and Debris Remover

Jeff Ward – JSWA

Dan Ward – JSWA

Don Rao – Engineering Director for Jefferson County

Background and purpose of mitigation planning

Updating the HMP has two purposes, it keeps us eligible for FEMA mitigation grant funds and it helps us to understand risk and think through the planning process as well as come up with other mitigation project ideas.

The original HMP written in 2005 and updated in 2010. The 2010 update was approved by FEMA on 6/26/2011. The current plan expires on 6/26/2016.

The plan update process

The Plan update will follow the same process as before. Things that have changed within the District must be accounted for like the new admin building which is not in current plan. We need to address how was it built and any risk that comes with the new building and how to mitigate that risk.

We will take the old plan and look at new FEMA requirements. We have to look at any changes in planning area and assets at risk over the past five years as well as any actions to protect those areas.

We have to look at any hazards that have occurred over the past five years.

We will have to look at the status of old action items and add new actions that were not in the plan previously. We also want to involve anyone that interfaces with the district and may have input in what actions should be taken

The following are the Tasked to be followed/completed as part of this planning process:

Task 1: Determine the Planning Area and Resources

Task 2: Build the Planning Team

Task 3: Create an Outreach Strategy

Task 4: Review Community Capabilities - update previous and make sure it hasn't changed

Task 5: Conduct a Risk Assessment – look at any changes to the planning area like new population, new buildings and what has changed

Task 6: Develop a Mitigation Strategy -

Task 7: Keep the Plan Current

Task 8: Review and Adopt the Plan

Communications – communications between the team will occur via email and/or phone

Schedule

Task	Start Date	Completion Date
1st Committee Meeting	2/25/2016	2/25/2016
Data Collection	3/1/2016	5/1/2016
Draft plan development	3/1/2016	5/1/2016
Public Presentation	Mar-16	Mar-16
2nd Committee Meeting	May/June 2016	May/June 2016
Rough Draft Complete	6/1/2016	6/1/2016
Draft for Committee to review	6/1/2016	6/1/2016
3rd Committee Meeting	Mid June 2016	Mid June 2016
Committee comments incorporated	6/25/2016	6/25/2016
Submit to the State/FEMA for review	6/30/2016	6/30/2016
Final Public Meeting - associated with a board meeting		TBD

To Dos:

Verify point of contact for the mitigation plan:

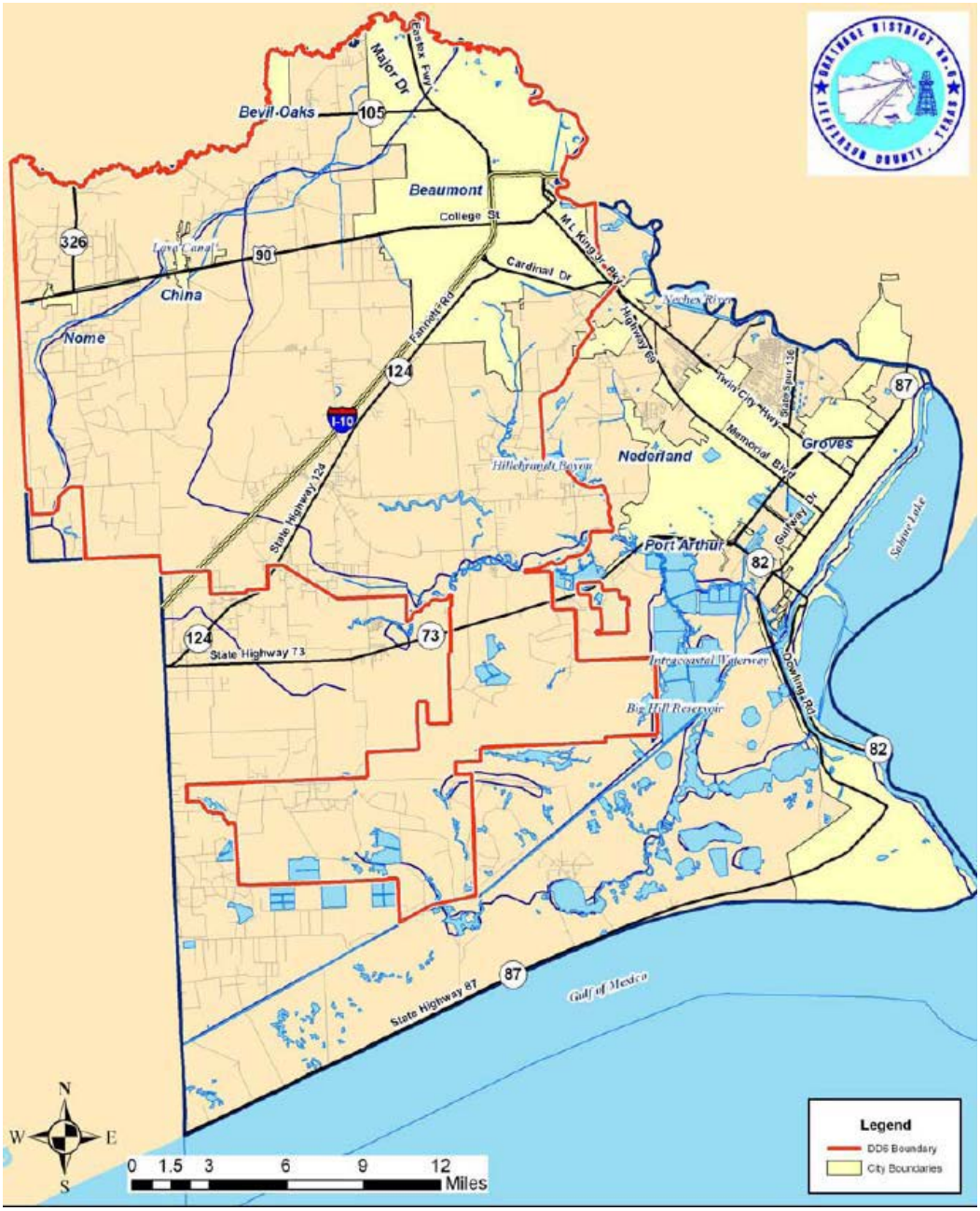
Karen Stewart will be the point of contact for the District.

Verify authority for plan development. The authority for plan development/update is the same.

The status as a drainage district and their authorities have not changed.

Verify no change to planning area

ACTION: Karen needs to send an update to the map with a current color version of the planning area showing the City, County and District boundaries. – revised map provided on 2/26/16



Verify and update planning committee membership

Mitigation Planning Committee

- Ms. Karen Stewart, Jefferson County Drainage District 6
- Mr. Doug Canant, Jefferson County Drainage District 6
- Ms. Adina Ward, City of Beaumont
- Thomas Gill, City of Beaumont
- Mr. Chuck Oakley, Jefferson County Drainage District 6
- Other Jefferson County Drainage District 6?
- Don Rao - Jefferson County Engineering Department

Verify Stakeholders Group

- Mr. Richard LeBlanc, Jefferson County Drainage District 6
- Other Members of Jefferson County Drainage District 6
- Mr. Gilbert Ward, Texas Water Development Board
- Sabine Neches Navigation District
- Texas Department of Emergency Management
- BISD, Harden Jefferson ISD (HJISD); Hamshire Fannett ISD (HFISD);
- Lamar University
- Lamar Institute of Technology
- Baptist Memorial Hospital; Christus St. Elizabeth Hospital
- Industry – ACTION to Karen and Doug to follow up on whether there is we should include a certain industry as a stakeholder
- Jefferson County Drainage District 3
- TXDOT
- LNVA (Lower Neches Valley Authority

Check updates to FIS/FIRMs:

The FIS and FIRMs have the same effective date as the previous Plan.

Public involvement

Previously we sent out surveys with the Water Bill, getting about 5,000 responses the first time, but far less last time. The data this time from a survey will not be as useful as previously, so we will not send one out.

Set First public meeting

We have to set a public meeting and advertise in the newspaper and on the District Website when and where the public meeting will be held.

ACTION – Jeff to propose to Karen some dates for a public meeting.

Review and re-verify mitigation goal is current

DD6's Mitigation Goal Statement
The mitigation goals of DD6 are:

- To protect public health, safety, and welfare;
- To reduce losses due to hazards by identifying hazards, minimizing exposure of citizens and property to hazards, and increasing public awareness and involvement;
- To facilitate the development review and approval process to accommodate growth in a practical way that recognizes existing stormwater and floodplain problems while avoiding creating new problems or worsening existing problems; and
- To seek solutions to existing problems.

The Mitigation Goals are still current and will be kept as is.

We will need an update on the number of buildings. Building permits issued by Jefferson County and the City of Beaumont will help us get an accurate number. ACTION – We need the number of permits issued by the County and the City for new construction in the past 5 years; residential and commercial.

Talk to Boyd Meyer about permits in the City of Beaumont

ACTION – Find the number of permits for demolished buildings

ACTION – Jeff to call City of China and Bevil Oaks for building permits issued for new construction and demolition.

Verify Jefferson Co and Beaumont still submit subdivision proposals to DD6 – how many? Beaumont only submits proposals for subdivisions and commercial buildings.

Change in local ordinances and/or procedures related to building permits/floodplain.

There have been no changes in local ordinances and/or procedures related to building permits/floodplain

Any recent CAVs

ACTION – check with City of Beaumont on recent Community Assisted Visit – JW spoke with AW on 2/26/16 - None in the past 5 years.

Any recent mitigation projects completed since update?

ACTION work with Doug/Chuck/Karen on a list of recent mitigation projects completed since the last update

New projects currently being contemplated?

ACTION work with Doug/Chuck/Karen on a list of new projects being contemplated.

Status of prior actions

ACTION – Karen work with Doug to send written response of status of actions from last plan. – DC provided a response on 2/25/16

ACTION – Jeff provide to Doug a list of completed Mitigation Projects since last plan

DD6 is completing a new project; there should be an action relating to this in the plan.

ACTION – Jeff send Doug entire repetitive loss list including properties that have been mitigated. – Sent to DC on 2/25/16

Status of prior actions

1. Continue to pursue cost effective mitigation projects; apply for federal funding, as appropriate. For flood mitigation projects, focus on areas known to be flood-prone/Repetitive Loss areas. For other hazard mitigation projects, coordinate with Jefferson County and incorporated areas within DD6 as they will be required to take the lead on non-flood related projects.
2. Formalize procedures on DD6 roles and responsibilities before, during, and after a hazard event
3. Work with National Weather Service to augment and perfect Pine Island Bayou Modeling.
4. Undertake periodic informational mailings to at-risk property owners (flood insurance, importance of maintaining drainage, flood safety, easy mitigation measures, permit requirements). Include information on other relevant hazards, as appropriate.
5. Enhance DD6's internal GIS capabilities
6. Hurricane Shutters - DD6 desires harden their administration and engineering building to make a safe harbor for any person that so chooses to stay in these buildings during an event.
7. Greenpond Gully Drainage Project - Ditch 600 needs to be widened in order to convey the flood flows delivered by the fields and tributaries, and the crossings need to be replaced with longer bridges that are constructed up and out of the flood flows.
8. Tyrell Park Drainage Project - The proposed project is to construct two small detention basins (14 acre feet), and increase the size of a road crossing. The net result of this effort will be a lower 100-year water surface in the area, and a significant reduction in flooding.
9. Lawhon Detention - In order to relieve flooding, a detention basin is proposed to be constructed along Bayou Din.
10. Hillebrandt Floodwater Diversion Under Calder
11. Replace 10 wooden flood gates at the very bottom of Taylor 's Bayou watershed with 4 concrete and steel tainter gates.

12. Improvements on Ditch 100-D (Cartwright Corley Area) - This mitigation project will remove the existing box culverts and excavate two detention basins on the land that the box culverts cross and adjacent lands. In addition, in order to bring water more efficiently to the new detention basins, an existing man-made ditch will be enlarged, a culvert will be bored under an existing crossing, and a 2,600 foot culvert will be placed along Corley Street.
13. Ditch 104B Improvement Project (Park St. and Saxe Ave. of the City of Beaumont and surrounding subdivisions) - This mitigation alternative is to bore two 84" pipes under an existing crossing and enlarge 7,200 linear feet of an existing man-made ditch for erosion control
14. Ditch 104 Detention Basin – (Highland Park Addition and surrounding subdivisions) - This mitigation project is to construct a detention basin project whereby 117 acre-feet of detention will be excavated in a series of basins that are connected by culverts
15. Upgrade / Repair Floodgates at Taylors Bayou Navigation District Facility
16. Construction of Disaster Shelter at DD6 Facility - This shelter will be 3,000 s.f. in area, house up to 30 people and will be built in accordance with FEMA 361 - Design and Construction Guidance for Community Shelters.
17. Ditch No. 901 Re-routing
18. Control/Shelter Room at the Flood Control Gates on Taylors Bayou
19. Periodically perform engineering and structural surveys of DD-6 facilities (in particular, command and control facilities) to ensure that they are sufficiently protected from effects of hazards, especially wind
20. Create severe weather action plan, conduct drills, identify and promulgate evacuation and sheltering options.
21. Implement 800 MHz radio system District-wide
22. Conduct homeowner workshops on retrofitting & low cost measures
23. Increase coordination with the City and County regarding flood predictions and post event recovery
24. Increase flood predictive capability for streams and creeks that affect DD6 (stream gages).
25. Collect "sunny day" data for at-risk buildings (photographs, elevation information/certificates)
26. Identify whether hazardous materials handlers/waste sites are in the mapped floodplain; if flood-prone, notify company and encourage protective measures.

Action Item	Owner
Jeff to revise the submittal date so the plan is submitted to the State before 6/28/16	**JW**
Karen needs to send an update to the map with a current color version of the planning area showing the City, County and District boundaries.	**KS**
Follow up on whether there is we should include a certain industry as a stakeholder	**MPC**
Jeff to propose to Karen some dates for a public meeting	**JW**
We need the number of permits issued by the County and the City for new construction in the past 5 years; residential and commercial	**MPC**
Talk to Boyd Meyer about permits in the city of Beaumont	**JW**
Find the number of permits for demolished buildings	**MPC**
Jeff to call City of China – 409-752-5403 and Bevil Oaks for building permits issued for new construction and demolition.	**JW**
check with Adina on City of Beaumont on recent Community Assisted Visit	**JW**
Jeff to work with Doug/Chuck/Karen on a list of recent mitigation projects completed since the last update	**JW, DC, CO, KS**
Jeff to work with Doug/Chuck/Karen on a list of new projects being contemplated	**JW, DC, CO, KS**
Karen work with Doug to send written response of status of actions from last plan	**KS, DC**
Jeff provide to Doug a list of completed Mitigation Projects since last plan	**JW**
Jeff send Doug entire repetitive loss list including properties that have been mitigated.	**JW**

Jefferson County Drainage District 6

MPC Meeting Minutes

May 25, 2016

JCDD6 Hazard Mitigation Planning Committee (MPC) Meeting 2

May 25, 2016

AGENDA

1. Confirm MPC attendees on Call
2. Review remaining data needs
3. Review draft mitigation action status from 2011 plan
4. Review mitigation action plans
5. Revised schedule:

Task	Start Date	Completion Date
1st Committee Meeting	2/25/2016	2/25/2016
Data Collection	3/1/2016	6/1/2016
Draft plan development	3/1/2016	6/15/2016
Public Presentation	4/14/2016	4/14/2016
2nd Committee Meeting	5/25/2016	5/25/2016
Rough Draft Complete	6/6/2016	6/6/2016
Public Notice for Public to review draft	5/27/2016	6/20/2016
Stakeholders requested to Review	5/27/2016	6/20/2016
Committee comments/stakeholder commments incorporated	6/6/2016	6/22/2016
3rd Committee Meeting	6/23/2016	6/23/2016
Public Presentation - Board meeting	6/28/2016	6/28/2016
Submit to State/FEMA for review	6/28/2016	6/28/2016
Final Public Meeting for approval of plan	TBD	TBD

6. Review Draft letter to stakeholders
    a. Who can place draft plan on DD6 website and can it be placed on for 6-6-16?
    b. MPC must review and provide comments back by 6-20-16 for incorporation by 6-25-16.
7. Next call will be June 23rd at 10 am for final review of draft
8. Second public meeting will be at JCDD6's Board meeting on draft plan to be submitted to State, 10 am June 28th.
9. JCDD6 to overnight plan to TDEM on June 28th for the review to begin

Introductions

Karen Stewart Business Manager – DD6

Chuck Oakley CFO – DD6

Doug Canant District Engineer – DD6

Kristen Thatcher – JSWA

Dan Ward – JSWA

Review remaining data needs

The RL and SRL maps with properties plotted within the district, decide on new mitigation actions and complete risk assessment.

Review draft mitigation action status from 2011 plan

Doug to review the list of ongoing actions and give a status summary.

Review mitigation action plans

The new mitigation actions were reviewed and agreed upon.

Review Draft letter to stakeholders

The draft letter to stakeholders was reviewed and six new stakeholders added .Letters will be mailed out and the draft plan needs to be put up on the District website by 6/6/16.

The next MPC meeting will be June 23rd at 10 am for final review of draft

APPENDIX 2 – PUBLIC MEETINGS AND PRESENTATION

DD6 held a public meeting on April 14, 2016. Information about this meeting was put in the Beaumont Enterprise, however, no one from the public attended. The publisher's affidavit and the notice in the Beaumont Enterprise are included below.

Publishers Affidavit

APR 14 2016
original Mailed PKA, AP

Acct #089393102 Job =199717601 Tear Sheet Attached
Name JEFFERSON COUNTY DRAINAGE DI 3910673 B24270750

STATE OF TEXAS
COUNTY OF JEFFERSON

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Victoria Bond

WHO BEING BY ME DULY SWORN, DEPOSES AND SAYS THAT HE/SHE IS A NEWSPAPER REPRESENTATIVE FOR THE BEAUMONT ENTERPRISE; THAT SAID NEWSPAPER REGULARLY PUBLISHED IN JEFFERSON COUNTY CIRCULATED IN JEFFERSON, HARDIN, TYLER, NEWTON, ORANGE, JASPER, LIBERTY, SABINE, CHAMBERS, SAN AUGUSTINE, ANGELINA AND GALVESTON COUNTY(COUNTIES), TEXAS; THAT THE ATTACHED NOTICE IN SAID NEWSPAPER ON THE FOLLOWING DATE(S), TO WIT:
04-07-16

Victoria Bond
NEWSPAPER REPRESENTATIVE

SWORN AND SUBSCRIBED TO BEFORE ME, THIS 8TH DAY OF APRIL 2016,

TO CERTIFY WHICH WITNESS MY HAND AND SEAL OF OFFICE.

Veronica M Tyrone
NOTARY PUBLIC IN AND FOR
THE STATE OF TEXAS

VERONICA M TYRONE 716335 NOTARY PUBLIC STATE OF TEXAS EXPIRES FEB. 10, 2020

Veronica M Tyrone
PRINT OR TYPE NAME OF NOTARY PUBLIC
MY COMMISSION EXPIRES 02-10-2020

Legal Notices

matter has been set for a final hearing on, Thursday, May 12, 2016 at 9 o'clock a.m. in Room 330 of the Pulaski County Court House located at 401 West Markham, Little Rock, AR.

In Witness Whereof, I have hereunto set my hand and seal as Clerk of the Court on this 25th day of March, 2016.

Larry Crane, Circuit Clerk

By: /s/ Nancy Sadler
Deputy Clerk

Prepared by:
Jimmy C. Morris, Jr.
Attorney for Plaintiff
AR Bar No. 2007134
2020 S. Broadway
Little Rock, AR 72206
Phone: (501) 319-7647
Fax: (501) 353-0287
Email:
j.c.morrisatty@gmail.com

Notice of Plan Availability for Public Review and Comment
Jefferson County Drainage District No. Six (DD6)
Hazard Mitigation Plan

The public is invited to a meeting where DD6 will present an overview of a planning process recently started by the District to update DD6' current Hazard Mitigation Plan. This planning process will lead to an updated plan of action to reduce the long-term impacts of flooding that impact citizens residing in the DD6 planning area and other hazards that impact DD6 owned facilities. Members of the public are encouraged to attend, especially those with property located in flood-prone areas.

This meeting will be held on April 14, 2016 at 4:00 PM, at DD6 Offices located at:

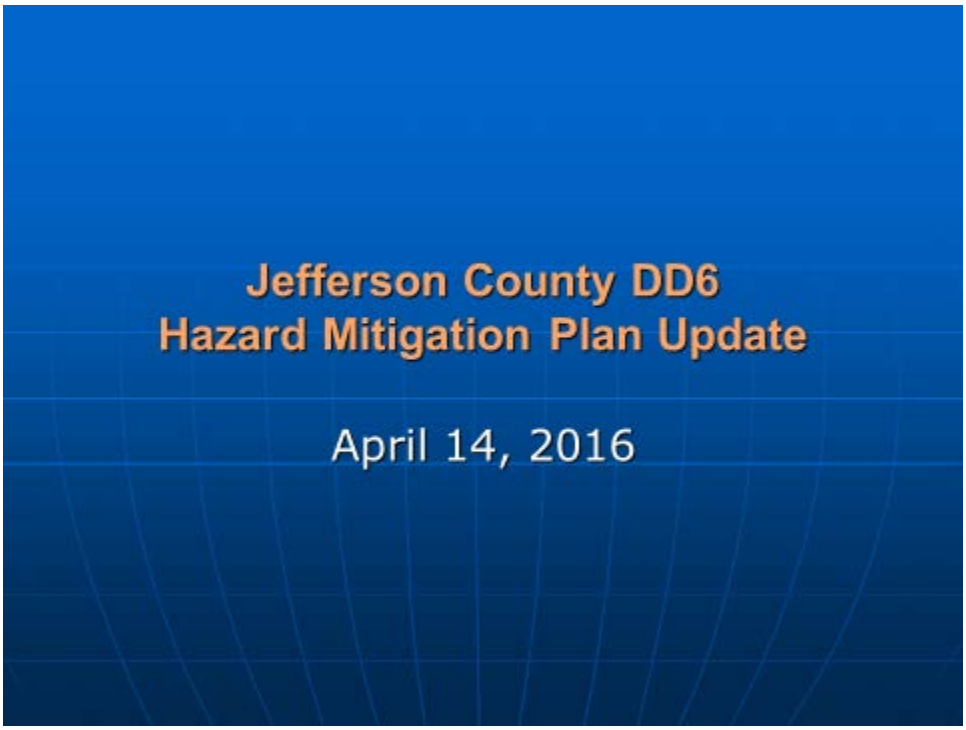
6550 Walden Road
Beaumont, TX 77707-5510

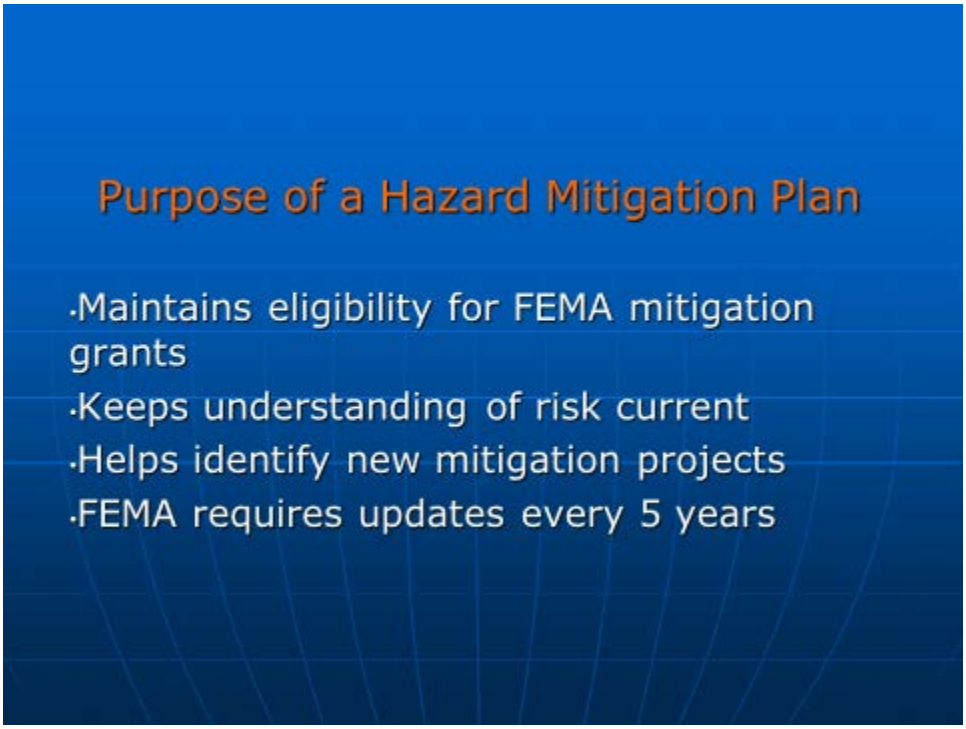
The plan update is required by the Federal Emergency Management Agency (FEMA) for DD6 to remain eligible for certain types of federal grants. The plan update will provide an overview of natural hazards in the District, a summary of past hazard events, and describe how the District recognizes and addresses hazards in the development process along with other District functions. The actions identified in this plan are intended to reduce the long-term impact of flooding on the District and its citizens. Members of the public will be encouraged to comment on the draft plan update as it progresses.

Once the plan update is complete, the final hazard mitigation plan will be presented to the DD6 Board for adoption later this year. Any additional public meetings will be scheduled before then to present the draft recommendations and request additional comment from interested citizens.

Questions about the plan should be directed to Mitigation Plan Consultant, Jeff Ward at 888-208-6695 or jward@rstarmail.com. You can also contact Karen J. Stewart at (409) 842-1818.

Public Presentation





Mitigation Plan Update

Risk assessment – Flooding and all hazards that could impact DD6 owned facilities

Establish priorities for actions and projects to reduce risk

A quick summary of what's in the plan

Executive Summary
Background
Approval and Adoption
Planning Process
Hazard Identification
Risk Assessment
Mitigation Strategy
Plan Monitoring and Maintenance
Appendices

Plan Update Process

Form team
Update Hazard Assessment
Update Risk Assessment
Provide status of prior mitigation actions
Generate new mitigation actions
Prioritize Actions
Invite public review and comment
This is why we are here tonight

DATE	FEDERAL DISASTER #	DISASTER DESCRIPTION	HAZARD MITIGATION GRANT AMOUNT
3/19/2016	4266	Severe Storms and Flooding	<$10M
2/9/2016	4255	Severe Storms and Flooding	<$10M
11/25/2015	4245	Severe Storms and Flooding	<$10M
5/29/2015	4223	Severe Storms and Flooding	<$10M
12/20/2013	4159	Severe Storms and Flooding	<$10M
8/2/2013	4136	Explosion	<$10M
9/9/2011	4029	Wildfires	<$10M
7/1/2011	1999	Wildfires	<$10M
8/3/2010	1931	Hurricane Alex	$ 6,200,000.00
9/13/2008	1791	Hurricane Ike	$ 400,266,164.00
7/24/2008	1780	Hurricane Dolly	$ 15,535,593.00
10/2/2007	1730	Tropical Storm Erin	$ 800,367.00
6/29/2007	1709	Severe Storms and Flooding	$ 13,119,696.00
5/1/2007	1697	Severe Storms and Tornadoes	$ 2,003,052.00
8/15/2006	1658	Flooding	$ 1,164,959.00
1/11/2006	1624	Extreme Wildfire Threat	$ 3,731,248.00
9/24/2005	1606	Hurricane Rita	$ 103,449,143.00
7/17/2003	1479	Hurricane Claudette	$ 2,644,965.00
11/5/2002	1439	Severe Storms and Flooding	$ 7,879,153.00
9/26/2002	1434	Tropical Storm Fay	$ 2,080,994.00
7/4/2002	1425	Severe Storms and Flooding	$ 11,388,366.00
6/9/2001	1379	Allison	$ 231,827,393.00
1/8/2001	1356	Severe Winter Storm	$ 5,523,264.00
		Total	Approx $900M

Statistics for insured properties and losses

- *In the Jefferson County and Cities within*
  - *9,000 insured properties*
  - *>$91M in paid claims*
- 600 RL properties (2 or more claims)
  - $41M in paid claims
- 85 SRL properties (4 or more claims)
  - $15M in paid claims

What is a Mitigation Project?

Reduces risk from natural hazards

Other FEMA criteria (later)

Projects potentially funded through one of FEMA's grant programs

Project Types

(focus on wind and flooding)

- Flood control projects (improved drainage, pumping, etc.)
  - Primary DD6 projects
- Acquisition/Demolition
- Elevation
- Mitigation-reconstruction

Project Types
(focus on wind and flooding)

- Window protection (shutters, filming, etc.)
- Improved connections between mechanical equipment/non-structural elements and structure
- Roof and structural load path improvements

Progress to date

- Planning Grant awarded
- Contract in place
- Initial Structure of revised plan drafted
- Request for Information provided
  - Will provide data for the plan
- Public outreach initiated
  - Today's meeting is the first
  - One more closer to when draft is complete

Path forward…

- Finalize drafts
- Continued Public outreach (draft to be made available)
- Notify stakeholders
- Submit draft to state and FEMA
- Incorporate changes
- Resubmit
- Adopt in final

Questions and Comments

Acct #089393102 Job #199969507 Tear Sheet Attached
Name JEFFERSON COUNTY DRAINAGE DT 3910673 P24271662

STATE OF TEXAS
COUNTY OF JEFFERSON

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Victoria Bond

WHO BEING BY ME DULY SWORN, DEPOSES AND SAYS THAT HE/SHE IS A NEWSPAPER REPRESENTATIVE FOR THE BEAUMONT ENTERPRISE; THAT SAID NEWSPAPER REGULARLY PUBLISHED IN JEFFERSON COUNTY CIRCULATED IN JEFFERSON, HARDIN, TYLER, NEWTON, ORANGE, JASPER, LIBERTY, SABINE, CHAMBERS, SAN AUGUSTINE, ANGELINA AND GALVESTON COUNTY(COUNTIES), TEXAS; THAT THE ATTACHED NOTICE IN SAID NEWSPAPER ON THE FOLLOWING DATE(S), TO WIT:
05-27-16

Victoria Bond
NEWSPAPER REPRESENTATIVE

SWORN AND SUBSCRIBED TO BEFORE ME, THIS 30TH DAY OF MAY 2016,

TO CERTIFY WHICH WITNESS MY HAND AND SEAL OF OFFICE.

Erika Acevedo
NOTARY PUBLIC IN AND FOR
THE STATE OF TEXAS

ERIKA ACEVEDO
PRINT OR TYPE NAME OF NOTARY PUBLIC
MY COMMISSION EXPIRES MAY 16,2020

ERIKA ACEVEDO
128948353
NOTARY PUBLIC, STATE OF TEXAS
MY COMMISSION EXPIRES
MAY 16, 2020

Apts Furnished

960 Ave. B, 1 bdr apt, furn., utilities pd, a/c, cable, $500mth + dep. 833-4729 or cell 720-9138.

Apts Unfurnished

Accepting Applications
Senior Citizens 62 & up or handicapped,
Low Income, Efficiency & 1 bedroom apartments.
Apply at 3030 French Rd.
Call :(409) 892-0196
Raintree Tower Apts
Equal Housing Opportunity

CURRENTLY ACCEPTING APPLICATIONS
SENIOR CITIZENS
62 OR OLDER
Section 8 Efficiency Apartments.
Rent Includes Utilities.
Apply: 930 Calder or call (409)833-9660
Handicap Accessibility
SENIOR CITIZENS
Y HOUSE
Equal Housing Opportunity

Near Lamar, Hacienda Apt, 1 bedroom start $500, 2 bedroom start $600, 409-832-0034.

Homes Unfurnished

5275 Bigner Rd, 3/1/1, $850 mth 409-782-2746 or 409-658-2670

Mobile Homes

For rent, 2/1, furnished, call 409-246-3770.

Jewelry

LOST gold Masonic ring, name engraved. Lost 3/26/16. BMT REWARD 409-791-4495

Miscellaneous

One owner white appliances, bedroom suite, miscellaneous - two side by side door refrigerators $450 & $200, Whirlpool electric washer and dryer $150 each, microwave hood combo (wall mount) $75, electric coil burner stove (slide in) $150, bedroom suite (all solid wood): king tall poster bed, two chests, two night stands, dresser and mirror $500, king mattress set available, two nice wheelchairs, and fishing rods & reels Call 898-2590 (serious callers only)

Livestock

POND STOCKING
CRAPPIE, BLUEGILL, BASS & CATFISH. FREE Delivery!! Discount prices!!
www.parkersfishfarm.com
1- 800-362-3390

Recreational Vehicles

'15 Montecarlo, 40' Park model, 3 slides, w/d, dual air, f'place, $37,500. 337-366-4690 or 616-260-5289. Free delivery.

TO SUBSCRIBE TO THE BEAUMONT ENTERPRISE CLASSIFIEDS CALL 409-838-2888

FOR JOBS! CALL ROBERT
409-838-2879

Ford

'11 Ford Explorer XLT 4X4, 60,500, white, excellent cond, $21,500. 409-893-1238 or 409-291-9911.

Want To Buy

CASH PAID
for Junk Cars and Pick-Ups.
Free Towing: 409-540-3344

Clean car or pickup, prefer compact.
409-781-1630

Top Dollar Paid for junked or wrecked cars & trucks. ★(409) 866 6835★

Legal Notices

IN THE CIRCUIT COURT OF PULASKI COUNTY, ARKANSAS
16th DIVISION 6th CIRCUIT

CASE NO:60DR-03-5226

MONDARROW L. BARNUM
PLAINTIFF
VS.
MISTY M. JONES-LEWIS
DEFENDANT

WARNING ORDER

To: Misty M. Jones-Lewis

You are hereby notified that a Motion for Change of Custody and an Amended Motion for Change of Custody has been filed in the Circuit Court of Pulaski County, Arkansas, which may affect your rights. You are hereby warned to file an Answer or other responsive pleading to the Motion or to appear in the Court within thirty (30) days from the date this Warning Order is first published.

Upon your failure to do so, the Motion filed herein will be deemed to be admitted and you will face entry of judgment by default or be otherwise barred from asserting your interest.

You or any person desiring to be heard concerning this action are hereby notified.

You are also notified that this matter has been set for a final hearing on, Thursday, May 12, 2016 at 9 o'clock a.m. in Room 330 of the Pulaski County Court House located at 401 West Markham, Little Rock, AR.

In Witness Whereof, I have hereunto set my hand and seal as Clerk of the Court on this 25th day of March, 2016.

Larry Crane, Circuit Clerk

By: /s/ Nancy Sadler
Deputy Clerk

Prepared by:
Jimmy C. Morris, Jr.
Attorney for Plaintiff
AR Bar No. 2007134
2020 S. Broadway
Little Rock, AR 72206
Phone: (501) 319-7647
Fax: (501) 353-0287
Email:
j.c.morrisatty@gmail.com

Notice of Plan Availability for Public Review and Comment
Jefferson County Drainage District No. Six (DD6)
Hazard Mitigation Plan

The public is invited to a meeting where DD6 will present an overview of a planning process recently started by the District to update DD6' current Hazard Mitigation Plan. This planning process will lead to an updated plan of action to reduce the long-term impacts of flooding that impact citizens residing in the DD6 planning area and other hazards that impact DD6 owned facilities. Members of the public are encouraged to attend, especially those with property located in flood-prone areas.

This meeting will be held on April 14, 2016 at 4:00 PM, at DD6 Offices located at:

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Questions about the plan should be directed to Mitigation Plan Consultant, Jeff Ward at 888-208-6695 or lward@rstarmail.com. You can also contact Karen J. Stewart at (409) 842-1818.

Beaumont

GARAGE SALE Sat. 8am-until 9595 College St, Bmt. Tons of clothes, furniture, tools, & etc.

HILLS ESTATE SALES
April 7th, 8th & 9th 9am-3pm
885 Heather Ln. Bmt.
409-289-3765
www.hillsestatesales.net

Huge Moving Garage Sale. 1650 S. 23rd. Btwn Washington & College Larry's Plumbing Co. Thurs. 6-6pm. Fri. 7:30-6pm. Sat. 7:30am-1 Furniture, clothing, toys, house hold & lots of misc. items.

SERVICE DIRECTORY

Carpet Cleaning

JL Maintenance, Carpet Cleaning, Pressure Washing, Tile & sofa cleaning 338-4313

Concrete Work

Concrete Construction
Driveways, patios, foundations, sidewalks
Bonded & Insured - Local.
Call 409-658-2802

General Contractors

Complete home remodeling & interior/exterior painting, carpentry, drywall & tile
Wrought Iron fences.
409-433-3663, 409-960-4027

Landscaping

MOBILE MOWER REPAIR
Specialized riding mowers & tillers. Why Wait 2-3 weeks? "We go to U" (409)540-1785

Land/Yard Service

FireHouse Lawn Care. Full mowing services provided. Pressure washing available as well 409-748-9961

SETX Lawn service, landscaping & pressure washing. 409-673-9480 for free estimates

Tree Service

GOODWINS TREE
Trim & Removals
409-350-9918

1 PG 2016009951
NPM

Notice of Plan Availability for Public Review and Comment

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Hazard Mitigation Plan

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Return To:

KAREN J. STEWART
6550 WALDEN RD
BEAUMONT TX 77707

FILED AND RECORDED
OFFICIAL PUBLIC RECORDS
Carolyn L. Guidry

Carolyn L. Guidry, County Clerk
Jefferson County, Texas
March 31, 2016 02:41:56 PM
FEE: $0.00 COLBERT 2016009951

NFL

Violating practice rule costs Ravens

By Tribune News Service

The NFL ordered the Ravens to forfeit three organized team activities and fined the organization and head coach John Harbaugh more than $480,000 combined for violating the league's collective bargaining agreement during the team's rookie minicamp earlier this month.

An investigation by the league confirmed that the Ravens had rookies and tryout participants in full pads for the start of practice on May 6, which is a clear violation of the CBA. Teams aren't allowed to have full-padded practice until training camp.

"It is what it is. We'll lose them. It's what they decided was appropriate, so we'll respect that," Harbaugh said.

"The only thing I really can say about that is the same thing that I told the players. I told the players, I said, 'There's not one player or one coach in this room that should worry about it for one second.' They shouldn't have any anxiety about it because it's on me. It's completely me. It was my decision, it was my effort. That's the situation that we're in. We'll adjust, we'll adapt and we'll still become the best football team we can be."

The team is docked $343,057; Harbaugh is set back $137,223. Those numbers are set by CBA rules.

The Ravens will cancel next week's three OTAs, as part of the penalty from the league.

It marks the second time in Harbaugh's tenure in which the Ravens were punished for violating the CBA. In 2010, they were ordered to cancel the final week of offseason workouts after multiple players complained to the players association for being kept at the facility too long for practices and hours.

The Ravens have acknowledged wrongdoing in the recent incident. However, they maintained the decision was a mistake rather than an effort to defy the CBA. A team official said the Ravens believed there were no specific rules about pads that governed the rookie minicamp like there is with OTAs.

The team essentially self-reported the violation when tight end Benjamin Watson, the Ravens' union representative, called the players association to check on whether rookies were allowed to wear pads during the minicamp. By the time Watson got back to the team and informed Harbaugh that it was a CBA violation, the Ravens had already started practice with a punt protection drill and one-on-one offensive and defensive linemen drills.

On the surface, the league's punishment shouldn't be too damaging to the Ravens, although Harbaugh values the OTA time, viewing the workouts as an important time for the young players to get repetitions, and the team to start developing chemistry. The Ravens currently have 23 rookies on their roster, and 31 newcomers from last season.

"We'll become the best football team we can be," Harbaugh said. "We'll adjust, we'll figure out ways to get our work done for sure. In some ways, maybe the rest will good for us. That's kind of the way I look at it. I told the guys, I'm pretty sure that I wouldn't have thought of giving our guys some time off after six weeks of hard work. Maybe the good lord is looking down and giving us what we need right now. That's how we're going to look at it."

The three workouts forfeited leave the Ravens with seven total OTAs.

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Legal Notices

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TPDES PERMIT FOR INDUSTRIAL WASTEWATER RENEWAL

Permit No. WQ0004840000

APPLICATION AND PRELIMINARY DECISION. TPC Group LLC, 2102 Spur 136, Port Neches, Texas 77651, which operates TPC Group Port Neches Operations, a facility that manufactures butadiene from crude streams used in the production of rubber, has applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0004840000, which authorizes the discharge of stormwater associated with industrial activity, hydrostatic test water, and authorized non-stormwater on an intermittent and flow-variable basis via Outfalls 005, 011, and 201. The TCEQ received this application on December 29, 2015. The facility is located at 2102 Spur 136 at the northwest corner of the intersection of Farm-toMarket Road 366 and Spur 136, Port Neches, Jefferson County, Texas 77651. The effluent discharged via Outfall 201 is to an unnamed ditch; thence to Star Lake Canal; thence to Neches River Tidal in Segment No. 0601 of the Neches River Basin. Outfalls 005 and 011 are discharged to Jefferson County Drainage District 7 Canal; thence to Intracoastal Waterway Tidal in Segment No. 0702 of the Neches-Trinity Coastal Basin. The designated uses for Segment No. 0601 are intermediate aquatic life use and primary contact recreation; the uses for Segment No. 0702 are high aquatic life use and primary contact recreation.

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying at the Port Neches Hebert Public Library, 2025 Merriman Street, Port Neches, Texas. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application. http://www.tceq.texas.gov/assets/public/hb610/index.html?lat=29.977777&lng=-93.945277&zoom=13&type=r

CHANGE IN LAW: The Texas Legislature enacted Senate Bill 709, effective September 1, 2015, amending the requirements for comments and contested case hearings. This application is subject to those changes in law.

PUBLIC COMMENT/PUBLIC MEETING. You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit written or oral comment or to ask questions about the application. Generally, the TCEQ will hold a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for public comments, the Executive Director will consider the comments and prepare a response to all relevant and material, or significant public comments. The response to comments, along with the Executive Director's decision on the application, will be mailed to everyone who submitted public comments or who requested to be on a mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision. A contested case hearing is a legal proceeding similar to a civil trial in a state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period and, the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period. TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.

EXECUTIVE DIRECTOR ACTION. The Executive Director may issue final approval of the application unless a timely contested case hearing request or a timely request for reconsideration is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director will not issue final approval of the permit and will forward the application and requests to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be added to: (1) the permanent list for a specific applicant name and permit number; and (2) the mailing list for a specific county. If you wish to be placed on the permanent and the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 or electronically at www.tceq.texas.gov/about/comments.html within 30 days from the date of newspaper publication of this notice.

AGENCY CONTACTS AND INFORMATION. If you need more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040. General information about the TCEQ can be found at our web site at www.tceq.texas.gov.

Further information may also be obtained from TPC Group LLC at the address stated above or by calling Mr. Kevin Harren, Environmental Manager, at (409) 724-4917.

Issued: May 18, 2016

Legal Notices

An original Application has been made with the Texas Alcoholic Beverage Commission for a Wine and Beer Retailer's Off-Premise Permit by Dolgencorp of Texas Inc. d/b/a Dollar General Store #9124 located at 11776 Highway 62 N., Orange, Orange County, TX 77632. Officers of said Corporation are Steven R. Deckard, CEO, John Garratt, CFO, and James W. Thorpe, Secretary/CMO.

An original Application has been made with the Texas Alcoholic Beverage Commission for a Wine and Beer Retailer's Off-Premise Permit by Dolgencorp of Texas Inc. d/b/a Dollar General Store #13471 located at 4080 N. Hwy 105, Vidor, Orange County, TX 77662. Officers of said Corporation are Steven R. Deckard, CEO, John Garratt, CFO, and James W. Thorpe, Secretary/CMO.

BID NOTICE

TOLEDO BEND PROJECT JOINT OPERATION BULK FUELS

Sealed bids, plainly marked as such will be received until 1:30 P.M. on June 27, 2016, and at that time publicly opened at the Toledo Bend Project Joint Operation office, located at 450 Spur 135, Burkeville, Texas 75932, for bulk fuel purchase of unleaded gasoline and diesel fuel for the Toledo Bend Project for the two year period from September 1, 2016 through August 31, 2018.

Additional information and specifications may be obtained by contacting Jim Washburn, at the Toledo Bend Project Joint Operation office, 450 Spur 135, Burkeville, Texas 75932, or phone 409/565-2273.

The Toledo Bend Project Joint Operation reserves the right to reject any and all bids, waive any or all formalities and to accept the bid most suited for its needs and purposes.

NOTICE IS HEREBY GIVEN THAT ON June 16, 2016 U-HAUL STORAGE CENTERS OF GREATER BEAUMONT, WILL BE OFFERING FOR SALE UNDER THE CONTRACTUAL LANDLORDS LEIN PROCESS, BY PUBLIC AUCTION, THE FOLLOWING STORAGE UNITS. THE GOODS TO BE SOLD ARE GENERALLY DESCRIBED AS HOUSEHOLD GOODS. U-HAUL STORAGE CENTERS OF GREATER HOUSTON RESERVES THE RIGHT TO REFUSE ANY AND ALL BIDS. PAYMENT WILL BE MADE IN CASH. CONTENTS OF UNITS LISTED BELOW ARE AS FOLLOW: MATTRESSES, BOX SPRINGS, TABLES, CHAIRS, SOFAS, LOVESEATS, GARDEN TOOLS, OFFICE FURNITURE, WALL HANGINGS, AUTOMOTIVE PARTS, CLOTHES, BIKES, BOOKS, BOXES, BAGS, AND MISC. HOUSEHOLD GOODS (UNLESS OTHERWISE INDICATED).

SALES WILL BEGIN AT OR AFTER 3:00 PM ON June 16, 2016 AND WILL CONTINUE DAY BY DAY UNTIL ALL UNITS ARE SOLD. U-HAUL RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS. NO ONE UNDER THE AGE OF 16 WILL BE ALLOWED TO ATTEND. AUCTIONEER- LUTHER DAVIS LICENSE # TX 8325) BIDS WILL BE ACCEPTED:

AT U-HAUL BEAUMONT [illegible]

[illegible]

Notice of Plan Availability for Public Review and Comment

Jefferson County Drainage District No. Six Hazard Mitigation Plan Update

The public is invited to review the draft of the Jefferson County Drainage District No. Six (DD6) Mitigation Plan update. DD6 is required by the Federal Emergency Management Agency to update this plan every five years, working with the public and stakeholders to identify risks and vulnerabilities associated with natural hazards in the planning area and to develop long term strategies and actions to protect citizens residing in the DD6 planning area and DD6 owned facilities from future hazard events. Members of the public are encouraged to download the plan at DD6's website at: www.dd6.org beginning June 6, 2016 until June 20, 2016 to review and provide comments to the draft plan update. A hard copy of the draft plan also will be available for review on June 6th at DD6's administrative office 6550 Walden Road, Beaumont, TX 77707-5510.

Comments to the plan should be directed to the Mitigation Plan Consultant, Jeff Ward at 888-208-6695 or jward@rstormail.com by June 20th. You can also contact Karen J. Stewart at (409) 842-1818 or kstewart@dd6.org.

NOTICE OF PUBLIC AUCTION

Uncle Bob's Self Storage

In accordance with the provisions of State law, there being due and unpaid charges for which the undersigned is entitled to satisfy an owner and/or manager's lien of the goods hereinafter described and stored at the Uncle Bob's Self Storage locations listed below. And, due notice having been given, to the owner of said property and all parties known to claim an interest therein, and the time specified in such notice for payment of such having expired, the goods will be sold at public auction at the below stated locations to the highest bidder or otherwise disposed of on Monday, June 13, 2016, at 8:00 AM.

Starting at Store #260 - 188 South LHS Dr, Lumberton, Tx 77657 (409-755-2565), Jessica Brewer, Hsld Gds/Furn, TV/Stereo Equip, Tools/ Applnces, Charles Johnson, Hsld Gds /Furn, Tools/ Applnces,Off Furn/Mach/ Equip, Then to store #130 - 6020 Eastex Frwy, Beaumont, TX 77708 (409-892-6799), Sharon Malbreau, Hsld Gds/ Furn, TV/Stereo Equip, Tools/ Applnces, Jeremy Crutcher, Hsld Gds/Furn, TV/Stereo Equip, Ferguson Parker, Jr. [illegible]

Auctioneer
Richard Moore
TL#17411

ORDINANCE NO. 16-028

ENTITLED AN ORDINANCE AMENDING CHAPTER 28 OF THE CODE OF ORDINANCES OF BEAUMONT, TEXAS, AND IN PARTICULAR THE BOUNDARIES OF THE ZONING DISTRICT AS INDICATED UPON THE ZONING MAP OF BEAUMONT, TEXAS, BY CHANGING THE ZONING PROPERTY PRESENTLY ZONED RS (RESIDENTIAL SINGLE FAMILY DWELLING) DISTRICT TO GC-MD-2 (GENERAL COMMERCIAL-MULTIPLE FAMILY DWELLING-2) DISTRICT FOR PROPERTY LOCATED AT 4450 CROW ROAD, BEAUMONT, JEFFERSON COUNTY, TEXAS; PROVIDING FOR SEVERABILITY; PROVIDING FOR REPEAL; AND PROVIDING PENALTY.

ORDINANCE NO. 16-029

ENTITLED AN ORDINANCE AMENDING CHAPTER 28 OF THE CODE OF ORDINANCES OF BEAUMONT, TEXAS, AND IN PARTICULAR THE BOUNDARIES OF THE ZONING DISTRICTS, AS INDICATED UPON THE ZONING MAP OF BEAUMONT, TEXAS, BY CHANGING THE ZONING OF PROPERTY PRESENTLY ZONED RS (RESIDENTIAL SINGLE FAMILY DWELLING) DISTRICT TO GC-MD-2 (GENERAL COMMERCIAL-MULTIPLE FAMILY DWELLING-2) DISTRICT FOR PROPERTY LOCATED TO THE WEST OF 7605 EASTEX FREEWAY, BEAUMONT, JEFFERSON COUNTY, T E X A S ; P R O V I D I N G FOR EVERABILITY; PROVIDING FOR REPEAL; AND PROVIDING A PENALTY.

TINA BROUSSARD, TRMC
CITY CLERK

THE STATE OF TEXAS
To: UNKNOWN HEIRS OF THOMAS JOHN BROWNE, DECEASED

GREETING:

You are hereby commanded to appear before the County Court of Jefferson County, Texas, at the Courthouse of said County in the City of Beaumont, Jefferson County, Texas, at or before 10:00 A.M. on the first Monday after the expiration of ten days from the date of publication of this citation by filing a written answer to a petition filed in said Court on MAY 17, 2016, in Cause No. 114977, styled,

ESTATE OF
THOMAS JOHN BROWNE,
DECEASED

A brief statement of the nature of the petition is as follows, to-wit:

TO DETERMINE THE HEIRS AND THEIR PERCENTAGE OWNERSHIP IN THE ESTATE OF THOMAS JOHN BROWNE, DECEASED

as is more fully shown by the petition on file in this cause.

The officer executing this process shall promptly execute the same according to law, and make due return as the law directs. If this citation is not served within ninety (90) days after day of issuance, it shall be returned unserved.

Issued and given under my hand and seal of said Court at Beaumont, Texas on MAY 18, 2016.

ATTORNEY OF RECORD:
BERNARD E. PACKARD
PACKARD LAPRAY
1240 ORLEANS
BEAUMONT, TEXAS 77701
(409)832-2300

Carolyn L. Guidry,
County Clerk
Jefferson County, Texas

By: Deputy
Darlene Tydlacka

Personals

♥♥ ADOPTION: ♥♥ At-Home-Mom, Successful Fashion Producer Lovingly yearns for 1st Miracle Baby. ♥ Expenses paid ♥ 1-800-989-4766

Beaumont

New Listing! 3 BR/2 Bth close to Beaumont and Houston. Large master suite, split floor plan with open kitchen and dining. Owner Financing Available. Call Gary 409-289-8248

Silsbee

Bids are being accepted til June 15, for 6405 Luna Ln. 3 Br. 1.5 Ba. No bids under $70K will be considered. Mail to A. Luna, 447 CR532, Nacodoches, Tx 75964

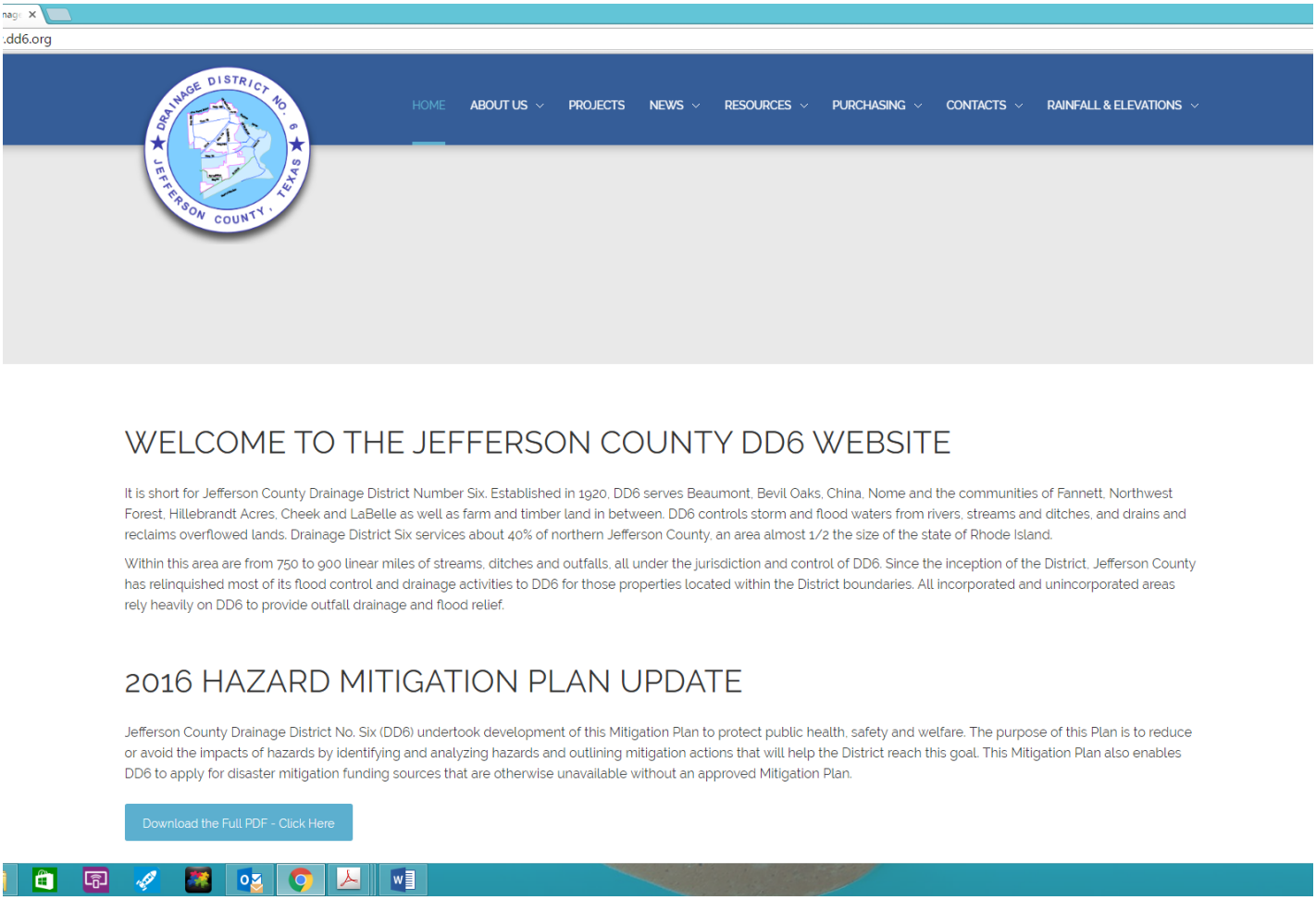
Beach, Lake Property

Lot 3424 Barracuda St., Singing Sands addition, Crystal Beach, $29,000 Call 409-296-9263

Apts Unfurnished

Accepting Applications Senior Citizens 62 & up or handicapped. Low Income. Efficiency & 1 bedroom apartments. Apply at 3030 French Rd. Call: (409) 892-0196 Reintree Tower Apts Equal Housing Opportunity

CURRENTLY ACCEPTING APPLICATIONS SENIOR CITIZENS 62 OR OLDER Section 8 Efficiency Apartments. Rent includes Utilities. Apply: 930 Calder or call (409)833-9660 Handicap Accessibility SENIOR CITIZENS Y HOUSE Equal Housing Opportunity


.dd6.org
DRAINAGE DISTRICT NO. 6
JEFFERSON COUNTY, TEXAS
HOME
ABOUT US
PROJECTS
NEWS
RESOURCES
PURCHASING
CONTACTS
RAINFALL & ELEVATIONS
WELCOME TO THE JEFFERSON COUNTY DD6 WEBSITE
It is short for Jefferson County Drainage District Number Six. Established in 1920, DD6 serves Beaumont, Bevil Oaks, China, Nome and the communities of Fannett, Northwest Forest, Hillebrandt Acres, Cheek and LaBelle as well as farm and timber land in between. DD6 controls storm and flood waters from rivers, streams and ditches, and drains and reclaims overflowed lands. Drainage District Six services about 40% of northern Jefferson County, an area almost 1/2 the size of the state of Rhode Island.
Within this area are from 750 to 900 linear miles of streams, ditches and outfalls, all under the jurisdiction and control of DD6. Since the inception of the District, Jefferson County has relinquished most of its flood control and drainage activities to DD6 for those properties located within the District boundaries. All incorporated and unincorporated areas rely heavily on DD6 to provide outfall drainage and flood relief.
2016 HAZARD MITIGATION PLAN UPDATE
Jefferson County Drainage District No. Six (DD6) undertook development of this Mitigation Plan to protect public health, safety and welfare. The purpose of this Plan is to reduce or avoid the impacts of hazards by identifying and analyzing hazards and outlining mitigation actions that will help the District reach this goal. This Mitigation Plan also enables DD6 to apply for disaster mitigation funding sources that are otherwise unavailable without an approved Mitigation Plan.
Download the Full PDF - Click Here

APPENDIX 3 – CORRESPONDENCE WITH STAKEHOLDERS

Jefferson County

Drainage District No. 6

6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

May 26, 2016

Mr. Richard LeBlanc
General Manager
Jefferson County Drainage District 6
6550 Walden Road
Beaumont, TX 77707
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Richard LeBlanc :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

Your organization has been identified by the District as one that could be impacted by the mitigation actions and strategy and therefore, the District would like to add you to its stakeholder group. The District respectfully requests your organization review the draft and provide any comments to the draft. The District will place the draft plan on their website by June 6th at: HTTP://www.dd6.org. Comments may be provided via email to Jeff Ward, the District's Plan Consultant at jward@rstarmail.com or you may reach him by phone at 540-668-6945. Comments will be considered by the Mitigation Planning Committee and incorporated as appropriate. The District asks that you please review and provide your comments back **by June 20, 2016** in order to give enough time to incorporate the comments into the draft.

Thank you very much for considering this request. It is important that stakeholders and the public have an opportunity to review and comment.

Sincerely,

Karen J. Stewart, MBA, CTP
Business Manager-JCDD6

Jefferson County

Drainage District No. 6

6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

May 26, 2016

Mr. Gilbert Ward
Team Leader, State Flood Protection Planning Program
Texas Water Development Board
1700 North Congress Avenue
Austin, TX 78701
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Gilbert Ward :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Sincerely,

Karen J. Stewart, MBA, CTP
Business Manager-JCDD6

Jefferson County
Drainage District No. 6
6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

Richard P. LeBlanc, Jr.
General Manager
Jim Broussard
Operations Manager
Doug S. Canant, Jr., PE, RPLS, CFM
Engineer
Chuck Oakley, CPA
Chief Financial Officer
Karen J. Stewart, MBA, CTP
Business Manager
Andrew J. Jones
Superintendent

May 26, 2016

Mr. Randall Reese
General Manager
Sabine Neches Navigation District
8180 Anchor Drive
Port Arthur, TX 77642
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Randall Reese :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Sincerely,

Karen J. Stewart, MBA, CTP
Business Manager-JCDD6

Jefferson County

Drainage District No. 6

6550 Walden Rd., Beaumont, Texas 77707
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Fax (409) 842-2729
Established in 1920

May 26, 2016

Dr. John W. Frossard
Superindentent
Beaumont Independent School District
3395 Harrison Avenue
Beaumont, TX 77706
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Dr. John W. Frossard :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Sincerely,

Karen J. Stewart, MBA, CTP
Business Manager-JCDD6

Jefferson County

Drainage District No. 6

6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

May 26, 2016

Ms. Shannon Holmes
Superindentent
Hardin - Jefferson ISD
520 W. Herring Street
Sour Lake, TX 77659
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Ms. Shannon Holmes :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Sincerely,

Karen J. Stewart, MBA, CTP
Business Manager-JCDD6

Jefferson County
Drainage District No. 6
6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

May 26, 2016

Ms. Pamela Lechler
Superindentent
Hamshire Fannett ISD
P.O. Box 223
Hamshire, TX 77622
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Ms. Pamela Lechler :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Thank you very much for considering this request. It is important that stakeholders and the public have an opportunity to review and comment.

Sincerely,

Karen J. Stewart, MBA, CTP
Business Manager-JCDD6

Jefferson County
Drainage District No. 6
6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

Richard P. LeBlanc, Jr.
General Manager
Jim Broussard
Operations Manager
Doug S. Canant, Jr., PE, RPLS, CFM
Engineer
Chuck Oakley, CPA
Chief Financial Officer
Karen J. Stewart, MBA, CTP
Business Manager
Andrew J. Jones
Superintendent

May 26, 2016

Dr. Kenneth Evans
President
Lamar University
4400 MLK Boulevard, PO Box 10009
Beaumont, TX 77710
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Dr. Kenneth Evans :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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May 26, 2016

Dr. Paul Sszuch
President
Lamar Institute of Technology
855 East Lavaca
Beaumont, TX 77705
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Dr. Paul Sszuch :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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6550 Walden Rd., Beaumont, Texas 77707
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May 26, 2016

Ms. Kim Moncla
Executive Director - Foundation
Baptist Hospitals of Southeast Texas
3080 College Street
Beaumont, TX 77702
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Ms. Kim Moncla :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Business Manager-JCDD6

Jefferson County

Drainage District No. 6

6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

May 26, 2016

Mr. Paul Trevino
CEO
Christus St. Elizabeth Hospital
2830 Calder Street
Beaumont, TX 77702
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Paul Trevino :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Jefferson County

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6550 Walden Rd., Beaumont, Texas 77707
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Fax (409) 842-2729
Established in 1920

May 26, 2016

Mr. Phil Kelley
Manager
JCDD7
4401 9th Avenue
Port Aruthur, TX 0
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Phil Kelley :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Jefferson County

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May 26, 2016

Mr. Leroy McCall Jr.
Manager
JCDD3
1149 Pearl Street
Beaumont, TX 77701
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Leroy McCall Jr. :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Jefferson County

Drainage District No. 6

6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Established in 1920

May 26, 2016

Mr. Kenneth Wiemers P.E.
Area Engineer Beaumont
TXDOT
8350 Eastex Freeway
Beaumont, TX 77708
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Kenneth Wiemers P.E. :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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May 26, 2016

Mr. Scott Hall, P.E.
General Manager
Lower Neches Valley Authority
7850 Eastex Freeway
Beaumont, TX 77708
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Scott Hall, P.E. :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Jefferson County

Drainage District No. 6

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Fax (409) 842-2729
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May 26, 2016

Mr. Patrick Trahan
Government Relations Director
Exxon Mobil Oil Corporation
1795 Burt Steet
Beaumont, TX 77701
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Patrick Trahan :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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Business Manager-JCDD6

Jefferson County
Drainage District No. 6
6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
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May 26, 2016

Mr. Michael Lockwood
Plant Manager
Goodyear Tire and Rubber
11357 I-10
Beaumont, TX 77705
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. Michael Lockwood :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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May 26, 2016

Ms. Sue Landry
Homeland Security Director
Southeast Texas Regional Planning Commission
2210 Eastex Freeway
Beaumont, TX 77703
Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Ms. Sue Landry :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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June 1, 2016

Ms. Becky Ford
Mayor
City of Bevil Oaks
7525 Sweetgum Road
Beaumont, TX 77713

Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Ms. Becky Ford :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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6550 Walden Rd., Beaumont, Texas 77707
Telephone (409) 842-1818
Fax (409) 842-2729
Website: dd6.org

June 1, 2016

Mr. John Walker
Mayor
City of China
P.O. Box 248
China, TX 77613

Re: Jefferson County Drainage District 6, Hazard Mitigation Plan Update

Dear Mr. John Walker :

As you may be aware, Jefferson County Drainage District 6 (the District) is currently in the process of updating its FEMA Hazard Mitigation Plan. FEMA requires local jurisdictions to update their plans every five years, and one of the update and re-approval requirements is to have a stakeholder group and the public review and provide input to the plan. Members of a stakeholder group are individuals or organizations that are affected by a mitigation action or policy and can provide specific information on a topic or provide input from a different point of view in the community. These organizations should include business, academia and other private and non-profit interests.

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June 1, 2016

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Mayor
City of China
P.O. Box 248
China, TX 77613

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Business Manager JCDD6

APPENDIX 4 – SOURCES

Figure 1 - Vicinity Map: State of Texas (Source: www.Mapquest.com)

Figure 2 – DD6 Boundary Map (Source: DD6)

Table 3 – Most Common Industries, Beaumont, Texas (Source: www.City-data.com)

Table 4 - Incorporated Areas of Jefferson County (Source: US Census Bureau, 2014 - Estimates)

Table 5 – Buildings/Infrastructure within Jefferson County Drainage District Six (Sources: Jefferson County Central Appraisal District)

Table 6 –Natural Hazard Events and Declared Major Disasters in Jefferson County (Sources: Public Entity Risk Institute (PERI) website, FEMA, NCDC database)

Table 9 – Tornado Events in Jefferson County with at Least $50,000 in Property Damage (Source: NCDC Storm Events Database)

Figure 4 – Historical Hurricane Tracks for Jefferson County TX (National Hurricane Center)

Figure 5 – Historical Hurricane Tracks for Jefferson County TX (National Hurricane Center)

Figure 6 – Basic Design Wind Speed (Source: International Building Code)

Table 14 – Beaufort Wind Scale (Source: National Oceanic and Atmospheric Administration)

Table 15 – Severe Thunderstorm and High Wind Events in Jefferson County with at Least $25,000 in Property Damage (Source: NCDC Storm Events Database)

Figure 7 – Jefferson County DD6 – 100-year Floodplain Map (Source: FEMA National Flood Insurance Program (NFIP) December 2009)

Figure 8 – Jefferson County TX Effective Flood Insurance Rate Map (Source: RiskMap6 Effective FIRM)

Figure 9 – Depth of Precipitation for 50-year Storm for 1-hour duration in Texas (Source: USGS)

Figure 10 – Depth of Precipitation for 100-year Storm for 1-hour duration in Texas (Source: USGS)

Table 17 – Jefferson County Flood Events since Last Planning Effort (Source: NCDC Storm Events Database)

Table 19 - Summary of Residential and Non-Residential NFIP Repetitive Loss Statistics, Jefferson County DD6, ordered by Municipality (Source: FEMA NFIP query January 1, 2016)

Table 20 - Summary of Residential NFIP Repetitive Loss Statistics, Jefferson County DD6, ordered by Municipality (Source: FEMA NFIP query January 1, 2016)

APPENDIX 5 – ADOPTION RESOLUTION

APPENDIX 6 – FEMA AND OR TDEM APPROVAL LETTER

JEFFERSON COUNTY

Hazard Mitigation Plan Update 2017

Maintaining a Safe, Secure, and Sustainable Community

August 29, 2017

H2O PARTNERS
PLAN YOUR RECOVERY

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

For more information, visit our website at:

www.co.jefferson.tx.us/em

Written comments should be forwarded to:

H2O Partners, Inc.

P. O. Box 160130

Austin, Texas 78716

info@h2opartnersusa.com

www.h2opartnersusa.com

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SECTION 1: INTRODUCTION

Background

Jefferson County is located in far southeastern Texas along the Texas-Louisiana border and the Gulf of Mexico. Jefferson County was formed in 1836 and organized in 1837, and was named for the municipality that preceded it, which was in turn named for Thomas Jefferson.

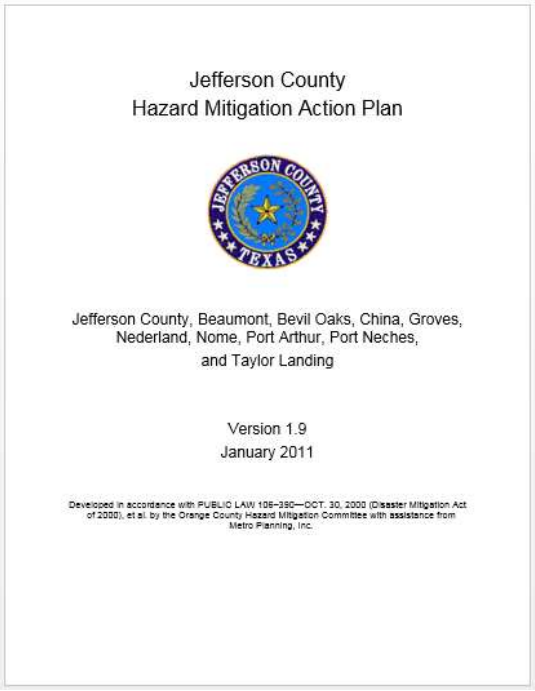
Jefferson County is bounded by Hardin and Orange Counties to the north, the Sabine River and Lake Sabine and Cameron Parish, Louisiana on the east, Chamber County is to the west and Liberty County is to the northwest. The county seat is the City of Beaumont, located 75 miles east of Houston and 17 miles northwest of Port Arthur.

Texas is prone to extremely heavy rains and flooding with half of the world record rainfall rates (48 hours or less).[1] While flooding is a well-known risk, Jefferson County is susceptible to a wide range of natural hazards, including but not limited to extreme heat, tornadoes, hail, and wildfires. These life-threatening hazards can destroy property, disrupt the economy, and lower the overall quality of life for individuals.

While it is impossible to prevent an event from occurring, the effect from many hazards to people and property can be lessened. This concept is known as hazard mitigation, which is defined by the Federal Emergency Management Agency (FEMA) as *sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects.*[2] Communities participate in hazard mitigation by developing hazard mitigation plans. The Texas Division of Emergency Management (TDEM) and FEMA have the authority to review and approve hazard mitigation plans through the Disaster Mitigation Act of 2000.

In 2005-2006, Jefferson County and the participating cities originally developed their Hazard Mitigation Action Plan (HMAP). Then in 2011, information about the planning area and hazard events were updated and incorporated into their HMAP update titled, "Jefferson County Hazard Mitigation Action Plan Version 1.9". This plan was developed by the Jefferson County Hazard Mitigation Team with assistance from Metro Planning, Inc.

[1] http://floodsafety.com/texas/regional_info/regional_info/dallas_zone.htm
[2] http://www.fema.gov/hazard-mitigation-planning-resources


Jefferson County
Hazard Mitigation Action Plan

Jefferson County, Beaumont, Bevil Oaks, China, Groves, Nederland, Nome, Port Arthur, Port Neches, and Taylor Landing

Version 1.9
January 2011

Developed in accordance with PUBLIC LAW 106–390—OCT. 30, 2000 (Disaster Mitigation Act of 2000), et al. by the Orange County Hazard Mitigation Committee with assistance from Metro Planning, Inc.

The Disaster Mitigation Act requires that hazard mitigation plans be reviewed and revised every five years to maintain eligibility for Hazard Mitigation Assistance (HMA) grant funding. Since FEMA originally approved the Jefferson County HMAP in 2006, and then approved an update in 2011, the County began the process of developing a HMAP Update in order to maintain eligibility for grant funding within the five-year window. The South East Texas Regional Planning Commission (SETRPC) coordinated among Orange County, Hardin County, and Jefferson County to update each of their HMAP plans and selected the consultant team of H2O Partners, Inc. to write and develop the HMAP Update 2017 for each of the three counties, including Jefferson County. The HMAP Update planning process provided an opportunity for Jefferson County to evaluate successful mitigation actions and explore opportunities to avoid future disaster loss. The 2011 HMAP Update will expire in 2016; therefore, the SETRPC and Jefferson County has selected H2O Partners, Inc. to write and develop the 2017 HMAP Update, hereinafter titled: "Jefferson County Hazard Mitigation Plan Update 2017: Maintaining a Safe, Secure and Sustainable Community" (Plan or Plan Update).

Hazard mitigation activities are an investment in a community's safety and sustainability. It is widely accepted that the most effective hazard mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made. A comprehensive update to a hazard mitigation plan addresses hazard vulnerabilities that exist today and in the foreseeable future. Therefore, it is essential that a plan identify projected patterns of how future development will increase or decrease a community's overall hazard vulnerability.

Scope and Participation

Jefferson County's 2017 Plan Update is a multi-jurisdictional Plan. The participating jurisdictions include Jefferson County, the City of Beaumont, the City of Bevil Oaks, the City of China, the City of Groves, the City of Nederland, the City of Nome, the City of Port Arthur, the City of Port Neches, and the South East Texas Regional Planning Commission (SETRPC). These jurisdictions provided valuable input into the planning process.

Throughout the Plan "Jefferson County planning area" refers to the entire planning area including all participating jurisdictions. Similarly, the term "countywide" refers to the entire planning area including all participating jurisdictions.

The focus of the 2017 Plan Update is to identify activities to mitigate hazards classified as "high" or "moderate" risk, as determined through a detailed hazard risk assessment conducted for Jefferson County and the participating jurisdictions. Hazards that pose a "low" or "negligible" risk will continue to be

evaluated during future updates to the Plan, but may be included in the appendices and not be fully addressed until they are determined to be a high or moderate risk. The hazard classification enables the County and participating jurisdictions to prioritize mitigation actions based on hazards which can present the greatest risk to lives and property in the geographic scope (i.e., planning area).

Purpose

The 2017 Plan Update was prepared by Jefferson County, participating jurisdictions, and H2O Partners, Inc. The purpose of the Plan Update is to protect people and structures, and to minimize the costs of disaster response and recovery. The goal of the Plan Update is to minimize or eliminate long-term risks to human life and property from known hazards by identifying and implementing cost-effective hazard mitigation actions. The planning process is an opportunity for Jefferson County, the participating jurisdictions, stakeholders, and the general public to evaluate and develop successful hazard mitigation actions to reduce future risk of loss of life, and damage to property resulting from a disaster in the Jefferson County planning area.

The Mission Statement of the Plan Update is, "*Maintaining a secure and sustainable future through the revision and development of targeted hazard mitigation actions to protect life and property.*"

Jefferson County, participating jurisdictions, and planning participants identified eleven natural hazards to be addressed by the Plan Update. Additional hazards that have a very low risk or no risk to the planning area are included in Appendix A. The specific goals of the Plan Update are to:

- Provide a comprehensive update to the 2011 HMAP;
- Minimize disruption to Jefferson County and the participating jurisdictions following a disaster;
- Streamline disaster recovery by articulating actions to be taken before a disaster strikes to reduce or eliminate future damage;
- Demonstrate a firm local commitment to hazard mitigation principles;
- Serve as a basis for future funding that may become available through grant and technical assistance programs offered by the State or Federal government. The Plan Update will enable Jefferson County and participating jurisdictions to take advantage of rapidly developing mitigation grant opportunities as they arise; and
- Ensure that Jefferson County and participating jurisdictions maintain eligibility for the full range of future Federal disaster relief.

Authority

The Plan Update is tailored specifically for Jefferson County, participating jurisdictions, and plan participants including Planning Team members, stakeholders, and the general public who participated in the Plan Update development process. The Plan Update complies with all requirements promulgated by the Texas Division of Emergency Management (TDEM) and all applicable provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390), and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C.

4001, et al). Additionally, the Plan complies with the Interim Final Rules for the Hazard Mitigation Planning and Hazard Mitigation Grant Program (44 CFR, Part 201), which specify the criteria for approval of mitigation plans required in Section 322 of the DMA 2000 and standards found in FEMA's "Local Mitigation Plan Review Guide" (October 2011), and the "Local Mitigation Planning Handbook" (March 2013). Additionally, the Plan is developed in accordance with FEMA's Community Rating System (CRS) Floodplain Management Plan standards and policies.

Summary of Sections

Sections 1 and 2 of the Plan Update outline the Plan's purpose and development, including how Planning Team members, stakeholders, and members of the general public were involved in the planning process. Section 3 profiles the planning area's population and economy. Sections 4 through 15 present a hazard overview and information on individual natural hazards in the planning area. The hazards generally appear in order of priority based on potential losses to life and property, and other community concerns. For each hazard, the Plan Update presents a description of the hazard, a list of historical hazard events, and the results of the vulnerability and risk assessment process. Section 16 presents hazard mitigation goals and objectives; Section 17 gives an analysis for the previous actions; and Section 18 presents hazard mitigation actions for Jefferson County and the participating jurisdictions. Section 19 identifies Plan maintenance mechanisms.

Several hazards that were included in the previous plans that have very low or no risk to the planning area are included in Appendix A and are updated with any occurrence that have occurred in the past five years. A list of Planning Team members is located in Appendix B. Public survey results are analyzed and presented in Appendix C. Appendix D contains a detailed list of critical facilities for the planning area, and Appendix E provides a list of dam locations. Appendix F contains information regarding workshops, and meeting documentation. The Capability Assessment for Jefferson County and the participating jurisdictions is located in Appendix G.[3]

[3] Information contained in some of these appendices are exempt from public release under the Freedom of Information Act (FOIA).

SECTION 2: PLANNING PROCESS

Plan Preparation and Development

Hazard mitigation planning involves coordination with various constituents and stakeholders to develop a more disaster-resistant community. Section 2 provides an overview of the planning process including the identification of key steps, and a detailed description of how stakeholders and the public were involved.

Overview of the Plan

The Southeast Texas Regional Planning Commission (SETRPC) hired H2O Partners, Inc. (Consultant Team), to provide technical support and oversee the development of the Plan Update 2017 for Jefferson County. The Consultant Team used the FEMA "Local Mitigation Plan Review Guide" (October 1, 2011), and the Local Mitigation Planning Handbook" (March 2013) to develop the Plan. The overall planning process is shown in Figure 2-1 below.

Figure 2-1. Mitigation Planning Process

Jefferson County, participating jurisdictions, and the Consultant Team met in March 2016 to begin organizing resources, identify Planning Team members, and conduct a Capability Assessment.

Planning Team

Key members of H2O Partners, Inc. developed the Plan Update in conjunction with the Planning Team. The Planning Team was established using a direct representation model. Some of the responsibilities of the Planning Team included: completing Capability Assessment surveys, providing input regarding the identification of hazards, identifying mitigation goals, and developing mitigation strategies. An Executive Planning Team consisting of key personnel from each of the participating jurisdictions as well as Jefferson County, shown in Table 2-1, was formed to coordinate planning efforts, and request input and participation in the planning process. Table 2-2 reflects the Advisory Planning Team, consisting of additional representatives from area organizations and departments from the participating jurisdictions and Jefferson County that participated throughout the planning process.

Table 2-1. Executive Planning Team

ORGANIZATION/JURISDICTION	TITLE
Jefferson County	Emergency Management Coordinator
City of Beaumont	Emergency Management Coordinator
City of Bevil Oaks	Mayor/ Floodplain Manager
City of China	Mayor
City of Groves	Emergency Management Coordinator

ORGANIZATION/JURISDICTION	TITLE
City of Nederland	Emergency Management Coordinator
City of Nome	Mayor
City of Port Arthur	Senior Planner
City of Port Neches	Emergency Management Coordinator
SETRPC	Homeland Security and Emergency Management Planning Director

Table 2-2. Advisory Planning Team

ORGANIZATION/JURISDICTION	TITLE
City of Beaumont	Communications Manager
City of Beaumont	Emergency Management Assistant
City of Beaumont	Emergency Management Specialist
City of Beaumont	Director of Technology Services
City of Beaumont Police Department	Assistant Chief
City of China	City Secretary
City of Nederland Police Department	Assistant Chief
City of Nome	City Secretary
City of Port Arthur	Senior Planner
City of Port Arthur Development Services	Director
City of Port Arthur Fire Department	Emergency Management Coordinator
City of Port Arthur Police Department	Emergency Management Coordinator
City of Port Neches Fire Department	Emergency Management Coordinator
City of Taylor Landing	Mayor
Jefferson County	Assistant Emergency Management Coordinator
SETRPC	Regional Emergency Planner

Additionally, a Stakeholder Group was invited to participate in the planning process via e-mail. The Consultant Team, Planning Team, and Stakeholder Group coordinated to identify mitigation goals, and develop mitigation strategies and actions for the Plan Update. Appendix B, provides a complete listing of all participating Planning Team members and stakeholders by organization and title.

Based on results of completed Capability Assessment, Jefferson County and participating jurisdictions described methods for achieving future hazard mitigation measures by expanding existing capabilities. For example, the City of Bevil Oaks and the City of Groves each have an emergency manager, but no emergency operations plan in place. Other options for improving capabilities include the following:

- Establishing Planning Team members with the authority to monitor the Plan Update and identify grant funding opportunities for expanding staff.
- Identifying opportunities for cross-training or increasing the technical expertise of staff by attending free training available through FEMA and the Texas Division of Emergency Management (TDEM) by monitoring classes and availability through preparetexas.org.
- Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes.
- Developing ordinances that will require all new developments to conform to the highest mitigation standards.

Sample hazard mitigation actions developed with similar hazard risk were shared at the meetings. These important discussions resulted in development of multiple mitigation actions that are included in the Plan Update to further mitigate risk from natural hazards in the future.

The Planning Team developed hazard mitigation actions for mitigating risk from potential flooding and hurricanes, including storm-hardening or retrofitting critical facilities, regional communication sites and infrastructure throughout the County to mitigate hazard damage from water and wind, and practicing hazard mitigation techniques. In order to reduce the damage resulting from county-wide flooding that occurs during heavy rain periods, the Plan Update also includes county-wide actions to elevate or upgrade bridges, culverts and other crossings throughout Jefferson County to reduce damages to infrastructure and reduce flooding caused by undersized crossing and culverts.

Planning Process

The process used to prepare the 2017 Plan Update followed the four major steps included at Figure 2-1. After the Planning Team was organized, a capability assessment was developed and distributed at the Kick-Off Workshop. Hazards were identified and assessed, and results associated with each of the hazards were provided at the Risk Assessment Workshop. Based on Jefferson County's identified vulnerabilities, specific mitigation strategies were discussed and developed at the Mitigation Strategy Workshop. Finally, Plan maintenance and implementation procedures were developed and are included in Section 19. Participation of Planning Team members, stakeholders, and the public at each of the workshops is documented in Appendix F.

At the Plan Update development workshops held throughout the planning process described herein, the following factors were taken into consideration:

- The nature and magnitude of risks currently affecting the community;
- Hazard mitigation goals to address current and expected conditions;
- Whether current resources will be sufficient for implementing the Plan Update;
- Implementation problems, such as technical, political, legal, and coordination issues that may hinder development;

- Anticipated outcomes; and
- How Jefferson County, participating jurisdictions, agencies, and partners will participate in implementing the Plan Update.

Kickoff Workshop

The Kickoff Workshop was held at the SETRPC Offices on March 30, 2016. The initial workshop informed County officials and key department personnel about how the planning process pertained to their distinct roles and responsibilities, and engaged stakeholder groups such as Lamar University. In addition to the kickoff presentation, participants received the following information:

- Project overview regarding the planning process;
- Public survey access information;
- Hazard Ranking form; and
- Capability Assessment survey for completion.

A risk ranking exercise was conducted at the Kickoff Workshop to get input from the Planning Team and stakeholders pertaining to various risks from a list of natural hazards affecting the planning area. Participants ranked hazards high to low in terms of perceived level of risk, frequency of occurrence, and potential impact.

Hazard Identification

At the Kickoff Workshop, and through e-mail and phone correspondence, the Planning Team conducted preliminary hazard identification. The Planning Team in coordination with the Consultant Team reviewed and considered a full range of natural hazards. Once identified, the teams narrowed the list to significant hazards by reviewing hazards affecting the area as a whole, the 2013 State of Texas Hazard Mitigation Plan Update, and initial study results from reputable sources such as federal and state agencies. Based on this initial analysis, the teams identified a total of eleven natural hazards which pose a significant threat to the planning area.

Risk Assessment

An initial risk assessment for Jefferson County and the participating jurisdictions was completed in May 2016 and results were presented to Planning Team members at the Risk Assessment Workshop held on June 1, 2016. At the workshop, the characteristics and consequences of each hazard were evaluated to determine the extent to which the planning area would be affected in terms of potential danger to property and citizens.

Potential dollar losses from each hazard were estimated using the Federal Emergency Management Agency's National Centers for Environmental Information. The resulting risk assessment profiled hazard events, provided information on previous occurrences, estimated probability of future events, and detailed the spatial extent and magnitude of impact on people and property. Each participant at the Risk Assessment Workshop was provided a risk ranking sheet that asked participants to rank hazards in terms of the probability or frequency of occurrence, extent of spatial impact, and the magnitude of impact. The results of the ranking sheets identified unique perspectives on varied risks throughout the planning area.

The assessments were also used to set priorities for hazard mitigation actions based on potential loss of lives and dollar losses. A hazard profile and vulnerability analysis for each of the hazards can be found in Sections 4 through 15.

Mitigation Review and Development

Developing the Mitigation Strategy for the Plan Update involved identifying mitigation goals and new mitigation actions. A Mitigation Workshop was held at the SETRPC Offices on August 24, 2016. In addition to the Planning Team, stakeholder groups were invited to attend the workshop. Regarding hazard mitigation actions, Workshop participants emphasized the desire for flood and hurricane projects. Additionally, the County and participating jurisdictions were proactive in identifying mitigation actions to lessen the risk of all the identified hazards included in the Plan Update.

An inclusive and structured process was used to develop and prioritize new hazard mitigation actions for the 2017 Plan Update. The prioritization method was based on FEMA's STAPLE+E criteria and included social, technical, administrative, political, legal, economic and environmental considerations. As a result, each Planning Team Member assigned an overall priority to each hazard mitigation action. The overall priority of each action is reflected in the hazard mitigation actions found in Section 18.

Planning Team Members then developed action plans identifying proposed actions, costs and benefits, the responsible organization(s), effects on new and existing buildings, implementation schedules, priorities, and potential funding sources.

Specifically the process involved:

- Listing optional hazard mitigation actions based on information collected from previous plan reviews, studies, and interviews with federal, state and local officials. Workshop participants reviewed the optional mitigation actions and selected actions that were most applicable to their area of responsibility, cost-effective in reducing risk, easily implemented, and likely to receive institutional and community support.
- Workshop participants inventoried federal and state funding sources that could assist in implementing the proposed hazard mitigation actions. Information was collected, including the program name, authority, purpose of the program, types of assistance and eligible projects, conditions on funding, types of hazards covered, matching requirements, application deadlines, and a point of contact.
- Planning Team Members considered the benefits that would result from implementing the hazard mitigation actions compared to the cost of those projects. Although detailed cost-benefit analyses were beyond the scope of the Plan Update, Planning Team Members utilized economic evaluation as a determining factor between hazard mitigation actions.
- Planning Team Members then selected and prioritized mitigation actions.

Hazard mitigation actions identified in the process were made available to the Planning Team for review. The draft 2017 Plan Update was made available to the general public for review on Jefferson County's website with the chance to comment via responding to Jefferson County's Assistant Emergency Management Coordinator's email at mwhite@co.jefferson.tx.us.

Review and Incorporation of Existing Plans

Review

Background information utilized during the planning process included various studies, plans, reports, and technical information from sources such as FEMA, the United States Army Corps of Engineers (USACE), the U.S. Fire Administration, National Oceanic and Atmospheric Administration (NOAA), the Texas Water Development Board (TWDB), the Texas Commission on Environmental Quality (TCEQ), the Texas State Data Center, Texas Forest Service, the Texas Division of Emergency Management (TDEM), and local hazard assessments and plans. Section 4 and the hazard-specific sections of the Plan (Sections 5-15) summarize the relevant background information.

Specific background documents, including those from FEMA, provided information on hazard risk, hazard mitigation actions currently being implemented, and potential mitigation actions. Previous hazard events, occurrences and descriptions were identified through NOAA's National Center for Environmental Information (NCEI). Results of past hazard events were found through searching the NCEI. The USACE studies were reviewed for their assessment of risk and potential projects in the region. State Data Center documents were used to obtain population projections. The State Demographer webpages were reviewed for population and other projections and included in Section 3 of the Plan Update. Information from the Texas Forest Service was used to appropriately rank the wildfire hazard, and to help identify potential grant opportunities. Materials from FEMA and TDEM were reviewed for guidance on Plan Update development requirements.

Incorporation of Existing Plans into the HMAP Process

A Capability Assessment was completed by key Jefferson County and participating jurisdictions' departments which provided information pertaining to existing plans, policies, ordinances and regulations to be integrated into the goals and objectives of the Plan Update. The relevant information was included in a master Capability Assessment, Appendix G.

Existing projects and studies were utilized as a starting point for discussing hazard mitigation actions among Planning and Consultant Team members. For example, the City of Beaumont had a study completed in 2005 that suggested moving several fire stations and the health department in order to improve neighborhood coverage. This was included as an action for the City of Beaumont. Additionally the Continuity of Operations plan from several participating jurisdictions is incorporated into the Plan Update as many critical facilities were identified to install generators with hardwired quick connections to ensure continuity of operations during a hazard event, along with retrofitting and storm-hardening these facilities. Other plans were reviewed, such as Floodplain Management Plans and Storm water Management Plans, to identify any additional mitigation actions. Finally, the 2013 State of Texas Mitigation Plan Update, developed by TDEM, was discussed in the initial planning meeting in order to develop a specific group of hazards to address in the planning effort. The 2013 State Plan Update was also used as a guidance document, along with FEMA materials, in the development of the Jefferson County Plan Update.

Incorporation of the HMAP into Other Planning Mechanisms

Planning Team members will integrate implementation of the Plan Update with other planning mechanisms for Jefferson County, such as the Floodplain Management Plan. Existing plans for Jefferson County will be reviewed, and incorporated into the Plan Update, as appropriate. This section discusses how the Plan Update will be implemented by Jefferson County and the participating jurisdictions. It also addresses how the Plan Update will be evaluated and improved over time, and how the public will continue to be involved in the hazard mitigation planning process.

Jefferson County and the participating jurisdictions will be responsible for implementing hazard mitigation actions contained in Section 18. Each hazard mitigation action has been assigned to a specific County and City department that is responsible for tracking and implementing the action.

A funding source has been listed for each identified hazard mitigation action and may be utilized to implement the action. An implementation time period has also been assigned to each hazard mitigation action as an incentive and to determine whether actions are implemented on a timely basis.

Jefferson County and the participating jurisdictions will integrate hazard mitigation actions contained in the Plan Update with existing planning mechanisms such as Stormwater Management Plans and ordinances, Emergency Operations or Management Plans, Evacuation Plans and other local and area planning efforts. Jefferson County will work closely with area organizations to coordinate implementation of hazard mitigation actions that benefit the planning area in terms of financial and economic impact.

Upon formal adoption of the 2017 Plan Update, Planning Team members from Jefferson County and the participating jurisdictions will review existing plans, along with building codes to guide development and ensure that hazard mitigation actions are implemented. Each of the jurisdictions will be responsible for coordinating periodic review of the Plan Update with members of the Advisory Planning Team to ensure integration of hazard mitigation strategies into these planning mechanisms and codes. The Planning Team will also conduct periodic reviews of various existing planning mechanisms and analyze the need for any amendments or updates in light of the approved Plan Update. Jefferson County and the participating jurisdictions will ensure that future long-term planning objectives will contribute to the goals of the Plan Update to reduce the long-term risk to life and property from moderate and high risk hazards. Within one year of formal adoption of the Plan Update, existing planning mechanisms will be reviewed and analyzed as they pertain to the Plan Update.

Planning Team members will review and revise, as necessary, the long-range goals and objectives in its strategic plan and budgets to ensure that they are consistent with the Plan Update.

Further, Jefferson County will work with neighboring jurisdictions to advance the goals of the Plan Update as it applies to ongoing, long-range planning goals and actions for mitigating risk to natural hazards throughout the planning area.

Table 2-3 identifies types of planning mechanisms and examples of methods for incorporating the Plan Update into other planning efforts.

Table 2-3. Examples of Methods of Incorporation

Planning Mechanism	Incorporation of Plan
Grant Applications	The Plan Update will be evaluated by Jefferson County and participating jurisdictions when grant funding is sought for mitigation projects. If a project is not in the Plan Update, an amendment may be necessary to include the action in the Plan Update.
Annual Budget Review	Various departments and key personnel that participated in the planning process for Jefferson County and participating jurisdictions will review the Plan Update and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.
Regulatory Plans	Currently, Jefferson County and participating jurisdictions have regulatory plans in place, such as Emergency Management Plans, Continuity of Operations Plans, Economic Development, and Evacuation Plans. The Plan Update will be consulted when County and City departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.
Capital Improvement Plans	Jefferson County and participating jurisdictions have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County and City departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Floodplain Management Plans	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding, and information found in Section 5 of this Plan Update discussing the people and property at risk to flood, will be reviewed and revised when Jefferson County updates their management plans or develops new plans.

Appendix G provides an overview of Planning Team members' existing planning and regulatory capabilities to support implementation of mitigation strategy objectives. Appendix G also provides further analysis of

how each intends to incorporate hazard mitigation actions into existing plans, policies, and the annual budget review as it pertains to prioritizing grant applications for funding and implementation of identified hazard mitigation projects.

It should be noted for the purposes of the plan update that the HMAP has been used as a reference when reviewing and updating all plans and ordinances for the entire planning area, including all participating jurisdictions. The Emergency Management Plan developed independently by all participating jurisdictions is updated every 5 years and incorporates goals, objectives and actions identified in the mitigation plan.

Plan Review and Plan Update

As with the development of Plan Update, Jefferson County will oversee the review and update process for relevance and to necessary make adjustments. At the beginning of each fiscal year, Planning Team Members will meet to evaluate the Plan Update and review other planning mechanisms to ensure consistency with long-range planning efforts. In addition, planning participants will also meet twice a year, by conference call or presentation, to re-evaluate prioritization of the hazard mitigation actions.

Timeline for Implementing Mitigation Actions

Both the Executive Planning Team (Table B-1, Appendix B), and the Advisory Planning Team (Table B-2, Appendix B), will engage in discussions regarding a timeframe for how and when to implement each hazard mitigation action. Considerations include when the action will be started, how existing planning mechanisms' timelines affect implementation, and when the action should be fully implemented. Timeframes may be general, and there will be short, medium, and long term goals for implementation based on prioritization of each action, as identified on individual Hazard Mitigation Action worksheets included in the Plan Update for Jefferson County and participating jurisdictions.

Both the Executive and Advisory Planning Team will evaluate and prioritize the most suitable hazard mitigation actions for the community to implement. The timeline for implementation of actions will partially be directed by Jefferson County's comprehensive planning process, budgetary constraints, and community needs. Jefferson County and the participating jurisdictions are committed to addressing and implementing hazard mitigation actions that may be aligned with and integrated into the Plan Update.

Overall, the Planning Team is in agreement that goals and actions of the Plan Update shall be aligned with the timeframe for implementation of hazard mitigation actions with respect to annual review and updates of existing plans and policies.

Public and Stakeholder Involvement

An important component of hazard mitigation planning is public participation and stakeholder involvement. Input from individual citizens and the community as a whole provides the Planning Team with a greater understanding of local concerns, and increases the likelihood of successfully implemented hazard mitigation actions. If citizens and stakeholders, such as local businesses, non-profits, hospitals, and schools are involved, they are more likely to gain a greater appreciation of the risks that hazards may present in their community and take steps to reduce or mitigate their impact.

The public was involved in the development of Jefferson County's 2017 Plan Update at different stages prior to official Plan Update approval and adoption. Public input was sought using three methods: (1) open public meetings; (2) survey instruments; and (3) making the draft Plan Update available for public review at Jefferson County's website.

The draft 2017 Plan Update was made available to the general public for review and comment on the Jefferson County's website. The public was notified at the public meetings that the draft Plan Update would be available for review. No feedback was received on the draft 2017 Plan Update, although it was given on the public survey, and all relevant information was incorporated into the Plan Update.

The 2017 Plan Update will be advertised and a copy available at the SETRPC office and the County's Engineering office upon approval from FEMA.

Stakeholder Involvement

Stakeholder involvement is essential to hazard mitigation planning since a wide range of stakeholders can provide input on specific topics and input from various points of view. Throughout the planning process, members of community groups, local businesses, neighboring jurisdictions, schools, and hospitals were invited to participate in development of the 2017 Plan Update. The Stakeholder Group (Table B-3 in Appendix B, and Table 2-4, below), included a broad range of representatives from both the public and private sector, and served as a key component in Jefferson County's outreach efforts for development of the Plan Update. Documentation of stakeholder meetings is found in Appendix F. A list of organizations invited to attend via e-mail is found in Table 2-4.

Table 2-4. Stakeholder Working Group

AGENCY	TITLE	PARTICIPATED
Colonial Pipeline	Manager	X
Lamar University	Assistant Professor	X
Local Emergency Planning Committee	Chairperson	X
Jefferson County Drainage District 7	Graduate Engineer	X
Jefferson County Drainage District 7	Supervisor	X
RPS	Senior Consulting Engineer	X
South East Texas Disaster Recovery Group	Executive Director	X
Texas House of Representatives	Texas US Representative	X
Texas State Senate	Texas State Senator	
United Way	Executive Director	X
City of Kountze	Emergency Management Coordinator	X
City of Lumberton	City Manager	X

AGENCY	TITLE	PARTICIPATED
City of Rose Hill Acres	Mayor	X
City of Silsbee	Emergency Management Coordinator	X
City of Silsbee	Assistant Emergency Management Coordinator	X
City of Sour Lake	City Manager	X
City of Sour Lake	Police Chief	X
Hardin County	Emergency Management Coordinator	X
Hardin County	Floodplain Administrator	X
South East Texas Regional Planning Commission	Homeland Security and Emergency Management Planning Director	X
City of Bridge City	Emergency Management Coordinator	X
City of Orange	Deputy Chief/Emergency Management Coordinator	X
City of Pinehurst	Emergency Management Coordinator	X
City of Pine Forest	Emergency Management Coordinator	X
City of Rose City	City Secretary	X
City of Vidor Police Department	Emergency Management Coordinator	X
City of West Orange	Emergency Management Coordinator	X
Orange County	Tax Assessor-Collector	X
Orange County Office of Emergency Management	Deputy Emergency Management Coordinator	X
Orange County Office of Emergency Management	Emergency Management Coordinator	X

Stakeholders and participants from neighboring communities that attended the Planning Team and public meetings played a key role in the planning process. For example, hurricanes and flooding were major concerns to the stakeholders, so many of the participating jurisdictions included mitigation actions to improve their drainage systems to reduce flood damages to structures and infrastructure in the area, as well as revising their evacuation routes and plans to ensure safety to the residents during times when an evacuation is necessary.

Public Meetings

A series of public meetings were held throughout the planning area, to collect public and stakeholder input. Topics of discussion included the purpose of hazard mitigation, discussion of the planning process, and types of natural hazards. Representatives from area neighborhood associations, and area residents were invited to participate. Additionally, Jefferson County utilized social media sources including

Facebook, Twitter, and the local media to increase public participation in the Plan Update development process. Documentation on the public meetings are found in Appendix F.

Public meetings were held on the following dates and locations:

- March 30, 2016, SETRPC Homer E Nagel Conference Room
- June 1, 2016, Hardin County Courthouse Commissioners' Courtroom
- August 24, 2016, Orange County Expo Center

Public Participation Survey

In addition to public meetings, the Planning and Consultant Teams developed a public survey designed to solicit public input during the planning process from citizens and stakeholders, and to obtain data regarding the identification of any potential hazard mitigation actions or problem areas. The survey was promoted by local officials and a link to the survey was posted on Jefferson County's website. A total of 69 surveys were completed online. The survey results are analyzed in Appendix C. Jefferson County reviewed the input from the surveys and decided which information to incorporate into the Plan Update as hazard mitigation actions. For example, many citizens mention concerns about flooding, and suggested levee/drainage improvements as potential steps the jurisdictions could take. In response to public input several hazard mitigation actions were added to the Plan Update to pursue funding and implement drainage improvements through the County to include installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

SECTION 3: COUNTY PROFILE

Overview

Jefferson County was established in 1836 as a municipality of Mexico and was organized as a county in 1837. It is named for U.S. president Thomas Jefferson, and Beaumont is the county seat. Jefferson County has a total area of 1,113 square miles, of which 876 square miles is land and 236 square miles (21%) is water. The County consists of several cities, a few census-designated places, and unincorporated areas. The following cities are participating within this plan and are considered part of the planning area: the City of Beaumont, the City of Bevil Oaks, the City of China, the City of Groves, the City of Nederland, the City of Nome, the City of Port Arthur, and the City of Port Neches. The other unincorporated communities will be considered under Jefferson County.

Primary waterways within Jefferson County include the Neches River, Pine Island Bayou and its tributaries, Walker Branch and Walker Branch Tributary, Taylor Bayou and its tributaries, Rhodair Gully, Mayhaw Bayou, Hillebrandt Bayou (a major tributary of Taylor Bayou) with its tributaries, Willow Marsh Bayou, Bayou Din and its tributaries, Bayou Din Tributary, Kidd Gully and Cotton Creek. Soils in Jefferson County have high concentrations of clay and silt, with low infiltration rates and high runoff potential.

Jefferson County is characterized by flat, featureless terrain that slopes gently to the Gulf of Mexico. Elevations range from sea level to approximately forty-five (45) feet. Belts of hardwood and pine are found in the upland portions of the county. Swamps exist in the floodplains of the Neches River and the major bayous. The swamps support vegetation such as cypress trees, and water tolerant grass and sedges in a few cleared areas. Most open land is prairie land used for grazing and rice production. Large areas of tidal marsh along the Gulf of Mexico/Sabine Lake support a dense growth of salt-water vegetation, principally cord grass and marsh cane.

The majority of developed land in the county is primarily agricultural, although many parts are highly industrialized. Commercial, residential, and recreational areas are generally located in the eastern portion of the county. The Gulf of Mexico shore is mostly undeveloped and is used extensively for public recreation. Leading industries in the area produce petroleum and natural gas, sulfur, petrochemicals, and petroleum and natural gas products.

Figure 3-1 shows the general location of Jefferson County, along with the Cities that are located within the County.

Figure 3-1. Location of Jefferson County Planning Area

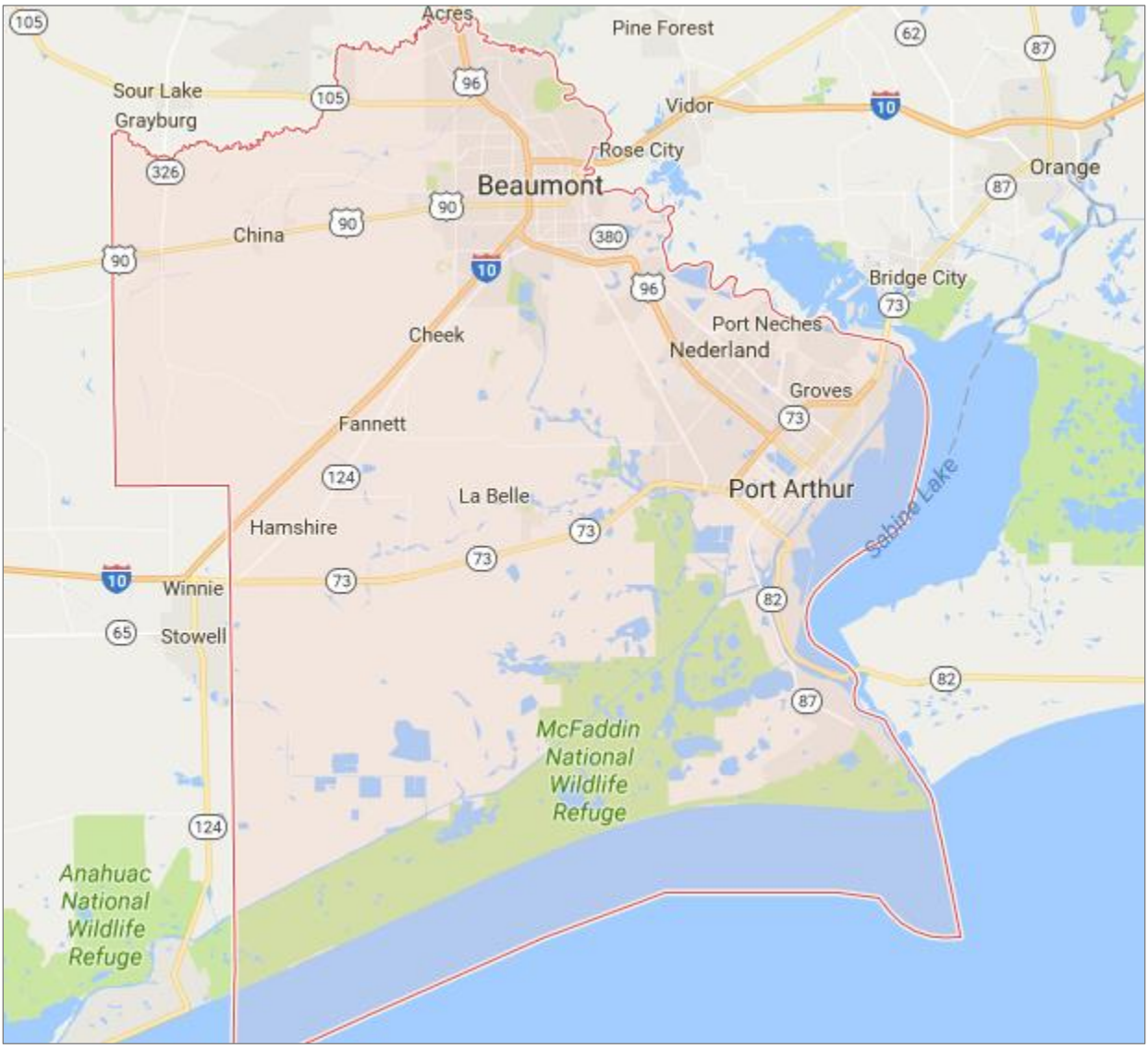
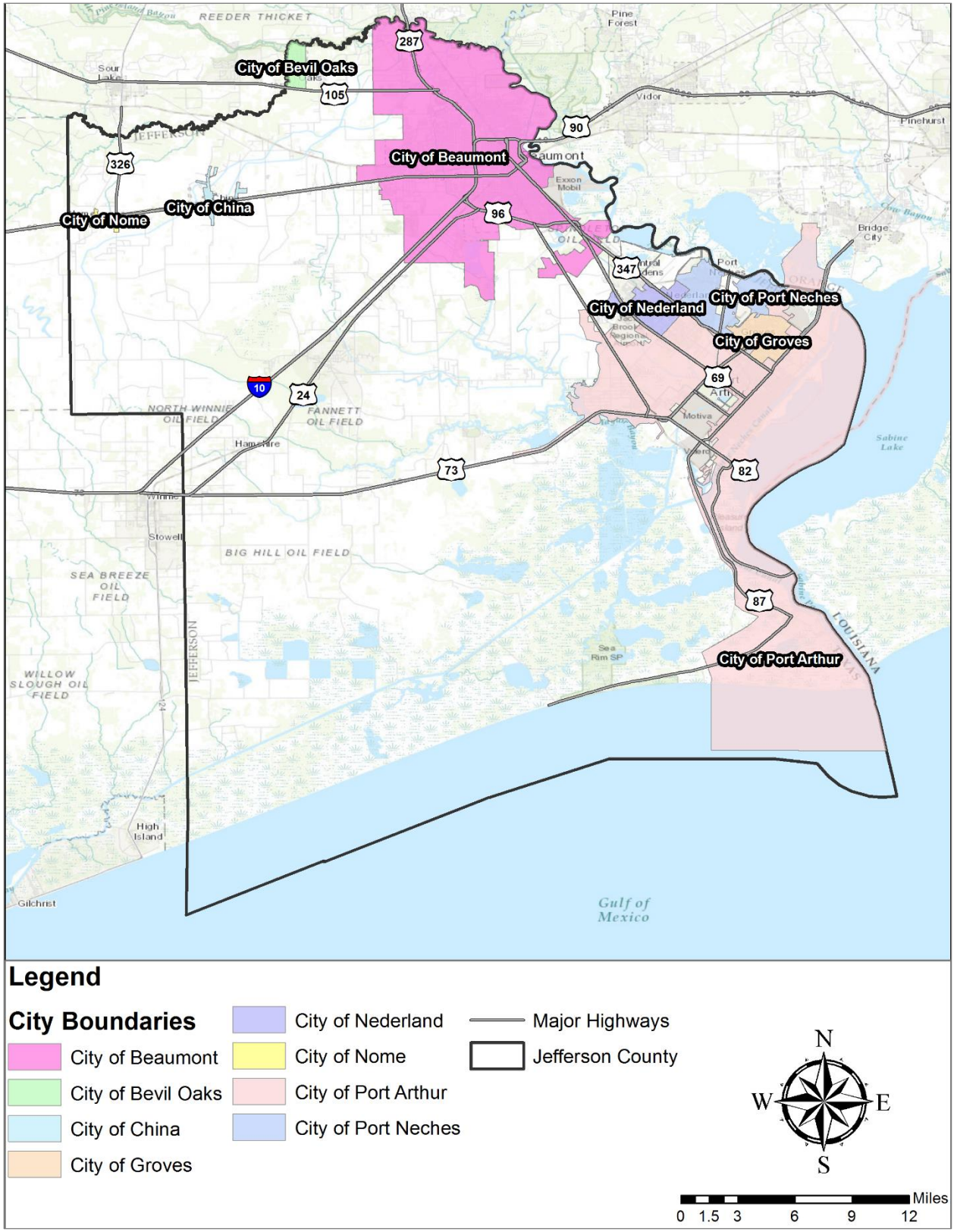


Figure 3-2 shows the Jefferson County Study Area, including the participating jurisdictions that are covered in the risk assessment analysis of the Plan.

Figure 3-2. Jefferson County Study Area



Provided in Table 3-1 below is a listing of the jurisdictions in Jefferson County that participated in the Hazard Mitigation Plan Update.

Table 3-1. Participating Jurisdictions

PARTICIPATING JURISDICTIONS
Jefferson County
City of Beaumont
City of Bevil Oaks
City of China
City of Groves
City of Nederland
City of Nome
City of Port Arthur
City of Port Neches
Southeast Texas Regional Planning Commission (SETRPC)

Population and Demographics

In the official Census population count, as of April 1, 2010, Jefferson County had a population of 252,273 residents. By July 2014, the number had grown to 252,439, and by July 2015, the population was 254,308. Table 3-2 provides the population distribution by jurisdiction within Jefferson County.[1]

Between official U.S. Census population counts, the estimate uses a formula based on new residential building permits and household size. It is simply an estimate and there are many variables involved in achieving an accurate estimation of people living in a given area at a given time.

Table 3-2. Population Distribution by Jurisdiction

JURISDICTION	TOTAL 2010 POPULATION	PERCENTAGE	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS	
			Elderly (Over 65)	Below Poverty Level
Beaumont	118,296	46.9%	14,432	25,789
Bevil Oaks	1,274	0.5%	280	41
China	1,160	0.4%	186	263

[1] http://www.census.gov/quickfacts/table/PST045215/48245,00

JURISDICTION	TOTAL 2010 POPULATION	PERCENTAGE	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS	
			Elderly (Over 65)	Below Poverty Level
Groves	16,144	6.4%	2,518	2,147
Nederland	17,547	7.0%	2,527	1,491
Nome	588	0.2%	67	106
Port Arthur	53,818	21.3%	7,158	14,692
Port Neches	13,040	5.2%	2,034	1,630
Unincorporated Jefferson County	30,406	12.1%	2,837	7,323
JEFFERSON COUNTY TOTAL	**252,273**	**100%**	**32,039**	**53,482**

Population Growth

The official 2010 Jefferson County population is 252,273. Overall, Jefferson County experiences a slight increase in population between 1980 and 2010 by 1.46%, or an increase by 3,621 people. Beaumont, Nederland, Nome, and the unincorporated areas of Jefferson County experienced a population growth between 1980 and 2010, while the rest of the cities experienced a decrease in their population. Beaumont, China, Groves, Nederland, and Nome experienced an increase in population between 2000 and 2010, while the rest of the cities and the unincorporated areas of the County exhibited a decrease in population during this time period. Table 3-2 provides historic growth rates in Jefferson County.

Table 3-2. Population for Jefferson County, 1980-2010

JURISDICTIONS	1980	1990	2000	2010	POP CHANGE 1980-2010	PERCENT OF CHANGE	POP CHANGE 2000-2010	PERCENT OF CHANGE
Beaumont	118,102	114,323	113,866	118,296	194	0.164%	4,430	3.89%
Bevil Oaks	1,306	1,350	1,346	1,274	-32	-2.45%	-72	-5.35%
China	1,351	1,144	1,112	1,160	-191	-14.14%	48	4.32%
Groves	17,090	16,744	15,733	16,144	-964	-5.54%	411	2.61%
Nederland	16,855	16,192	17,422	17,547	692	4.11%	125	0.72%
Nome	550	448	515	588	38	6.91%	73	14.17%
Port Arthur	61,251	58,724	57,755	53,818	-7,433	-12.14%	-3,937	-6.82%
Port Neches	13,944	12,908	13,601	13,040	-904	-6.48%	-561	-4.12%
Unincorporated Jefferson County	18,203	17,556	30,701	30,406	12,203	67.04%	-295	-0.96%
COUNTY TOTAL	**248,652**	**239,389**	**252,051**	**252,273**	**3,621**	**1.46%**	**222**	**0.08%**

Future Development

To better understand how future growth and development in the County might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth management efforts. This section includes an analysis of the projected population change, the number of permits that have been issued throughout the county, and economic impacts.

Population projections from 2010 to 2040 are listed in Table 3-3, as provided by the Office of the State Demographer, Texas State Data Center, and the Institute for Demographic and Socioeconomic Research. Population projections are based on a 0.5 scenario growth rate, which is 50 percent of the population growth rate that occurred during 2000-2010. This information is only available at the County level; however, the population projection shows an increase in population density for the County, which would mean overall growth for the County.

Table 3-3. Jefferson County Population Projects

County	LAND AREA (SQ MI)	2010		2020		2030		2040	
		Population							
		Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)
Jefferson	1,113	252,273	226.7	267, 88	240.1	283,813	255.0	300,728	270.2

Economic Impact

Building and maintaining infrastructure depends on the economy; therefore, protecting infrastructure from risk due to natural hazards in the planning area is important to Jefferson County. Whether it's expanding culverts under a road that washes out during flash flooding, shuttering a fire station, or flood-proofing a wastewater facility, infrastructure must be mitigated from natural hazards in order to continue providing essential utility and emergency response services in a fast-growing planning area.

Major employers in the area are critical to the health of the economy, as well as effective transportation connectivity.

Existing and Future Land Use and Development Trends

Jefferson County is part of the South East Texas Regional Planning Commission (SETRPC) which has many departments to promote intergovernmental cooperation and coordination, conduct comprehensive regional planning, and provide a forum for the discussion and study of area issues. The Community Development Department focus on building a stronger more prosperous region through the focus on an individual community, while the Transportation and Environmental Resources department provides assistance through grants and resources regarding the environment and working with state, city, and

county entities to coordinate transportation planning for the Jefferson-Orange-Hardin Regional Transportation Study area.

Additionally, the City of Beaumont, the City of Groves, the City of Nederland and the City of Port Arthur all have a Comprehensive Land Use Plan in place. These plans, along with the planning department are responsible for the comprehensive planning activities of the city and for administering the subdivision regulations.

Building Permits

Building permits indicate what types of buildings are being constructed and their relative uses. Table 3-4 lists the number of residential building permits for Jefferson County that have been granted between 1996 and 2015. The data includes all sizes of family homes for reported permits, as well as the construction costs, to show the potential increase in vulnerability of structures to the various hazards reviewed in the risk assessment. The increase in vulnerability can be attributed to the higher construction costs that would be factored into repairing or replacing a structure using current market values. Permits are reported annually in September; data reflects permits for years 2010, 2011, 2012, 2013, 2014, and 2015 to demonstrate growth rates.

Table 3-4. County Residential Building Permits[2]

Jefferson County			
Year	**Buildings**	**Units**	**Construction Cost**
1996	428	453	$40,661,459
2000	602	615	$73,176,250
2005	450	819	$83,568,395
2010	965	1,111	$104,441,681
2011	588	743	$81,941,185
2012	552	995	$106,460,700
2013	362	364	$70,423,743
2014	839	1,061	$122,734,784
2015	513	599	$95,208,119

[2] http://censtats.census.gov/cgi-bin/bldgprmt/bldgdisp.pl

SECTION 4: RISK OVERVIEW

Hazard Description

Section 4 is the first phase of the Risk Assessment, providing background information for the hazard identification process, and descriptions for the hazards identified. The Risk Assessment continues with Sections 5 through 15, which include hazard descriptions and vulnerability assessments.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, Jefferson County and the participating jurisdictions identified eleven natural hazards that are addressed in the 2017 Hazard Mitigation Plan Update (Plan or Plan Update). Of the hazards identified, eleven natural hazards) were identified as significant, as shown in Table 4-1. The hazards were identified through input from Planning Team members, and a review of the current 2013 State of Texas Hazard Mitigation Plan Update (State Plan Update). Readily available online information from reputable sources such as federal and state agencies were also evaluated and utilized to supplement information as needed.

In general, there are three main categories of hazards including atmospheric, hydrologic, and technological. Atmospheric hazards, are events or incidents associated with weather generated phenomenon. Atmospheric hazards that have been identified as significant for the Jefferson County Planning area include extreme heat, hail, hurricane, lightning, thunderstorm wind, tornado, and winter storm (Table 4-1).

Hydrologic hazards, are events or incidents associated with water related damage and account for over 75 percent of Federal disaster declarations in the United States. Hydrologic hazards identified as significant for the planning area include flood and drought.

Technological hazards, refers to the origins of incidents that can arise from human activities, such as the construction and maintenance of dams. Technological hazards are distinct from natural hazards primarily because they originate from human activity. The risks presented by natural hazards may be increased or decreased as a result of human activity, however they are not inherently human-induced.

For the Risk Assessment, the wildfire hazard is considered “other,” since a wildfire may be natural or human-caused, and is not considered atmospheric or hydrologic.

Table 4-1. Hazard Descriptions

HAZARD	DESCRIPTION
ATMOSPHERIC	
Extreme Heat	Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period of time.
Hail	Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and subsequent cooling of the air mass.
Hurricane	A hurricane is an intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher.
Lightning	Lightning is a sudden electrostatic discharge that occurs during an electrical storm. This discharge occurs between electrically charged regions of a cloud, between two clouds, or between a cloud and the ground.
Thunderstorm Wind	A thunderstorm occurs when an observer hears thunder. Radar observers use the intensity of the radar echo to distinguish between rain showers and thunderstorms. Lightning detection networks routinely track cloud-to-ground flashes, and therefore thunderstorms.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. The destruction caused by tornadoes ranges from light to catastrophic, depending on the location, intensity, size, and duration of the storm.
Winter Storm	Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
HYDROLOGIC	
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality.

HAZARD	DESCRIPTION
Flood	The accumulation of water within a body of water, which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, and shallow flooding.
Coastal Erosion	Coastal erosion is a hydrologic hazard defined as the wearing away of land and loss of beach, shoreline, or dune material as a result of natural coastal processes or manmade influences. Coastal Erosion occurrences and damages are not well documented, however, team members indicate that coastal erosion pose little to no risk for the area based on local knowledge and experience. Coastal Erosion is ranked as a minimal hazard risk in the State's HMAP and for the purposes of this Plan, is addressed as a sub-hazard of Hurricanes.
OTHER	
Wildfire	A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase the risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors.

Hazards that weren't considered significant and were not included in the Plan are located in Table 4-2, along with the evaluation process used for determining the significance of each of these hazards. These natural hazards are not addressed in detail due to their no to minimal level of risk within the Jefferson County planning area. Hazards not identified for inclusion at this time may be addressed during future evaluations and updates.

Table 4-2. Hazard Identification Process

HAZARD	DESCRIPTION
ATMOSPHERIC	
Expansive Soils	Expansive soils occurrences and damages are not well documented. There are no historical occurrences of expansive soils for the Jefferson County planning area and it is located in an area where occurrences are considered rare. Expansive Soils poses little to no risk for the area and was not addressed further in the plan.
Earthquakes	According to the State Plan, an earthquake occurrence for the Jefferson County planning area is considered exceedingly rare. Although a small event is possible, it would pose little to no risk for the area. There are no recorded earthquake events or damages for

HAZARD	DESCRIPTION
	the planning area. Due to the low frequency of the hazard and limited impact, the hazard was not addressed further in the plan.
Land Subsidence	There are no historical occurrences of land subsidence for the Jefferson County planning area and it is located in an area where occurrences are considered rare. The impact would be limited and the frequency of occurrence is unlikely according to the State Plan. Land Subsidence poses little to no risk for the area and was not addressed further in the plan.
Dam Failure	There are 3 dams in the Jefferson County planning area. However, there are no historical occurrences of these dams failing and there is none expected in the future. If the dams were to fail Jefferson County would not experience any impact to life, property, or services provided by the community.

Natural Hazards and Climate Change

Climate change is defined as a long-term hazard which can increase or decrease the risk of other weather hazards; and directly endangers property due to sea level rise, and biological organisms due to habitat destruction.

Global climate change is expected to exacerbate the risks of certain types of natural hazards impacted through rising sea levels, warmer ocean temperatures, higher humidity, the possibility of stronger storms and an increase in wind and flood damages due to storm surges. While sea level rise is a natural phenomenon and has been occurring for several thousand years, the general scientific consensus is that the rate has increased in the past 200 years, from 0.5 millimeters per year to 2 millimeters per year.

Texas is considered one of the more vulnerable states in the U.S. to both abrupt climate changes and to the impact of gradual climate changes to the natural and built environments. Mega-droughts can trigger abrupt changes to regional ecosystems and the water cycle, drastically increase extreme summer temperature and fire risk, and reduce availability of water resources, as Texas experienced during 2011-2012.

Paleoclimate records also show that the climate over Texas had large changes between periods of frequent mega-droughts and the periods of mild droughts that Texas is currently experiencing. While the cause of these fluctuations is unclear, it would be wise to anticipate that such changes could occur again, and may even be occurring now.

Overview of Hazard Analysis

The methodologies utilized to develop the Risk Assessment are a historical analysis and a statistical approach. Both methodologies provide an estimate of potential impact by using a common, systematic framework for evaluation.

Records retrieved from the National Centers for Environmental Information (NCEI) and the National Oceanic and Atmospheric Administration (NOAA) were reported for the Jefferson County planning area, including the participating jurisdictions. Remaining records identifying the occurrence of hazard events in the planning area and the maximum recorded magnitude of each event were also evaluated.

The use of geographic information system (GIS) technology to identify and assess risks for the Jefferson County planning area, and evaluate community assets and their vulnerability to the hazards.

The four general parameters that are described for each hazard in the Risk Assessment include frequency of return, approximate annualized losses, a description of general vulnerability, and a statement of the hazard's impact.

Frequency of return was calculated by dividing the number of events in the recorded time period for each hazard by the overall time period that the resource database was recording events. Frequency of return statements are defined in Table 4-3, and impact statements are defined in Table 4-4 below.

Table 4-3. Frequency of Return Statements

PROBABILITY	DESCRIPTION
Highly Likely	Event is probable in the next year.
Likely	Event is probable in the next three years.
Occasional	Event is probable in the next five years.
Unlikely	Event is probable in the next ten years.

Table 4-4. Impact Statements

POTENTIAL SEVERITY	DESCRIPTION
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses resulting in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25 percent of property destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and illnesses are treatable with first aid. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property destroyed or with major damage.

Each of the hazard profiles includes a description of a general Vulnerability Assessment. Vulnerability is the total of assets that are subject to damages from a hazard, based on historic recorded damages. Assets in the region were inventoried and defined in hazard zones where appropriate. The total amount of damages, including property and crop damages, for each hazard is divided by the total number of assets (building value totals) in that community to determine the percentage of damage that each hazard can cause to the community.

To better understand how future growth and development in the County might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth management efforts. Hazard Vulnerability for Jefferson County, and all participating jurisdictions, was reviewed based on recent development changes that occurred throughout the County. The Jefferson County planning area has grown slightly between 2010 and 2015 according to the U.S. Census Bureau, therefore there has been no significant factors or development trends with a consequential effect or increase in vulnerability to the population, infrastructure, and buildings for hazards.

Once loss estimates and vulnerability were known, an impact statement was applied to relate the potential impact of the hazard on the assets within the area of impact.

Hazard Ranking

Table 4-5 portrays the results of the County's self-assessment for hazard ranking, based on the preliminary results of the risk assessment presented at the Risk Assessment Workshop. This table also takes into account local knowledge regarding frequency of occurrence and the potential impact of each hazard.

Table 4-5. Hazard Risk Ranking

HAZARD	FREQUENCY OF OCCURENCE	POTENTIAL SEVERITY	RANKING
Flood	Highly Likely	Limited/Major[1]	High
Hurricane	Highly Likely	Substantial	High
Lightning	Highly Likely	Substantial	Moderate
Extreme Heat	Occasional	Minor	Moderate
Thunderstorm Wind	Highly Likely	Substantial	Moderate
Drought	Occasional	Limited	Moderate
Hail	Highly Likely	Limited	Low
Tornado	Highly Likely	Major	Low
Wildfire	Highly Likely	Minor	Low

[1] The Potential Severity for the City of Beaumont is considered "Major" while the rest of the jurisdictions, including Jefferson County have a Potential Severity of "Limited".

HAZARD	FREQUENCY OF OCCURENCE	POTENTIAL SEVERITY	RANKING
Winter Storm	Highly Likely	Limited	Low
Coastal Erosion	Highly Likely	Limited	Low

SECTION 5: FLOOD

Hazard Description

Floods generally result from excessive precipitation. The severity of a flood event is determined by a combination of several major factors, including: stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and the degree of vegetative clearing and impervious surface. Typically, floods are long-term events that may last for several days.

The primary types of general flooding are inland and coastal flooding. Inland or riverine flooding is a result of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Inland or riverine flooding is overbank flooding of rivers and streams, typically resulting from large-scale weather systems that generate prolonged rainfall over a wide geographic area; thus it is a naturally occurring and inevitable event. Some river floods occur seasonally when winter or spring rainfalls fill river basins with too much water, too quickly. Torrential rains from decaying hurricanes or tropical systems can also produce river flooding.

Coastal flooding occurs when normally dry, low-lying land is flooded by seawater. The extent of coastal flooding is a function of the elevation inland flood waters penetrate, which is controlled by the topography of the coastal land exposed to flooding.

Coastal flooding is largely a natural event, however human influence on the coastal environment can exacerbate coastal flooding. Extraction of water from groundwater reservoirs in the coastal zone can enhance subsidence of the land, increasing the risk of flooding. Engineered protection structures along the coast, such as sea walls, alter the natural processes of the beach, often leading to erosion on adjacent stretches of the coast, which also increases the risk of flooding. Coastal flooding is covered in detail under the profile for Hurricanes, located in Section 7.

Location

The Digital Flood Insurance Rate Map (DFIRM) data provided by FEMA for Jefferson County shows the following flood hazard areas:

- Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance requirements and floodplain management standards apply.
- Zone AE: Areas subject to inundation by 1-percent-annual-chance shallow flooding. It is the base floodplain where BFEs are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.
- Zone AH: Areas subject to inundation by the 1-percent-annual-chance shallow flooding, usually areas of ponding, where average depths range from 1 to 3 feet. BFEs derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone VE: Areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone X: Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones.

Locations of flood zones in Jefferson County based on the DFIRM from FEMA are illustrated in Figures 5-1 to 5-9.

Figure 5-1. Estimated Flood Zones in Jefferson County

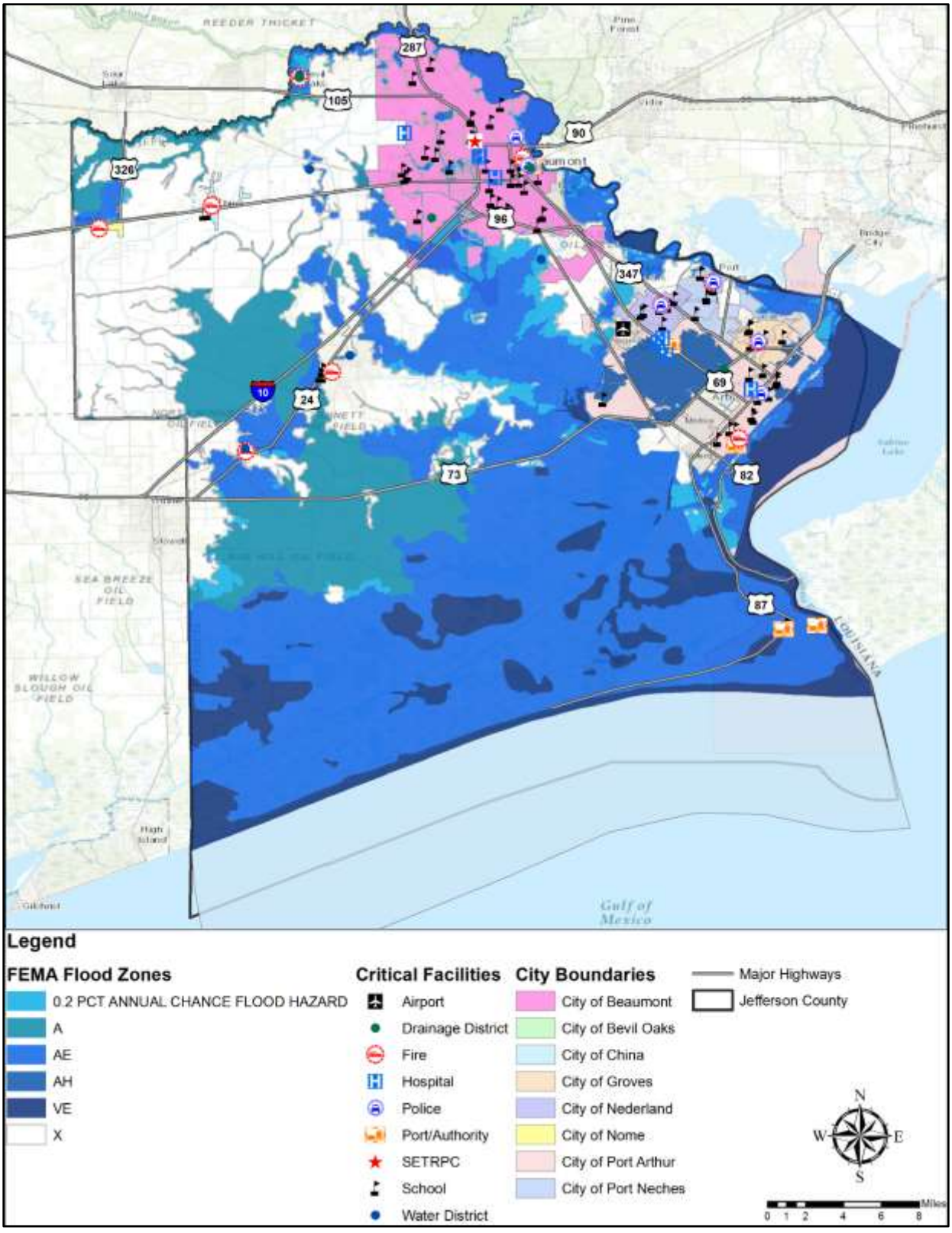


Figure 5-2. Estimated Flood Zones in the City of Beaumont, SETRPC

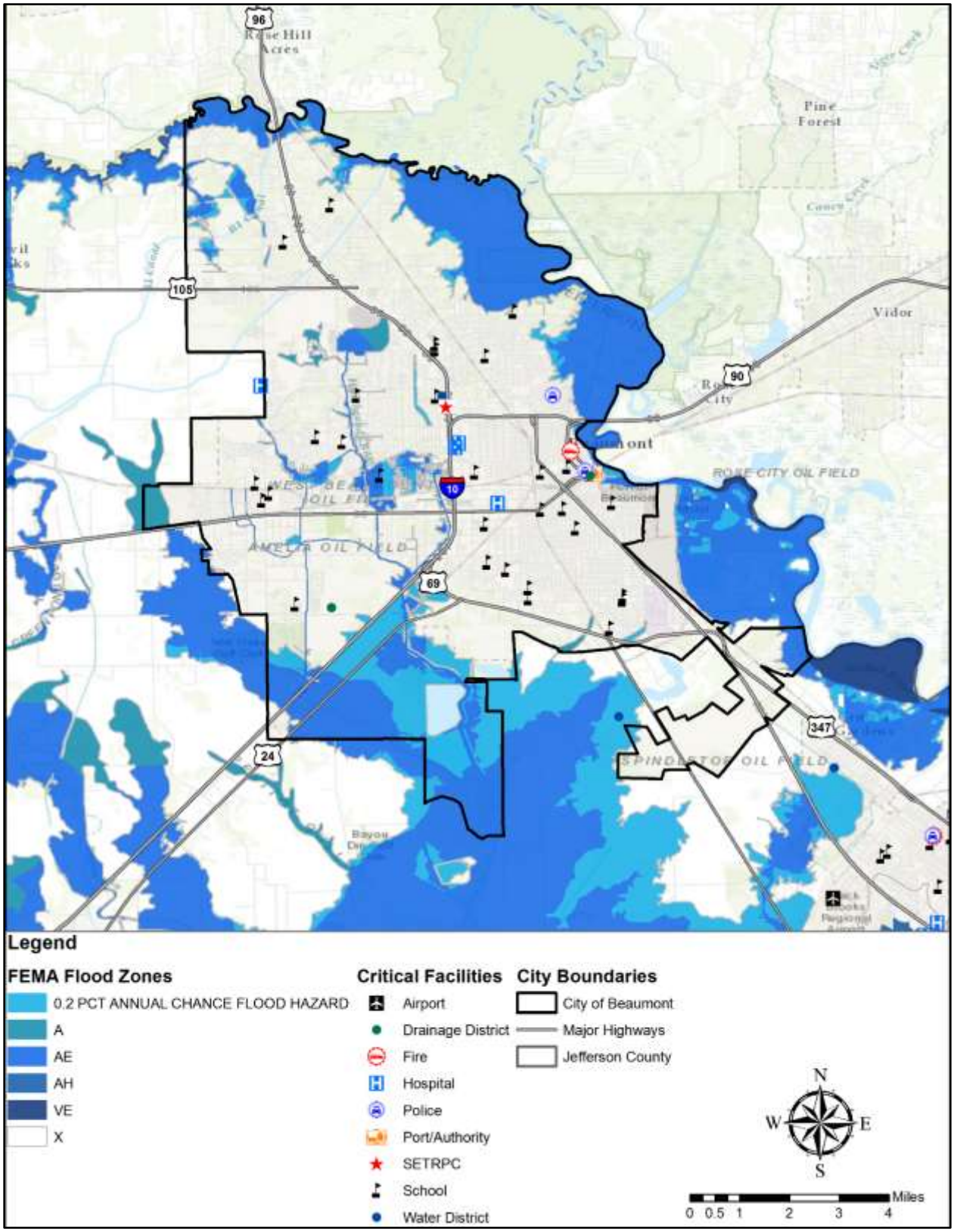


Figure 5-3. Estimated Flood Zones in the City of Bevil Oaks

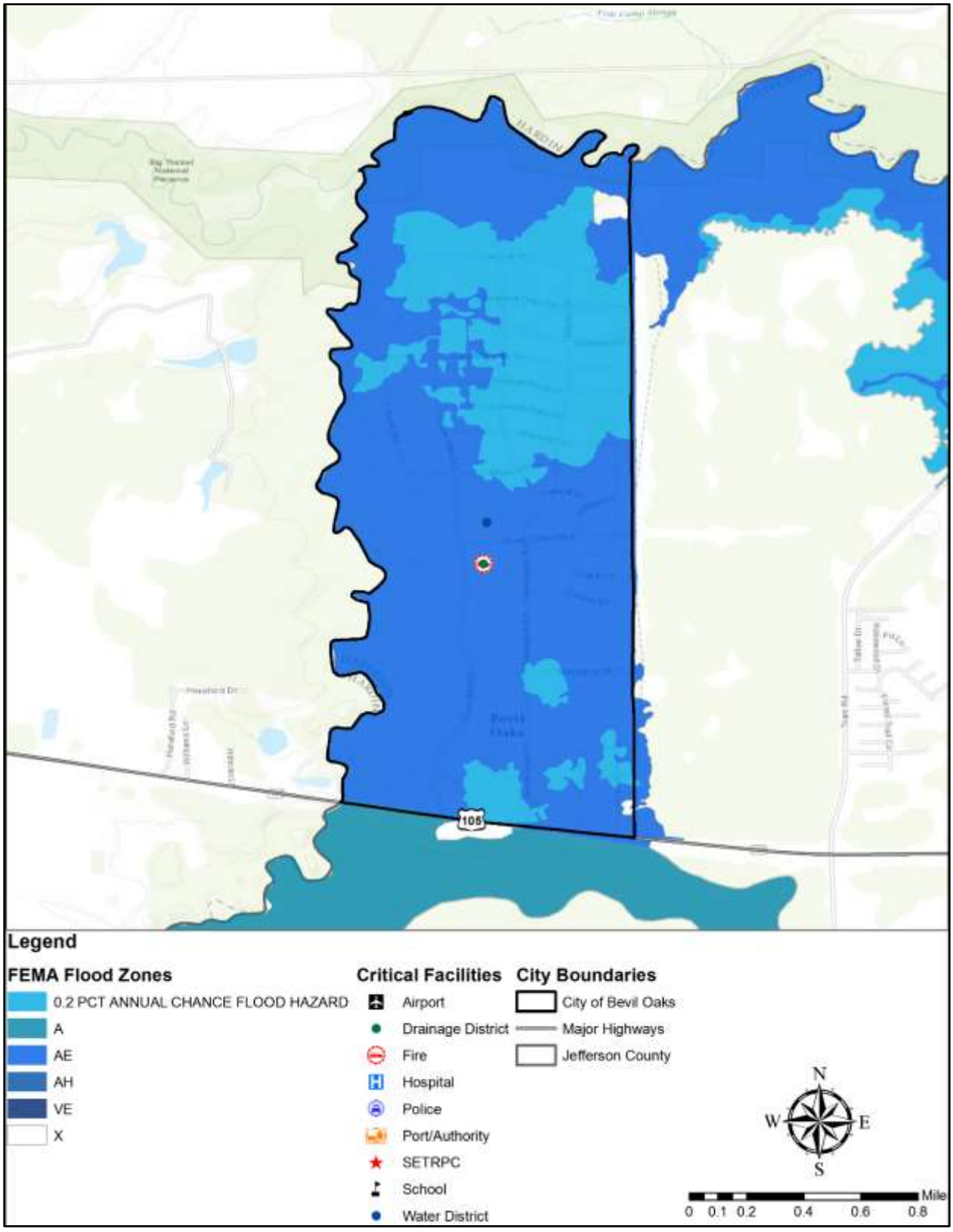


Figure 5-4. Estimated Flood Zones in the City of China

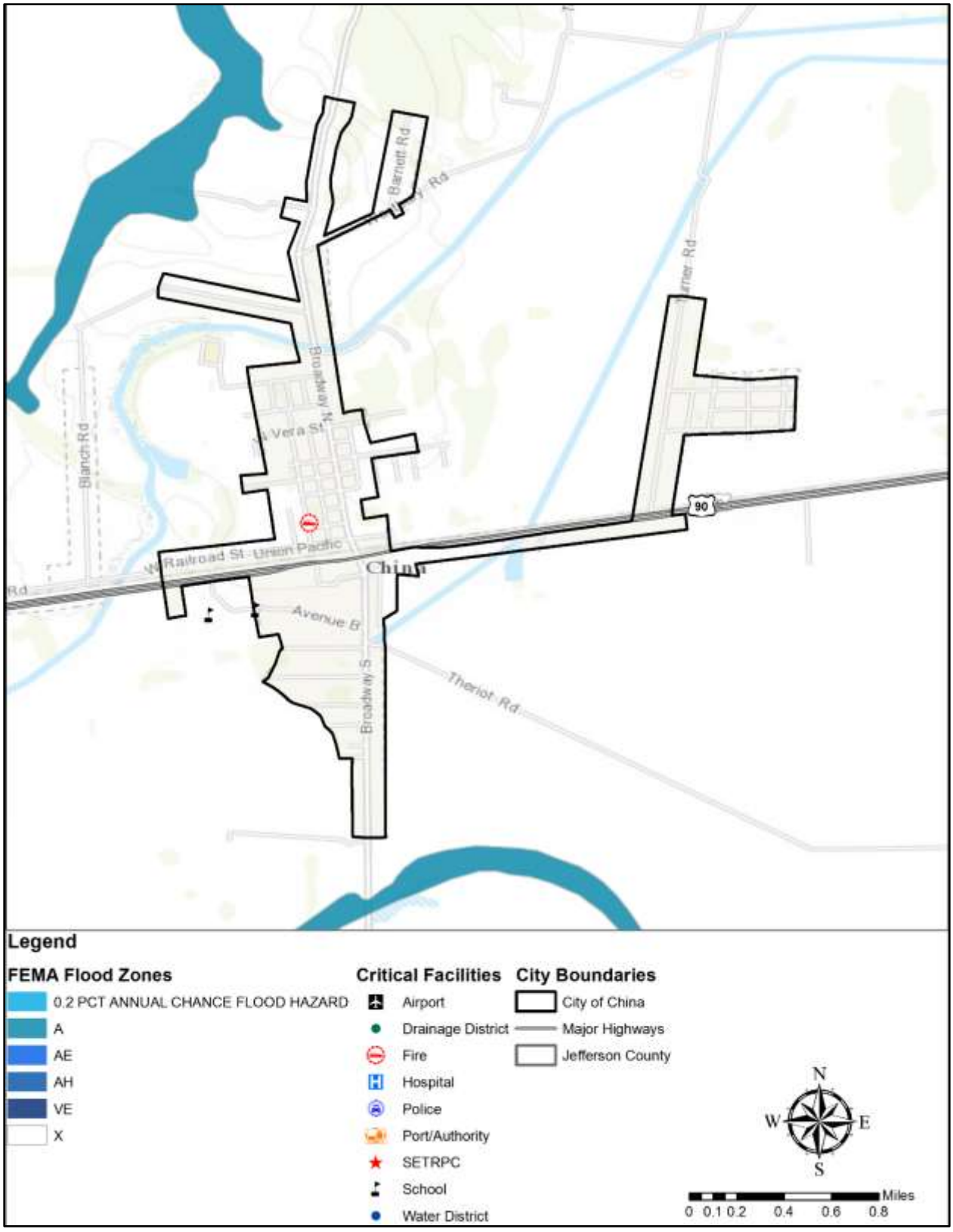


Figure 5-5. Estimated Flood Zones in the City of Groves

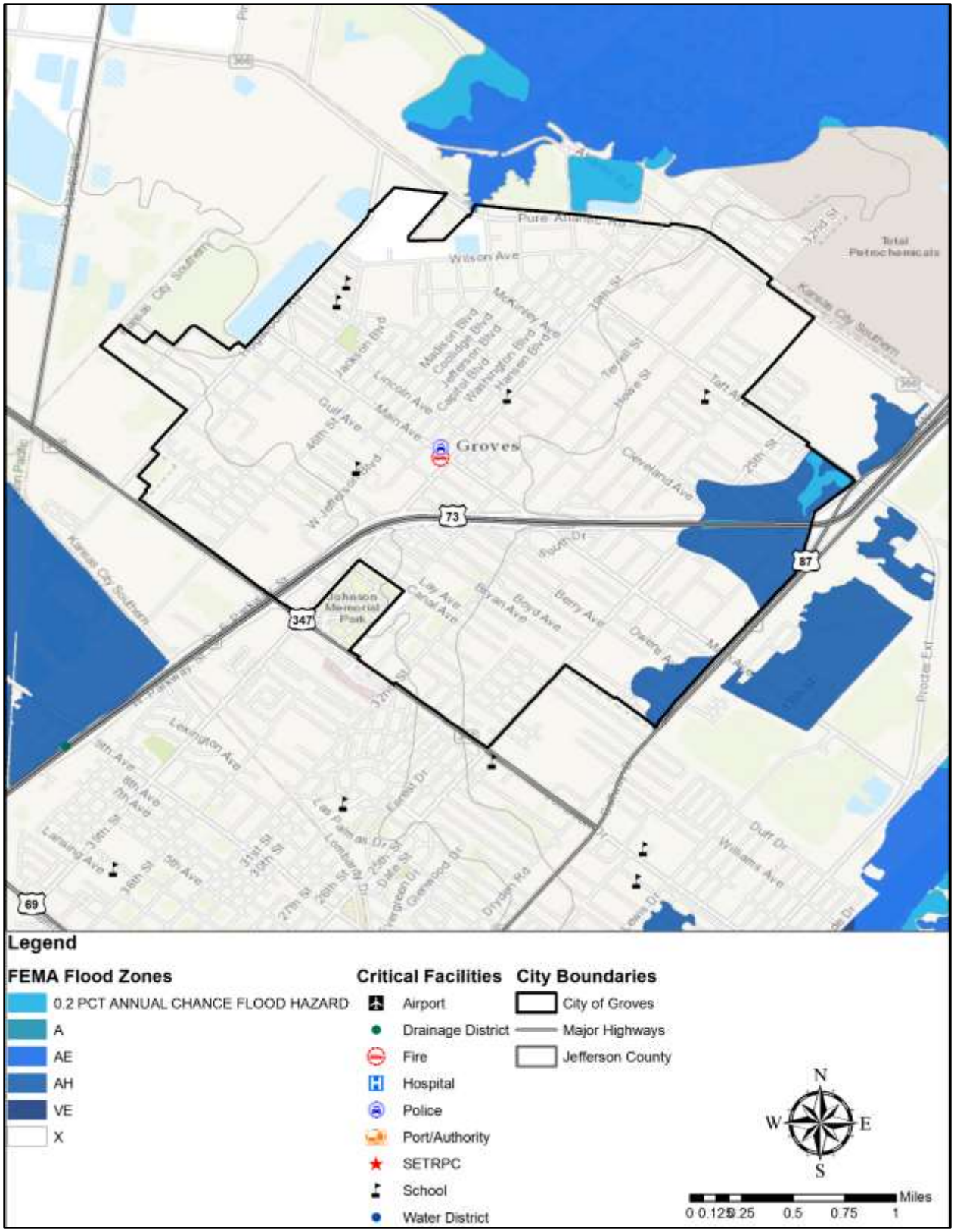


Figure 5-6. Estimated Flood Zones in the City of Nederland

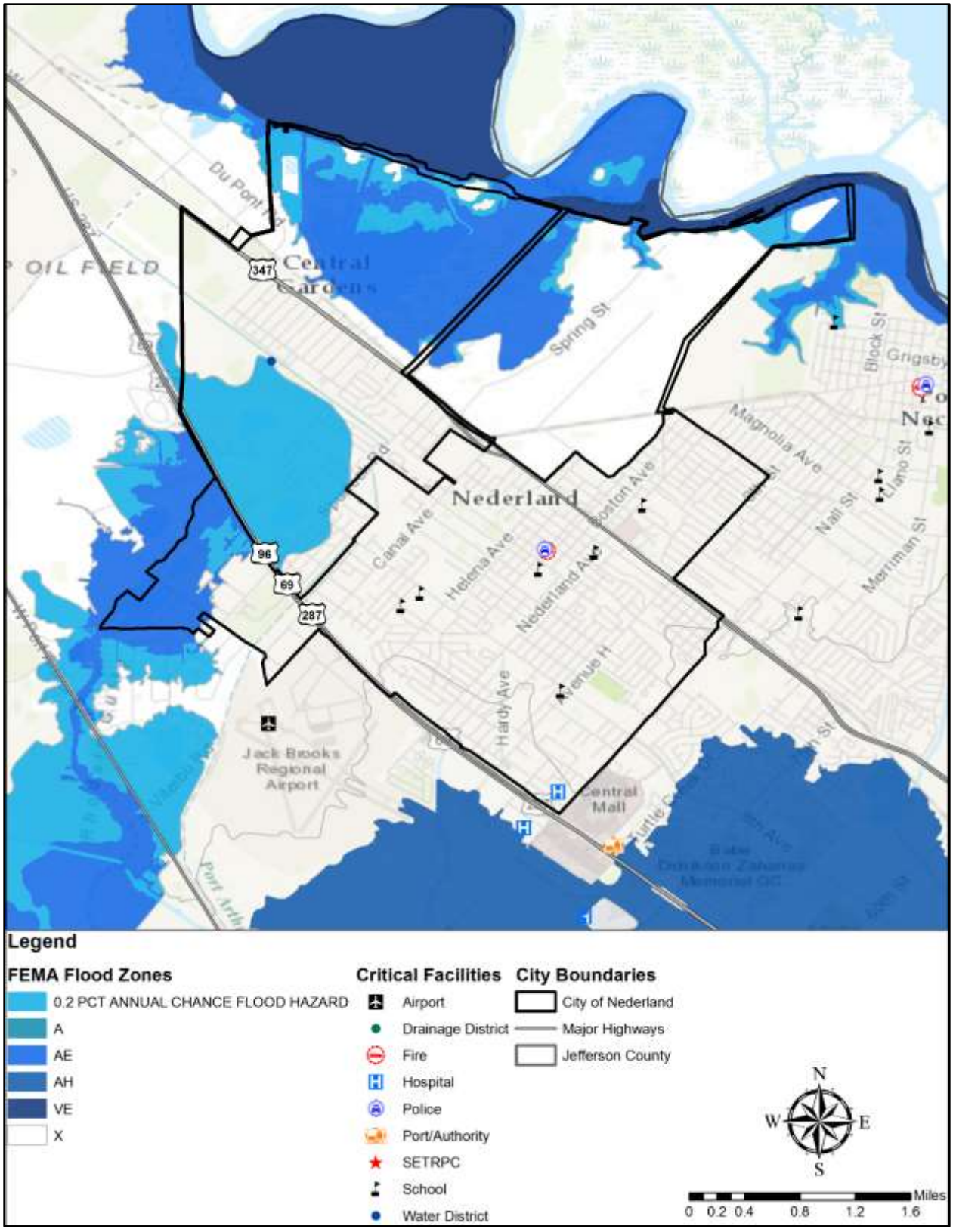


Figure 5-7. Estimated Flood Zones in the City of Nome

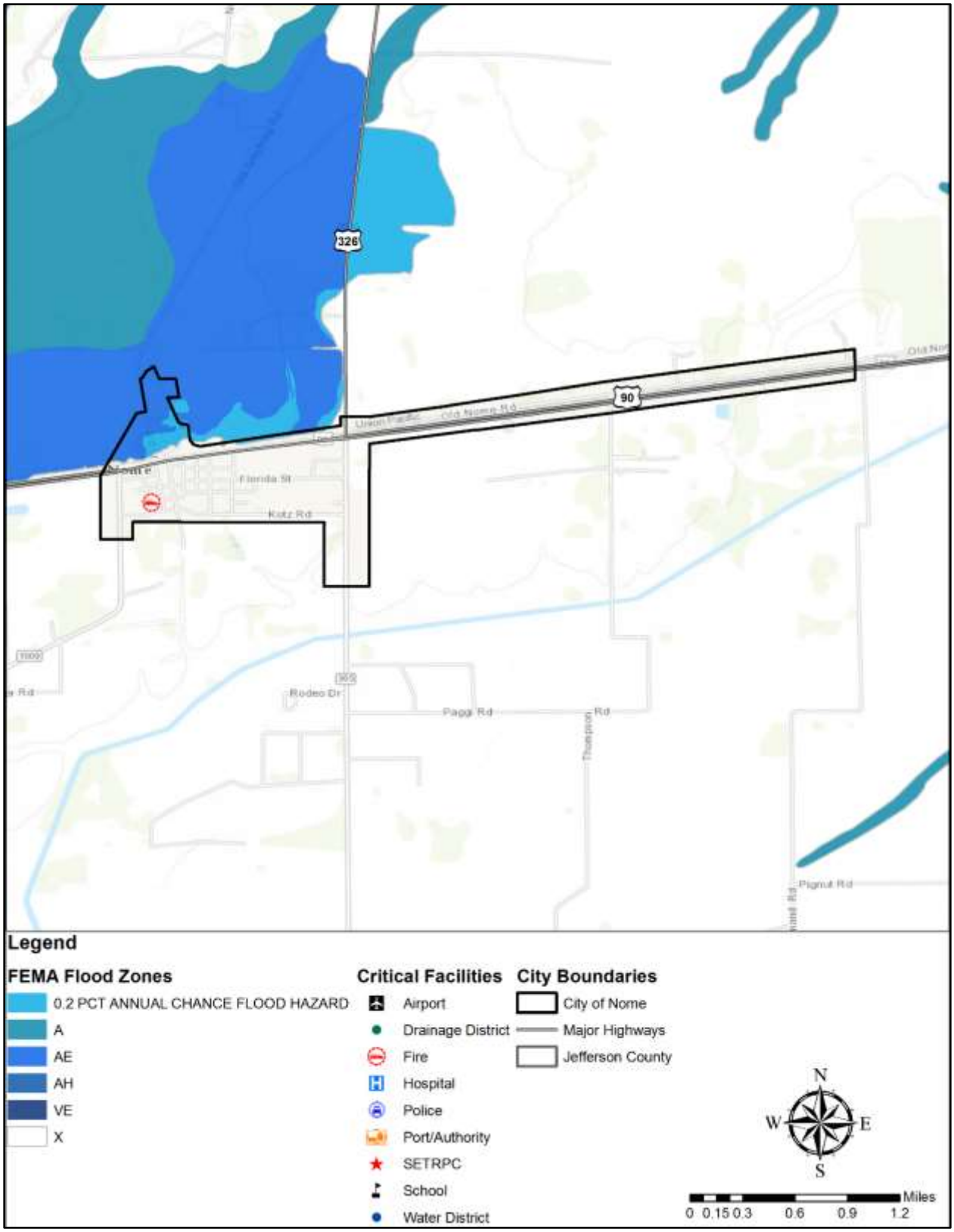


Figure 5-8. Estimated Flood Zones in the City of Port Arthur

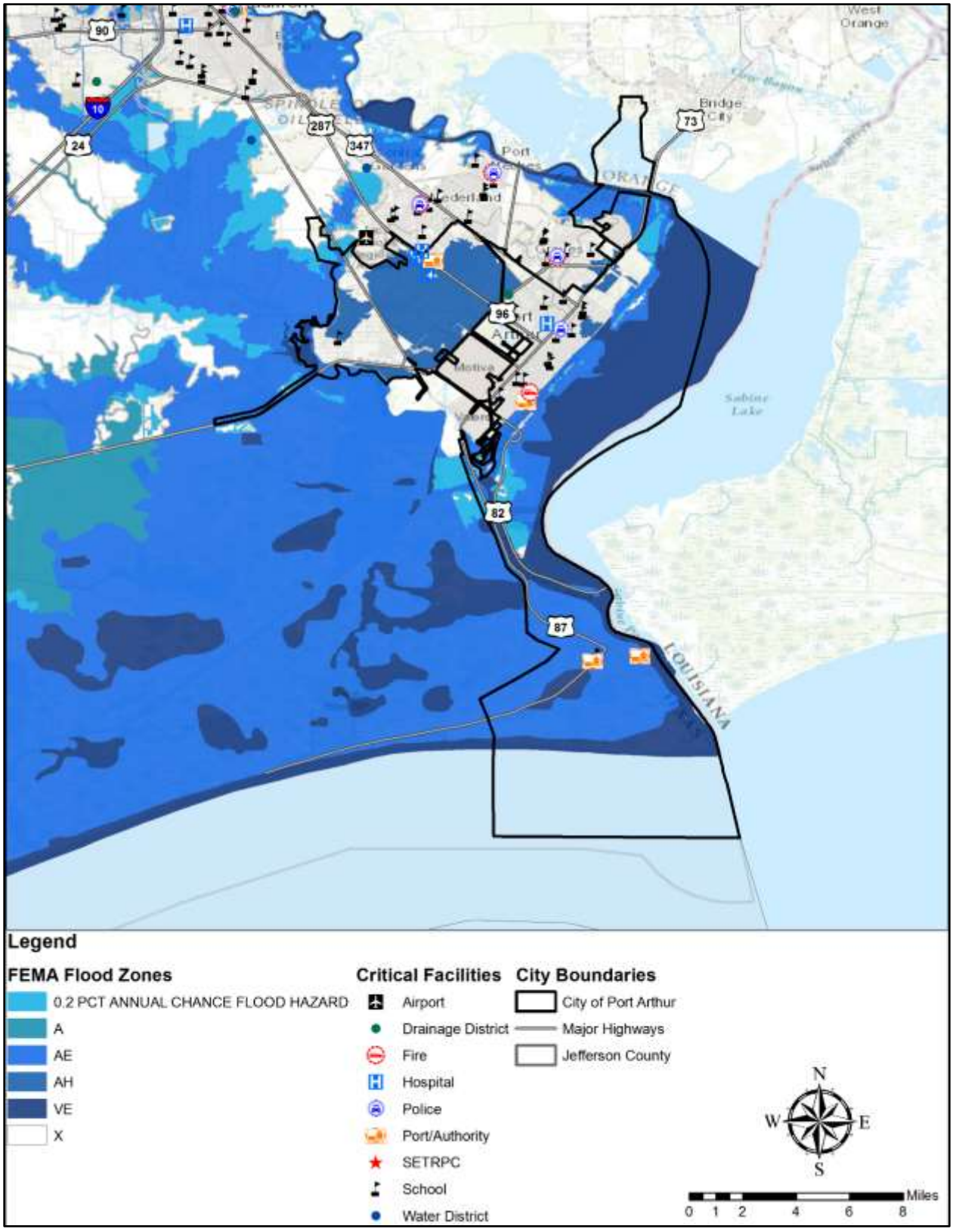
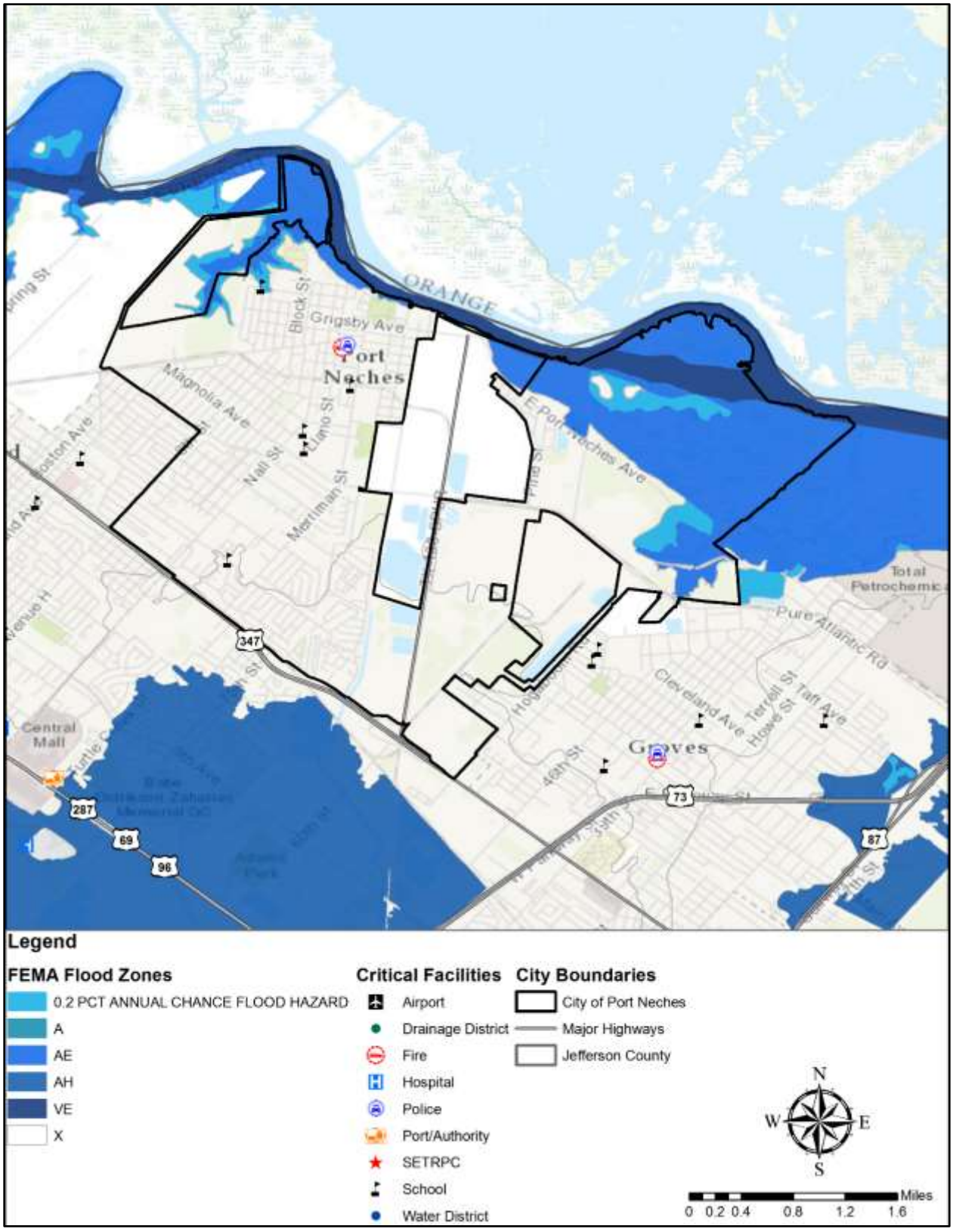


Figure 5-9. Estimated Flood Zones in the City of Port Neches



Extent

The severity of a flood event is determined by a combination of several factors including: stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and degree of vegetative clearing and impervious surface. Typically, floods are long-term events that may last for several days.

Determining the intensity and magnitude of a flood event is dependent upon the flood zone and location of the flood hazard area, in addition to depths of flood waters. The extent of flood damages can be expected to be more damaging in the areas that will convey a base flood. FEMA categorizes areas on the terrain according to how the area will convey flood water. Flood zones are the categories that are mapped on Flood Insurance Rate Maps. Table 5-1 provides a description of FEMA flood zones and the flood impact in terms of severity or potential harm. Flood Zones A, AE, and X are the only hazard areas mapped in the region. Figures 5-1 through 5-9 (above) should be read in conjunction with the extent for flooding in Tables 5-1, 5-2, and 5-3 in order to determine the intensity of a potential flood event.

Table 5-1. Flood Zones

INTENSITY	ZONE	DESCRIPTION
HIGH	ZONE A	Areas with a 1-percent-annual-chance of flooding and a 26-percent-chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
	ZONE A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a Base Flood Elevation (BFE) (old format).
	ZONE AE	The base floodplain where base flood elevations are provided. AE Zones are now used on the new format FIRMs instead of A1-A30 Zones.
	ZONE AO	River or stream flood hazard areas and areas with a 1-percent or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26-percent-chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
	ZONE AH	Areas with a 1-percent-annual-chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26-percent chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

INTENSITY	ZONE	DESCRIPTION
	ZONE A99	Areas with a 1-percent-annual-chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
	ZONE AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
	ZONE V	Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves. Because detailed hydraulic analyses have not been performed, no BFEs or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
	ZONE VE	Areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
MODERATE to LOW	ZONE X 500	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 100-year flooding.

Zone A is interchangeably referred to as the 100-year flood, the 1-percent-annual chance flood, the Special Flood Hazard Area (SFHA), or more commonly, the base flood. This is the area that will convey the base flood and constitute a threat to the planning area. The impact from a flood event can be more damaging in areas that will convey a base flood.

Structures built in the SFHA are subject to damage by rising waters and floating debris. Moving flood water exerts pressure on everything in its path and causes erosion of soil and solid objects. Utility systems, such as heating, ventilation, air conditioning, fuel, electrical systems, sewage maintenance systems, and water systems, if not elevated above BFE, may also be damaged.

The intensity and magnitude of a flood event is also determined by the depth of flood waters. Table 5-2 below describes the category of risk and potential magnitude of an event in correlation to water depth. The water depths depicted in Table 5-2 are approximations based on elevation data. Table 5-3 describes the extent associated with stream gauge data provided by the United States Geological Survey (USGS).

Table 5-2. Extent Scale – Water Depth

SEVERITY	DEPTH (in feet)	DESCRIPTION
BELOW FLOOD STAGE	0 to 15	Water begins to exceed low sections of banks and the lowest sections of the floodplain.
ACTION STAGE	16 to 23	Flow is well into the floodplain, minor lowland flooding reaches low areas of the floodplain. Livestock should be moved from low lying areas.
FLOOD STAGE	24 to 28	Homes are threatened and properties downstream of river flows or in low lying areas begin to flood.
MODERATE FLOOD STAGE	29 to 32	At this stage the lowest homes downstream flood. Roads and bridges in the floodplain flood severely and are dangerous to motorists.
MAJOR FLOOD STAGE	33 and above	Major flooding approaches homes in the floodplain. Primary and secondary roads and bridges are severely flooded and very dangerous. Major flooding extends well into the floodplain, destroying property, equipment, and livestock.

Table 5-3. Extent for Jefferson County[1]

JURISDICTION[2]	ESTIMATED SEVERITY PER FLOOD EVENT	PEAK FLOOD EVENT
Jefferson County	Below Flood Stage, 0 to 15 feet	Below Flood Stage: Taylor Bayou reached an overflow elevation of 11.29 feet in September 1963 near the City of LaBelle.
Jefferson County	Below Flood Stage, 0 to 15 feet	Below Flood Stage: Hillebrandt Bayou reached an overflow elevation of 12.30 feet in September 1963 near Lovell Lake.
Jefferson County	Below Flood Stage, 0 to 15 feet	Action Stage: Pine Island Bayou reached an overflow elevation of 16.18 feet in October 2006 near Sour Lake, Texas.
City of Beaumont	Below Flood Stage, 0 to 15 feet	Below Flood Stage: Neches River reached an overflow elevation of 11.71 feet in October 2006 in Beaumont, Texas.

[1] Severity estimated by averaging floods at certain stage level over the history of flood events. Severity and peak events are based on U.S. Geological Survey data.
[2] Severity is provided for jurisdictions where peak data was provided.

The range of flood intensity that the County can experience is high, or Zone A. Based on reporting from the USGS, a flood event can place the County at the extent of "Below Flood Stage" as shown in Tables 5-2 and 5-3. Based on historical occurrences, on average, the entire planning area, including all participating jurisdictions, could expect to experience 7 inches of water within a 5 hour period due to flooding.

The data described in Tables 5-1 through 5-3, together with Figures 5-1 through 5-9, and historical occurrences for the area, provides an estimated potential magnitude and severity for the County. For example the City of Port Arthur, as shown in Figure 5-8, has areas designated as Zone AE and Zone VE. Reading this figure in conjunction with Table 5-1 means the area is of high risk for flood. It is noted that the SETRPC is not located in a special flood hazard area and has no known localized flood risk.

Historical Occurrences

Historical evidence indicates that areas within Jefferson County are susceptible to flooding, especially in the form of flash flooding. It is important to note that only flood events that have been reported have been factored into this risk assessment; therefore it is likely that additional flood occurrences have gone unreported before and during the recording period. Table 5-4 identifies historical flood events that resulted in damages, injuries, or fatalities within the Jefferson County planning area. Table 5-5 provides the historical flood event summary by jurisdiction. Historical Data is provided by the National Oceanic and Atmospheric Administration and the National Weather Service's (NOAA/NWS) Storm Prediction Center, in addition to the National Center for Environmental Information (NCEI) database for Jefferson County.

Table 5-4. Historical Flood Events, 1996-2016[3]

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Beaumont	1/26/1996	10:00 AM	0	0	$0	$0
Jefferson County	9/27/1996	9:00 AM	0	0	$137,243	$0
Port Arthur	7/30/1997	3:00 PM	0	0	$29,814	$0
Port Arthur	9/23/1997	3:45 PM	0	0	$14,907	$0
Nederland	1/21/1998	11:00 PM	0	0	$58,714	$0
Beaumont	8/14/1998	1:00 PM	0	0	$14,679	$0
Beaumont	9/11/1998	1:00 PM	0	0	$146,786	$0
Jefferson County	9/13/1998	10:00 AM	0	0	$146,786	$0
Beaumont	10/6/1998	8:30 AM	0	0	$29,357	$0
Nederland	4/12/2000	10:00 AM	0	0	$347,359	$0

[3] Values are in 2016 dollars.

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Beaumont	6/7/2001	3:30 AM	0	0	$13,509,938	$0
Jefferson County	9/1/2001	10:00 AM	0	0	$33,775	$0
Jefferson County	9/2/2001	10:00 AM	0	0	$101,325	$0
Beaumont	11/28/2001	5:30 PM	0	0	$27,020	$0
Jefferson County	6/27/2002	3:00 AM	0	0	$6,650	$0
Jefferson County	8/15/2002	4:00 AM	0	0	$26,599	$0
Beaumont	10/29/2002	12:30 AM	1	0	$6,649,833	$0
Beaumont	11/3/2002	11:10 AM	0	0	$1,329,967	$0
Port Arthur	12/4/2002	7:00 AM	0	0	$66,498	$0
Beaumont	2/21/2003	1:34 AM	0	0	$32,508	$0
Jefferson County	9/12/2003	7:00 AM	0	0	$32,508	$0
Beaumont	10/9/2003	3:45 PM	0	0	$1,300,332	$0
Port Neches	10/25/2003	2:00 PM	0	0	$130,033	$0
Port Arthur	5/11/2004	8:40 PM	0	0	$2,533	$0
Nederland	5/13/2004	3:45 PM	0	0	$6,333	$0
Beaumont	6/26/2004	4:10 PM	0	0	$6,333	$0
Nederland	9/23/2004	8:50 PM	0	0	$12,666	$0
Jefferson County	5/29/2006	10:25 AM	1	0	$11,868	$0
Beaumont	5/29/2006	3:09 AM	0	0	$59,341	$0
Beaumont	5/29/2006	6:18 AM	0	0	$29,670	$0
Beaumont	7/23/2006	4:30 PM	0	0	$29,670	$0
Beaumont	7/26/2006	1:00 PM	0	0	$2,374	$0
Beaumont	10/16/2006	7:00 AM	0	0	$0	$0
Beaumont	10/16/2006	4:15 PM	0	0	$11,868	$0
Port Arthur	10/16/2006	6:00 PM	0	0	$5,934	$0
Bevil Oaks	2/12/2007	6:00 PM	0	0	$11,539	$0

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	7/6/2007	9:30 AM	0	0	$5,770	$0
Jefferson County	9/13/2007	1:00 AM	0	0	$57,697	$0
China	1/4/2009	3:25 AM	0	0	$5,576	$0
Jefferson County	4/18/2009	12:00 AM	0	0	$22,305	$0
Beaumont	4/27/2009	8:15 PM	0	0	$5,576	$0
Jefferson County	9/9/2009	10:30 AM	0	0	$0	$0
Beaumont	10/22/2009	8:00 AM	0	0	$111,524	$0
Port Arthur	10/22/2009	9:00 AM	0	0	$11,152	$0
Beaumont	10/26/2009	9:00 AM	0	0	$11,152	$0
Jefferson County	8/17/2010	3:00 PM	0	0	$1,097	$0
Port Arthur	7/19/2011	6:30 AM	0	0	$10,637	$0
Jefferson County	1/25/2012	3:20 PM	0	0	$1,042	$0
Jefferson County	3/20/2012	12:00 AM	0	0	$0	$0
Bevil Oaks	3/20/2012	12:00 PM	0	0	$10,421	$0
Jefferson County	7/13/2012	6:00 AM	0	0	$2,084	$0
Jefferson County	1/9/2013	2:58 PM	0	0	$0	$0
Beaumont	5/10/2013	4:00 AM	0	0	$51,353	$0
Beaumont	10/31/2013	8:15 AM	0	0	$51,353	$0
Port Neches	7/18/2014	6:52 AM	0	0	$0	$0
Beaumont	3/21/2015	9:35 AM	0	0	$15,142	$0
Port Arthur	4/16/2015	9:57 PM	0	0	$0	$0
Beaumont	5/12/2015	5:25 PM	0	0	$10,095	$0
Beaumont	5/21/2015	1:23 PM	0	0	$5,047	$0
Beaumont	5/27/2015	4:07 AM	0	0	$0	$0
Jefferson County	6/17/2015	7:29 PM	0	0	$1,009	$0
Jefferson County	10/25/2015	8:00 AM	0	0	$0	$0

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Port Arthur	11/7/2015	6:35 AM	0	0	$0	$0
Jefferson County	3/9/2016	7:30 AM	0	0	$0	$0
Beaumont	3/10/2016	12:50 AM	0	0	$0	$0
Jefferson County	3/30/2016	11:00 PM	0	0	$0	$0
Jefferson County	4/18/2016	10:20 AM	0	0	$0	$0
Beaumont	5/1/2016	11:30 AM	0	0	$0	$0
Jefferson County	5/22/2016	8:13 AM	0	0	$0	$0
Beaumont	6/2/2016	11:10 PM	0	0	$0	$0

Table 5-5. Summary of Historical Flood Events, 1996-2016[4]

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	23	1	0	$587,759	$0
Beaumont	29	1	0	$23,440,918	$0
Bevil Oaks	2	0	0	$21,960	$0
China	1	0	0	$5,676	$0
Groves	0	0	0	$0	$0
Nederland	4	0	0	$425,073	$0
Nome	0	0	0	$0	$0
Port Arthur	9	0	0	$141,476	$0
Port Neches	2	0	0	$130,033	$0
TOTAL LOSSES	**70**	**2**	**0**	**$24,752,796**	

Based on the list of historical flood events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, 24 events have occurred since the 2011 Plan.

[4] Values are in 2016 dollars.

Significant Events

Flash Flood on June 7, 2001 – Jefferson County

Tropical Storm Allison caused minor problems along coastal sections of southeast Texas, but eventually resulted in catastrophic flood losses further inland. Wind gusts of 30 to 40 miles per hour (mph) resulted in minor roof damage to less than 10 homes along the coast in Jefferson County between the evening of June 5, 2001 and the early morning hours of June 6, 2001. A 2 foot storm surge resulted in minor beach erosion and portions of Highway 82 between Sabine Pass and Port Arthur to go underwater during the nighttime high tide of June 5 to 6, 2001. The specific flood events that occurred between June 7 and 9, 2001 were a result of the remnants of Tropical Storm Allison, as it meandered across southeast and east Texas. Around ten inches of rain fell in less than 6 hours, resulting in widespread flooding across northern Jefferson County. Nearly 900 homes were damaged, but only ten were classified as destroyed. Roads and bridges also received some damage from the flood waters.

Flash Flood on October 29, 2002 – Jefferson County, City of Beaumont

Excessive rainfall in a short period of time impacted portions of Jefferson County on October 29, 2002. Between 6 and 8 inches of rain fell in less than 6 hours. Water filled up to 8 feet deep in underpasses. A woman drove her car into the deep water and drowned. A hospital had the emergency room floor flooded. Over 500 homes in Beaumont had water enter them. Damages were estimated at approximately $5,000,000.

Flood on October 9, 2003 – Jefferson County

Excessive rainfall in a short period of time impacted portions of Jefferson County on October 9, 2003. Around 6 to 8 inches of rain fell in less than 2 hours, causing significant flooding to sections of Beaumont. Water entered homes, vehicles were left stranded on the roads, but fortunately no injuries or deaths were reported. Damages were estimated at approximately $1,000,000.

Probability of Future Events

Based on recorded historical occurrences and extent within the Jefferson County planning area including all participating jurisdictions, flooding is highly likely and an event will likely occur within the next year. The SETRPC facilities has no history of flood events and an event impacting the SETRPC is unlikely.

Vulnerability and Impact

A property's vulnerability to a flood depends on its location and proximity to the floodplain. Structures that lie along banks of a waterway are the most vulnerable and are often repetitive loss structures.

All participating jurisdictions encourage development outside of the floodplain, although there are some critical facilities, homes, and businesses already located in the floodplain. Table 5-6 includes critical facilities in the planning area that are located in the floodplain and are vulnerable to flooding.

Table 5-6. Critical Facilities in the Floodplain by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	1 School, Port Authority Facility
Beaumont	3 Water District Facilities, 1 Drainage District Facility, 3 Schools
Bevil Oaks	1 Fire Station
China	None
Groves	None
Nederland	None
Nome	None
Port Arthur	1 School
Port Neches	1 School
SETRPC	None

Historic loss estimates due to flood are presented in Table 5-7 below. Considering 70 flood events over a 21-year period, frequency is approximately 2 to 3 events every year.

Table 5-7. Potential Annualized Losses by Jurisdiction, 1996-2016[5]

JURISDICTION	NUMBER OF EVENTS	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	23	$587,759	$27,989
Beaumont	29	$23,440,918	$1,116,234
Bevil Oaks	2	$21,960	$1,046
China	1	$5,576	$266
Groves	0	$0	$0
Nederland	4	$425,073	$20,242
Nome	0	$0	$0
Port Arthur	9	$141,476	$6,737
Port Neches	2	$130,033	$6,192

[5] Values are in 2016 dollars.

JURISDICTION	NUMBER OF EVENTS	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
SETRPC	0	$0	$0
Total Losses	**70**	**$24,752,796**	**$1,178,705**

The severity of a flooding event varies depending on the relative risk to citizens and structures located within each city. Table 5-8 depicts the level of impact for Jefferson County and each participating city.

Table 5-8. Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Jefferson County	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the county.
Beaumont	Major	Injuries or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 2 weeks, and it is expected that more than 25 percent of property would be destroyed or with major damage in the city.
Bevil Oaks	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
China	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Groves	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Nederland	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Nome	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Port Arthur	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.

JURISDICTION	IMPACT	DESCRIPTION
Port Neches	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
SETRPC	Limited	Facilities are unlikely to be impacted. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged at the SETRPC.

Assessment of Impacts

Flooding is the deadliest natural disaster that occurs in the U.S. each year, and it poses a constant and significant threat to the health and safety of the people in the planning area. Impacts to the planning area can include:

- Recreation activities at Sabine Lake and Sea Rim State Park may be unavailable and tourism can be unappealing for years following a large flood event, devastating directly related local businesses and negatively impacting economic recovery.
- The McFaddin National Wildlife Refuge may suffer significant wildlife mortality during and following a flood due to damaged or destroyed ecosystems and water contamination.
- The Port Arthur-Orange Bridge may be damaged or inaccessible, cutting off critical emergency services to Port Arthur.
- Flood-related rescues may be necessary at swift water and low water crossings or in flooded neighborhoods where roads have become impassable, placing first responders in harm's way.
- Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents.
- Health risks and threats to residents are elevated after the flood waters have receded due to contaminated flood waters (untreated sewage and hazardous chemicals) and mold growth typical in flooded buildings and homes.
- Significant flood events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Floods can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders are exposed to downed power lines, contaminated and potentially unstable debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities.
- Significant flooding can result in the inability of emergency response vehicles to access areas of the community.
- Critical staff may suffer personal losses or be otherwise impacted by a flood event and unable to report for duty, limiting response capabilities.

- City or County departments may be flooded, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the flood may be negatively impacted while utilities are being restored or water recedes, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures substantially damaged by a flood may not be rebuilt for years and uninsured or underinsured residential structures may never be rebuilt, reducing the tax base for the community.
- Large floods may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Flooding may cause significant disruptions of clean water and sewer services, elevating health risks and delaying recovery efforts.
- The psycho-social effects on flood victims and their families can traumatize them for long periods of time, creating long term increases in medical treatment and services.
- Extensive or repetitive flooding can lead to decreases in property value for the affected community.
- Flood poses a potential catastrophic risk to annual and perennial crop production and overall crop quality, leading to higher food costs.
- Flood related declines in production may lead to an increase in unemployment.
- Large floods may result in loss of livestock, potential increased livestock mortality due to stress and water borne disease, and increased cost for feed.

The overall extent of damages caused by floods is dependent on the extent, depth, and duration of flooding, and the velocities of flows in the flooded areas. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a flood event.

National Flood Insurance Program (NFIP) Participation

Flood insurance offered through the National Flood Insurance Program (NFIP) is the best way for home and business owners to protect themselves financially against the flood hazard. All of the jurisdictions located in Jefferson County participate in the NFIP. The SETRPC is not an eligible entity for participation in the NFIP and is not located in a special flood hazard area.

As an additional indicator of floodplain management responsibility, communities may choose to participate in FEMA's Community Rating System (CRS). This is an incentive-based program that allows communities to undertake flood mitigation activities that go beyond NFIP requirements. Currently, 3 of the communities in Jefferson County participate in CRS, including Beaumont (class 7), Bevil Oaks (class 7), and Port Arthur (class 9). The remaining jurisdictions in the planning area understand the value of participation in this program and have identified this as a goal and objective of the Plan that was discussed during Planning Team meetings.

Some participating jurisdictions in the NFIP currently have in place minimum NFIP standards for new construction and substantial improvements of structures; these jurisdictions include: China, Groves, Nome, and Port Neches. The remaining jurisdictions have adopted higher regulatory NFIP standards to limit floodplain development including: Jefferson County, Beaumont, Bevil Oaks, Nederland, and Port Arthur.

The flood hazard areas throughout Jefferson County are subject to periodic inundation, which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect public safety.

These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed, or otherwise protected from flood damage. Mitigation actions are included to address flood maintenance issues as well, including routinely clearing debris from roadside ditches and bridges, and expanding drainage culverts and storm water structures to more adequately convey flood waters.

It is the purpose of Jefferson County and NFIP jurisdictions participating in the Hazard Mitigation plan to continue to promote the public health, safety, and general welfare by minimizing public and private losses due to flood conditions in specific areas. Each of the NFIP participating jurisdictions in the Plan are guided by their local Flood Damage Prevention Ordinance. These communities will continue to comply with NFIP requirements through their local permitting, inspection, and record-keeping requirements for new and substantially developed construction. Furthermore, the NFIP program for each of the participating jurisdictions promotes sound development in floodplain areas and includes provisions designed to:

- Protect human life and health;
- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in floodplains;
- Help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas; and
- Ensure that potential buyers are notified that property is in a flood area.

In order to accomplish these tasks, Jefferson County and participating NFIP jurisdictions seek to follow the following guidelines to achieve flood mitigation:

- Restrict or prohibit uses that are dangerous to health, safety, or property in times of flood, such as filling or dumping, that may cause excessive increases in flood heights or velocities;
- Require that uses vulnerable to floods, including facilities, which serve such uses, be protected against flood damage at the time of initial construction, as a method of reducing flood losses;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
- Control filling, grading, dredging and other development, which may increase flood damage; and
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

NFIP Compliance and Maintenance

As mentioned, Jefferson County and participating jurisdictions have developed mitigation actions that relate to either NFIP maintenance or compliance. Compliance and maintenance actions can be found in Section 18.

Flooding was identified by the majority of the communities as a high risk hazard during hazard ranking activities at the Risk Assessment Workshop. As a result, many of the mitigation actions were developed with flood mitigation in mind. A majority of these flood actions address compliance with the NFIP and implementing flood awareness programs. County-wide, communities recognize the need and are working towards adopting additional higher NFIP regulatory standards to further minimize flood risk in their community. Smaller no-growth communities that typically do not have personnel or funds to implement more stringent NFIP compliance measures are focusing on NFIP public awareness activities. This includes promoting the availability of flood insurance by placing NFIP brochures and flyers in public libraries or public meeting places.

Repetitive Loss

The Severe Repetitive Loss (SRL) Grant Program under FEMA provides federal funding to assist states and communities in implementing mitigation measures to reduce or eliminate the long-term risk of flood damage to SRL residential structures insured under the NFIP. The Texas Water Development Board (TWDB) administers the SRL Grant Program for the State of Texas.

Severe Repetitive Loss properties are defined as residential properties that are:

- Covered under the NFIP and have at least 4 flood related damage claim payments (building and contents) over $5,000 each, and the cumulative amount of such claims payments exceed $20,000; or
- At least 2 separate claim payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

In either scenario, at least 2 of the referenced claims must have occurred within any 10-year period, and must be greater than 10 days apart.[6] Table 5-9 shows repetitive loss and severe repetitive loss properties for Jefferson County and all participating jurisdictions.

Table 5-9. Repetitive Loss and Severe Repetitive Loss Properties

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Jefferson County	0177501	Yes	Other-Nonres	2	$18,447	-
Jefferson County	0016017	No	Single Fmly	5	$84,858	VU
Jefferson County	0071531	No	Single Fmly	2	$98,851	-
Jefferson County	0013029	Yes	Single Fmly	4	$104,045	-
Jefferson County	0004178	SDF	Single Fmly	10	$423,856	V
Jefferson County	0026644	Yes	Single Fmly	3	$7,147	-
Jefferson County	0182118	Yes	Single Fmly	2	$19,961	-
Jefferson County	0158314	No	Single Fmly	3	$22,502	-
Jefferson County	0001457	No	Single Fmly	6	$120,317	VU
Jefferson County	0180869	No	Single Fmly	2	$118,698	-
Jefferson County	0137536	No	Single Fmly	2	$13,204	-
Jefferson County	0241281	Yes	Single Fmly	2	$45,054	-
Jefferson County	0017351	No	Single Fmly	4	$43,252	PU
Jefferson County	0163518	No	Single Fmly	2	$106,277	-
Jefferson County	0041486	No	Single Fmly	4	$27,869	-
Jefferson County	0067919	No	Single Fmly	4	$17,625	-
Jefferson County	0173735	No	Single Fmly	2	$8,280	-
Jefferson County	0148780	Yes	Single Fmly	3	$59,135	-
Jefferson County	0108329	No	Single Fmly	3	$68,125	-
Jefferson County	0153950	Yes	Single Fmly	3	$95,317	-
Jefferson County	0108430	SDF	Single Fmly	6	$198,046	V
Jefferson County	0153949	Yes	Single Fmly	3	$99,955	-
Jefferson County	0108476	No	Single Fmly	2	$6,354	-

[6] Source: Texas Water Development Board

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Jefferson County	0152782	No	Single Fmly	2	$44,617	-
Jefferson County	0108527	Yes	Single Fmly	3	$37,792	-
Jefferson County	0120084	No	Single Fmly	2	$4,976	-
Jefferson County	0182072	No	Single Fmly	2	$125,385	-
Jefferson County	0115988	No	Single Fmly	3	$94,047	-
Jefferson County	0179239	No	Single Fmly	2	$55,738	-
Jefferson County	0164706	No	Single Fmly	2	$92,206	-
Jefferson County	0185403	No	Single Fmly	2	$64,634	-
Jefferson County	0048506	No	Other-Nonres	2	$6,542	-
Jefferson County	0179193	No	Other-Nonres	2	$118,800	-
Jefferson County	0012918	No	Single Fmly	5	$49,221	-
Jefferson County	0083532	No	Single Fmly	2	$8,428	-
Jefferson County	0250441	Yes	Single Fmly	2	$34,987	-
Jefferson County	0044550	No	Single Fmly	3	$12,788	-
Jefferson County	0013026	No	Single Fmly	11	$294,171	VU
Jefferson County	0182115	Yes	Single Fmly	2	$66,076	-
Jefferson County	0044740	No	Single Fmly	2	$12,748	-
Jefferson County	0045848	Yes	Single Fmly	6	$75,679	-
Jefferson County	0001528	No	Single Fmly	18	$158,394	VU
Jefferson County	0004169	No	Single Fmly	10	$59,674	VU
Jefferson County	0042051	No	Single Fmly	2	$5,826	-
Jefferson County	0003757	SDF	Single Fmly	8	$156,202	V
Jefferson County	0017283	No	Assmd Condo	4	$70,716	PU
Jefferson County	0017396	No	Single Fmly	4	$22,327	-
Jefferson County	0173644	No	Single Fmly	2	$56,737	-
Jefferson County	0180156	No	Single Fmly	2	$18,766	-
Jefferson County	0083543	No	Single Fmly	5	$148,547	VU
Jefferson County	0120315	No	Single Fmly	2	$28,298	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Jefferson County	0153952	SDF	Single Fmly	2	$380,597	V
Jefferson County	0001952	No	Single Fmly	8	$66,827	VU
Jefferson County	0125137	No	Single Fmly	2	$3,054	-
Jefferson County	0043339	No	Single Fmly	2	$17,735	-
Jefferson County	0179752	Yes	Single Fmly	2	$49,457	-
Jefferson County	0045117	No	Single Fmly	5	$99,614	-
Jefferson County	0070472	No	Other-Nonres	3	$60,171	-
Jefferson County	0128395	No	Single Fmly	3	$45,981	-
Jefferson County	0165546	No	Single Fmly	2	$40,529	-
Jefferson County	0108434	Yes	Single Fmly	5	$58,179	-
Jefferson County	0108777	No	Single Fmly	2	$14,137	-
Jefferson County	0163519	No	Single Fmly	2	$96,223	-
Jefferson County	0173721	SDF	Single Fmly	4	$142,389	V
Jefferson County	0002601	Yes	Single Fmly	5	$87,823	-
Jefferson County	0002600	Yes	Single Fmly	4	$121,623	-
Jefferson County	0041009	No	Single Fmly	4	$7,203	-
Jefferson County	0071449	No	Single Fmly	2	$5,032	-
Jefferson County	0042675	No	Single Fmly	3	$9,768	-
Jefferson County	0004786	No	Single Fmly	6	$33,939	-
Jefferson County	0113811	No	Single Fmly	3	$272,767	PU
Jefferson County	0169147	Yes	Single Fmly	3	$118,177	-
Jefferson County	0168573	Yes	Other Resid	3	$112,610	-
Jefferson County	0004107	No	Single Fmly	4	$21,688	-
Jefferson County	0073580	No	Single Fmly	4	$87,941	VU
Jefferson County	0088112	No	Single Fmly	4	$72,447	-
Jefferson County	0002864	No	Single Fmly	6	$166,606	VU
Jefferson County	0165197	No	Single Fmly	2	$5,852	-
Jefferson County	0044800	No	Single Fmly	2	$7,410	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Jefferson County	0002678	SDF	Single Fmly	5	$78,867	V
Jefferson County	0157861	No	Single Fmly	2	$30,689	-
Jefferson County	0186703	Yes	Other-Nonres	4	$153,427	VN
Jefferson County	0038223	No	Single Fmly	3	$21,787	-
Jefferson County	0080468	SDF	Single Fmly	6	$148,689	V
Jefferson County	0039714	No	Single Fmly	7	$40,950	VU
Jefferson County	0108360	Yes	Single Fmly	6	$72,399	-
Jefferson County	0178162	Yes	Single Fmly	2	$50,732	-
Jefferson County	0122037	Yes	Single Fmly	2	$41,202	-
Jefferson County	0108238	No	Single Fmly	4	$35,291	-
Jefferson County	0108230	No	Single Fmly	2	$36,963	-
Jefferson County	0214533	No	Single Fmly	2	$45,558	-
Jefferson County	0160070	Yes	Single Fmly	2	$75,551	-
Jefferson County	0026342	No	Single Fmly	2	$26,231	-
Jefferson County	0025462	No	Single Fmly	2	$4,420	-
Jefferson County	0044016	No	Single Fmly	5	$153,408	MVU
Jefferson County	0040340	No	Single Fmly	8	$233,738	MVU
Jefferson County	0040116	No	Single Fmly	4	$137,523	-
Jefferson County	0026029	No	Assmd Condo	3	$65,173	-
Jefferson County	0046295	No	Single Fmly	4	$60,113	-
Jefferson County	0114070	No	Single Fmly	3	$233,637	-
Jefferson County	0117301	No	Other-Nonres	2	$6,344	-
Jefferson County	0067979	No	Single Fmly	2	$12,305	-
Jefferson County	0041990	No	Single Fmly	5	$54,108	-
Jefferson County	0048831	No	Single Fmly	3	$152,011	-
Jefferson County	0186075	No	Single Fmly	2	$131,591	-
Jefferson County	0180352	No	Single Fmly	2	$191,252	-
Jefferson County	0183152	No	Assmd Condo	2	$449,097	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Jefferson County	0026121	No	Single Fmly	6	$118,247	MVU
Jefferson County	0121931	No	Single Fmly	2	$19,911	-
Jefferson County	0179733	No	Single Fmly	2	$68,076	-
Beaumont	0070066	No	Single Fmly	2	$2,560	-
Beaumont	0182124	No	Single Fmly	2	$11,266	-
Beaumont	0043492	No	Single Fmly	12	$155,860	VU
Beaumont	0182135	No	Single Fmly	2	$33,190	-
Beaumont	0038907	No	Single Fmly	2	$12,491	-
Beaumont	0128504	No	Single Fmly	3	$14,526	-
Beaumont	0043346	No	Single Fmly	3	$15,097	-
Beaumont	0089788	No	2-4 Family	2	$5,703	-
Beaumont	0115540	No	Single Fmly	5	$55,255	-
Beaumont	0182764	Yes	Single Fmly	2	$12,261	-
Beaumont	0017381	No	Single Fmly	4	$11,309	-
Beaumont	0157279	Yes	Single Fmly	4	$125,138	V
Beaumont	0067939	No	Single Fmly	2	$6,479	-
Beaumont	0122426	No	Single Fmly	2	$40,740	-
Beaumont	0067960	No	Single Fmly	4	$36,206	-
Beaumont	0049134	No	Single Fmly	2	$15,120	-
Beaumont	0002569	No	Assmd Condo	3	$56,493	-
Beaumont	0002588	No	2-4 Family	3	$14,187	-
Beaumont	0116431	SDF	Other-Nonres	5	$300,016	VN
Beaumont	0042980	No	Single Fmly	5	$39,482	-
Beaumont	0003237	No	Single Fmly	4	$57,354	-
Beaumont	0067968	No	Single Fmly	2	$16,138	-
Beaumont	0067969	No	Single Fmly	5	$66,118	-
Beaumont	0125431	Yes	Single Fmly	2	$35,184	-
Beaumont	0002599	SDF	Single Fmly	6	$127,564	V

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0125433	Yes	Single Fmly	2	$39,856	-
Beaumont	0002698	No	Other-Nonres	26	$1,464,159	VNU
Beaumont	0082203	No	Single Fmly	3	$10,138	-
Beaumont	0173620	Yes	Other-Nonres	2	$15,453	-
Beaumont	0005811	Yes	Single Fmly	5	$60,891	-
Beaumont	0026764	No	Single Fmly	3	$29,717	-
Beaumont	0045178	No	Single Fmly	2	$7,268	-
Beaumont	0121694	No	Single Fmly	2	$11,687	-
Beaumont	0151747	No	Single Fmly	3	$57,066	-
Beaumont	0002580	No	Single Fmly	2	$8,304	-
Beaumont	0002575	No	Assmd Condo	3	$27,883	-
Beaumont	0002585	No	Assmd Condo	2	$21,922	-
Beaumont	0002590	No	2-4 Family	3	$15,041	-
Beaumont	0002581	No	2-4 Family	2	$7,227	-
Beaumont	0002589	No	2-4 Family	2	$7,723	-
Beaumont	0002574	No	2-4 Family	2	$7,240	-
Beaumont	0002583	No	2-4 Family	3	$13,239	-
Beaumont	0002582	No	2-4 Family	2	$7,027	-
Beaumont	0002576	No	2-4 Family	3	$14,512	-
Beaumont	0002568	No	2-4 Family	3	$14,083	-
Beaumont	0002596	No	Assmd Condo	3	$58,348	-
Beaumont	0002592	No	Assmd Condo	2	$21,866	-
Beaumont	0002593	No	2-4 Family	2	$7,890	-
Beaumont	0002594	No	2-4 Family	2	$10,722	-
Beaumont	0002595	Yes	2-4 Family	4	$82,377	-
Beaumont	0122098	No	Single Fmly	2	$29,978	-
Beaumont	0113248	SDF	Single Fmly	4	$103,457	V
Beaumont	0120023	Yes	Single Fmly	2	$49,718	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0004631	Yes	Single Fmly	4	$60,627	-
Beaumont	0067978	SDF	Single Fmly	7	$100,986	V
Beaumont	0122261	No	Single Fmly	2	$9,172	-
Beaumont	0121260	No	Single Fmly	2	$15,797	-
Beaumont	0046922	No	Single Fmly	7	$39,355	-
Beaumont	0122366	Yes	Single Fmly	4	$89,533	V
Beaumont	0132737	No	Single Fmly	2	$12,416	-
Beaumont	0114740	No	Single Fmly	3	$8,656	-
Beaumont	0120004	Yes	Single Fmly	2	$26,303	-
Beaumont	0114774	Yes	Other-Nonres	2	$16,534	-
Beaumont	0071539	Yes	Single Fmly	3	$17,200	-
Beaumont	0183470	Yes	Single Fmly	2	$3,887	-
Beaumont	0179716	Yes	Single Fmly	2	$15,556	-
Beaumont	0120093	No	Single Fmly	2	$7,223	-
Beaumont	0126222	No	Other-Nonres	2	$47,645	-
Beaumont	0067949	No	Single Fmly	3	$9,318	-
Beaumont	0240104	Yes	Single Fmly	2	$111,011	-
Beaumont	0004650	SDF	Single Fmly	7	$67,213	V
Beaumont	0046556	No	Single Fmly	5	$49,800	-
Beaumont	0073389	No	Single Fmly	5	$67,086	-
Beaumont	0128354	No	Single Fmly	3	$9,027	-
Beaumont	0113792	Yes	Single Fmly	3	$24,978	-
Beaumont	0067981	SDF	Single Fmly	5	$54,053	V
Beaumont	0088111	No	Single Fmly	3	$23,743	-
Beaumont	0166575	Yes	Single Fmly	2	$6,595	-
Beaumont	0039928	No	Single Fmly	4	$69,994	-
Beaumont	0121676	No	Single Fmly	2	$5,373	-
Beaumont	0115539	No	Single Fmly	3	$68,729	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0048616	No	Single Fmly	2	$9,678	-
Beaumont	0003398	No	Single Fmly	3	$24,920	-
Beaumont	0152109	No	Other-Nonres	2	$32,421	-
Beaumont	0067959	No	Single Fmly	4	$42,663	-
Beaumont	0083533	No	Single Fmly	2	$19,334	-
Beaumont	0044211	No	Other-Nonres	2	$2,847	-
Beaumont	0114917	SDF	Single Fmly	6	$49,013	V
Beaumont	0168158	No	Single Fmly	2	$26,616	-
Beaumont	0113804	No	Single Fmly	3	$32,531	-
Beaumont	0067962	No	Single Fmly	2	$4,805	-
Beaumont	0158046	No	Single Fmly	2	$56,874	-
Beaumont	0127398	No	Single Fmly	2	$13,922	-
Beaumont	0112832	SDF	Single Fmly	4	$78,260	V
Beaumont	0002520	No	Single Fmly	3	$6,077	-
Beaumont	0120305	No	Single Fmly	2	$13,702	-
Beaumont	0237955	Yes	Single Fmly	2	$26,324	-
Beaumont	0237956	Yes	Other Resid	2	$12,242	-
Beaumont	0036099	No	Single Fmly	2	$4,940	-
Beaumont	0116577	No	Other-Nonres	3	$115,136	-
Beaumont	0067937	No	Single Fmly	6	$41,590	VU
Beaumont	0121499	Yes	Other-Nonres	2	$174,474	-
Beaumont	0002422	No	Single Fmly	11	$69,927	VU
Beaumont	0067971	No	Single Fmly	6	$51,994	-
Beaumont	0121689	No	Single Fmly	2	$5,726	-
Beaumont	0157223	No	Single Fmly	2	$87,574	-
Beaumont	0173160	No	Single Fmly	2	$12,283	-
Beaumont	0181178	No	Single Fmly	2	$7,898	-
Beaumont	0037562	No	Single Fmly	2	$49,987	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0157056	No	Single Fmly	4	$49,085	VU
Beaumont	0247942	Yes	Single Fmly	2	$8,217	-
Beaumont	0239937	No	Other-Nonres	2	$7,310	-
Beaumont	0036557	No	Single Fmly	2	$5,332	-
Beaumont	0044946	No	Other-Nonres	2	$28,596	-
Beaumont	0043814	No	Single Fmly	3	$5,461	-
Beaumont	0067916	No	Single Fmly	5	$51,199	-
Beaumont	0067952	No	Single Fmly	2	$17,093	-
Beaumont	0013120	No	Single Fmly	2	$6,402	-
Beaumont	0070494	No	Other-Nonres	6	$60,752	VNU
Beaumont	0113806	No	Single Fmly	3	$9,515	-
Beaumont	0003192	No	Single Fmly	3	$56,695	-
Beaumont	0235028	No	Single Fmly	2	$4,893	-
Beaumont	0045522	No	Single Fmly	7	$64,851	VU
Beaumont	0070115	No	Single Fmly	2	$28,288	-
Beaumont	0069904	No	Other-Nonres	2	$63,383	-
Beaumont	0115894	No	Single Fmly	3	$26,352	-
Beaumont	0043374	No	Single Fmly	2	$3,173	-
Beaumont	0043197	No	Other-Nonres	3	$16,137	-
Beaumont	0002673	No	Other-Nonres	5	$24,201	PNU
Beaumont	0045889	No	Single Fmly	3	$17,937	-
Beaumont	0047508	No	Assmd Condo	2	$14,112	-
Beaumont	0044866	SDF	Single Fmly	5	$65,046	V
Beaumont	0070303	No	Single Fmly	6	$156,220	VU
Beaumont	0069941	No	Single Fmly	4	$15,654	-
Beaumont	0048673	No	Single Fmly	3	$46,442	-
Beaumont	0043698	No	Single Fmly	4	$11,190	-
Beaumont	0013037	No	Single Fmly	3	$12,556	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0044455	No	Single Fmly	4	$100,040	-
Beaumont	0044919	No	Single Fmly	2	$11,501	-
Beaumont	0125434	No	Single Fmly	3	$24,944	-
Beaumont	0044382	No	Single Fmly	3	$74,960	-
Beaumont	0067945	No	Single Fmly	2	$7,393	-
Beaumont	0067980	No	Single Fmly	2	$5,017	-
Beaumont	0043598	No	Single Fmly	3	$101,464	VU
Beaumont	0237813	Yes	Single Fmly	2	$10,543	-
Beaumont	0044997	No	Single Fmly	3	$35,678	-
Beaumont	0173890	No	Single Fmly	3	$11,880	-
Beaumont	0120003	No	Single Fmly	2	$28,542	-
Beaumont	0086078	No	Single Fmly	3	$68,338	-
Beaumont	0003353	No	Single Fmly	3	$10,920	-
Beaumont	0120038	Yes	Single Fmly	4	$40,735	-
Beaumont	0121912	No	Single Fmly	2	$37,151	-
Beaumont	0162445	No	Single Fmly	2	$14,806	-
Beaumont	0122004	Yes	Single Fmly	2	$16,815	-
Beaumont	0026335	No	Other-Nonres	3	$21,253	-
Beaumont	0088878	Yes	Single Fmly	2	$10,648	-
Beaumont	0067970	No	Single Fmly	2	$9,699	-
Beaumont	0120307	No	Single Fmly	2	$20,326	-
Beaumont	0044573	No	Single Fmly	2	$5,231	-
Beaumont	0237895	No	Single Fmly	2	$13,111	-
Beaumont	0003413	No	Single Fmly	4	$49,101	VU
Beaumont	0008406	No	Single Fmly	7	$50,400	-
Beaumont	0067934	No	Single Fmly	2	$7,265	-
Beaumont	0002559	Yes	Single Fmly	3	$31,088	-
Beaumont	0121435	No	Single Fmly	2	$10,639	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0084605	No	Single Fmly	2	$40,252	-
Beaumont	0067947	No	Single Fmly	3	$4,760	-
Beaumont	0084817	No	Single Fmly	2	$12,875	-
Beaumont	0121914	No	Single Fmly	2	$92,394	-
Beaumont	0044439	No	Single Fmly	5	$101,539	VU
Beaumont	0067932	No	Single Fmly	2	$13,353	-
Beaumont	0043922	SDF	Other-Nonres	6	$247,669	VN
Beaumont	0186070	No	Other-Nonres	2	$95,623	-
Beaumont	0003912	No	Other-Nonres	8	$528,406	VNU
Beaumont	0122196	No	Other-Nonres	5	$527,383	VNU
Beaumont	0115972	No	Other-Nonres	6	$405,225	VNU
Beaumont	0002782	No	Other-Nonres	3	$5,790	-
Beaumont	0113801	Yes	Other-Nonres	3	$365,974	-
Beaumont	0043228	No	Single Fmly	7	$100,269	VU
Beaumont	0046414	No	Single Fmly	2	$5,809	-
Beaumont	0025461	No	Single Fmly	6	$81,486	-
Beaumont	0042478	No	Single Fmly	2	$10,791	-
Beaumont	0025410	No	Single Fmly	3	$14,121	-
Beaumont	0004259	No	Other-Nonres	3	$158,835	-
Beaumont	0005654	No	Single Fmly	4	$32,680	-
Beaumont	0025298	No	Other-Nonres	6	$37,457	-
Beaumont	0004293	No	Single Fmly	3	$36,052	-
Beaumont	0046461	No	Single Fmly	5	$92,986	MVU
Beaumont	0002744	No	Single Fmly	4	$22,586	-
Beaumont	0014106	No	Assmd Condo	11	$100,300	MVU
Beaumont	0048689	No	Other-Nonres	2	$18,649	-
Beaumont	0067907	No	Single Fmly	2	$14,745	-
Beaumont	0121005	No	Single Fmly	3	$55,544	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0067909	No	Single Fmly	2	$12,263	-
Beaumont	0067946	No	Single Fmly	3	$37,077	-
Beaumont	0113793	No	Single Fmly	3	$103,254	MVU
Beaumont	0157055	No	Single Fmly	4	$45,132	-
Beaumont	0073385	No	Single Fmly	2	$22,968	-
Beaumont	0116242	No	Single Fmly	4	$32,899	-
Beaumont	0004779	No	Single Fmly	6	$202,733	-
Beaumont	0121461	No	Single Fmly	4	$37,076	-
Beaumont	0173760	No	Single Fmly	3	$10,714	-
Beaumont	0080411	No	Single Fmly	3	$4,728	-
Beaumont	0160048	No	Single Fmly	2	$4,277	-
Beaumont	0005575	No	Single Fmly	12	$66,171	-
Beaumont	0005574	No	Single Fmly	11	$56,840	MVU
Beaumont	0005557	No	Single Fmly	10	$61,424	-
Beaumont	0001250	No	Single Fmly	13	$100,603	-
Beaumont	0007187	No	Other Resid	16	$276,817	MVU
Beaumont	0007186	No	Other Resid	12	$556,517	MVU
Beaumont	0007185	No	Other Resid	12	$273,182	MVU
Beaumont	0069905	No	Single Fmly	2	$10,082	-
Beaumont	0045245	No	Single Fmly	2	$6,094	-
Beaumont	0184310	No	Other-Nonres	2	$511,817	-
Beaumont	0088109	No	Other-Nonres	2	$13,306	-
Beaumont	0122245	No	Other-Nonres	2	$15,502	-
Beaumont	0017628	Yes	Other-Nonres	7	$157,483	-
Beaumont	0001884	Yes	Single Fmly	4	$44,018	-
Beaumont	0025380	No	Single Fmly	2	$2,724	-
Beaumont	0120310	Yes	Single Fmly	2	$55,601	-
Beaumont	0003781	No	Single Fmly	6	$110,785	MVU

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0114644	No	Single Fmly	3	$25,180	-
Beaumont	0067935	Yes	Single Fmly	3	$29,184	-
Beaumont	0067957	No	Single Fmly	2	$7,176	-
Beaumont	0043903	No	Single Fmly	2	$12,548	-
Beaumont	0080717	Yes	Single Fmly	3	$87,052	-
Beaumont	0122216	Yes	Single Fmly	2	$41,954	-
Beaumont	0044574	No	Single Fmly	5	$53,646	MVU
Beaumont	0151750	No	Single Fmly	2	$34,330	-
Beaumont	0168670	No	Single Fmly	2	$29,471	-
Beaumont	0167875	No	Single Fmly	2	$20,334	-
Beaumont	0120321	No	Single Fmly	2	$30,669	-
Beaumont	0120376	No	Single Fmly	2	$12,790	-
Beaumont	0120298	No	Single Fmly	2	$10,098	-
Beaumont	0173860	No	Single Fmly	2	$46,961	-
Beaumont	0115537	No	Single Fmly	3	$46,623	-
Beaumont	0116239	Yes	Single Fmly	3	$43,080	-
Beaumont	0067914	No	Single Fmly	4	$97,317	MVU
Beaumont	0120031	Yes	Single Fmly	2	$34,800	-
Beaumont	0121437	No	Single Fmly	2	$79,788	-
Beaumont	0067961	Yes	Single Fmly	2	$2,801	-
Beaumont	0120309	No	Single Fmly	2	$29,623	-
Beaumont	0122579	No	Other-Nonres	2	$64,621	-
Beaumont	0121009	No	Single Fmly	2	$47,570	-
Beaumont	0067902	No	Other-Nonres	2	$7,040	-
Beaumont	0043261	No	Other-Nonres	2	$4,387	-
Beaumont	0025267	Yes	Single Fmly	5	$52,992	-
Beaumont	0004755	No	Other-Nonres	9	$32,967	-
Beaumont	0004100	Yes	Other-Nonres	25	$945,255	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0122596	Yes	Other-Nonres	3	$285,356	-
Beaumont	0070422	No	Single Fmly	3	$26,138	-
Beaumont	0121465	No	Single Fmly	3	$26,395	-
Beaumont	0121294	No	Single Fmly	2	$46,399	-
Beaumont	0067965	No	Single Fmly	2	$12,776	-
Beaumont	0067953	No	Single Fmly	3	$101,925	-
Beaumont	0003442	Yes	Single Fmly	4	$269,055	MV
Beaumont	0003991	No	Single Fmly	4	$168,689	MVU
Beaumont	0005799	No	Single Fmly	5	$296,966	MVU
Beaumont	0002563	No	Single Fmly	4	$83,419	MVU
Beaumont	0013090	No	Single Fmly	4	$6,583	-
Beaumont	0026742	No	Single Fmly	2	$3,119	-
Beaumont	0124952	No	Single Fmly	2	$31,328	-
Beaumont	0047488	Yes	Single Fmly	3	$19,140	-
Beaumont	0003021	No	Single Fmly	7	$164,791	MVU
Beaumont	0046268	No	Single Fmly	2	$14,195	-
Beaumont	0067973	No	Single Fmly	4	$28,698	-
Beaumont	0043305	No	Single Fmly	4	$126,787	MVU
Beaumont	0067974	No	Single Fmly	4	$29,586	-
Beaumont	0067975	No	Single Fmly	3	$9,303	-
Beaumont	0043077	No	Single Fmly	2	$10,092	-
Beaumont	0043164	No	Single Fmly	2	$6,369	-
Beaumont	0067976	No	Single Fmly	2	$30,867	-
Beaumont	0067943	Yes	Single Fmly	3	$27,170	-
Beaumont	0044356	No	Single Fmly	3	$21,774	-
Beaumont	0044589	No	Single Fmly	2	$9,961	-
Beaumont	0044737	No	Single Fmly	5	$67,122	MVU
Beaumont	0043997	No	Single Fmly	4	$77,451	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0043171	No	Single Fmly	4	$58,040	-
Beaumont	0067977	No	Single Fmly	4	$77,196	MVU
Beaumont	0045181	No	Single Fmly	3	$17,988	-
Beaumont	0073390	No	Single Fmly	4	$43,273	-
Beaumont	0073391	No	Single Fmly	4	$72,526	MVU
Beaumont	0046314	No	Single Fmly	5	$70,852	MVU
Beaumont	0121014	No	Single Fmly	3	$56,654	-
Beaumont	0080904	No	Single Fmly	3	$47,722	-
Beaumont	0067944	No	Single Fmly	5	$95,029	MVU
Beaumont	0121073	Yes	Single Fmly	3	$50,164	-
Beaumont	0043038	Yes	Single Fmly	6	$93,780	MV
Beaumont	0044931	No	Single Fmly	7	$94,813	MVU
Beaumont	0036835	Yes	Single Fmly	4	$31,974	-
Beaumont	0048688	No	Single Fmly	2	$14,130	-
Beaumont	0025756	No	Single Fmly	8	$126,000	MVU
Beaumont	0121067	Yes	Single Fmly	3	$34,658	-
Beaumont	0113791	No	Single Fmly	3	$55,762	-
Beaumont	0174600	Yes	Other Resid	5	$71,252	-
Beaumont	0174601	Yes	Other Resid	5	$63,814	-
Beaumont	0067982	Yes	Other Resid	5	$63,541	-
Beaumont	0126221	Yes	Other-Nonres	2	$46,207	-
Beaumont	0121631	Yes	Other-Nonres	3	$227,994	-
Beaumont	0166425	Yes	Single Fmly	2	$17,447	-
Beaumont	0039157	No	Single Fmly	5	$27,840	-
Beaumont	0067922	Yes	Single Fmly	3	$34,866	-
Beaumont	0067954	Yes	Single Fmly	3	$162,635	-
Beaumont	0067955	Yes	Single Fmly	3	$80,982	-
Beaumont	0067918	No	Single Fmly	2	$65,187	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0067948	No	Assmd Condo	2	$14,446	-
Beaumont	0035313	No	Single Fmly	2	$4,458	-
Beaumont	0091338	Yes	Single Fmly	3	$28,379	-
Beaumont	0025381	No	Single Fmly	4	$59,806	MVU
Beaumont	0013023	No	2-4 Family	4	$36,653	-
Beaumont	0002381	No	Single Fmly	5	$117,743	MVU
Beaumont	0043237	Yes	Single Fmly	2	$3,417	-
Beaumont	0025449	No	Single Fmly	4	$42,639	-
Beaumont	0025340	No	Single Fmly	4	$36,690	-
Beaumont	0168614	No	Single Fmly	2	$29,785	-
Beaumont	0043390	No	Single Fmly	4	$47,932	MVU
Beaumont	0041200	No	Single Fmly	3	$31,644	-
Beaumont	0046367	No	Single Fmly	2	$23,780	-
Beaumont	0067972	No	Single Fmly	2	$11,792	-
Beaumont	0013095	No	Single Fmly	3	$18,287	-
Beaumont	0003331	No	Single Fmly	5	$101,558	MVU
Beaumont	0120347	No	Single Fmly	2	$29,541	-
Beaumont	0002997	No	Single Fmly	3	$33,492	-
Beaumont	0067942	No	Single Fmly	3	$11,518	-
Beaumont	0013214	No	Single Fmly	2	$16,988	-
Beaumont	0013040	No	Single Fmly	3	$4,939	-
Beaumont	0044352	No	Single Fmly	4	$21,222	-
Beaumont	0046170	Yes	Single Fmly	3	$46,474	-
Beaumont	0067912	No	Single Fmly	6	$53,576	MVU
Beaumont	0154186	No	Single Fmly	2	$21,129	-
Beaumont	0043677	Yes	Single Fmly	2	$11,346	-
Beaumont	0045631	No	Single Fmly	3	$5,338	-
Beaumont	0067921	No	Single Fmly	2	$9,667	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0001932	No	Single Fmly	4	$38,988	-
Beaumont	0113236	No	Other-Nonres	3	$88,993	-
Beaumont	0002610	Yes	Other-Nonres	4	$107,347	-
Beaumont	0113250	Yes	Other Resid	3	$81,049	-
Beaumont	0002611	No	Other-Nonres	3	$147,906	-
Beaumont	0004227	No	Other-Nonres	8	$1,566,257	-
Beaumont	0067903	No	Single Fmly	2	$6,178	-
Beaumont	0067983	No	Single Fmly	2	$12,677	-
Beaumont	0067984	No	Single Fmly	4	$21,888	-
Beaumont	0122404	No	Single Fmly	2	$47,406	-
Beaumont	0038812	Yes	Single Fmly	4	$17,114	-
Beaumont	0067966	No	Single Fmly	4	$17,912	-
Beaumont	0013232	No	Single Fmly	3	$22,847	-
Beaumont	0046057	No	2-4 Family	2	$7,296	-
Beaumont	0125740	No	Single Fmly	2	$35,778	-
Beaumont	0067985	No	Single Fmly	4	$65,285	MVU
Beaumont	0121368	Yes	Single Fmly	2	$31,741	-
Beaumont	0120353	Yes	Single Fmly	2	$72,755	-
Beaumont	0122067	Yes	Single Fmly	3	$115,732	-
Beaumont	0002719	Yes	Single Fmly	6	$222,093	MV
Beaumont	0120306	Yes	Single Fmly	3	$87,160	-
Beaumont	0121454	Yes	Single Fmly	2	$67,456	-
Beaumont	0125275	Yes	Single Fmly	2	$50,214	-
Beaumont	0125274	No	Single Fmly	2	$50,369	-
Beaumont	0122457	No	Single Fmly	6	$136,673	MVU
Beaumont	0067926	No	Single Fmly	6	$91,772	MVU
Beaumont	0121264	No	Single Fmly	3	$53,584	-
Beaumont	0067950	No	Single Fmly	2	$9,097	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0119972	No	Single Fmly	3	$46,345	-
Beaumont	0043050	No	Single Fmly	5	$90,867	MVU
Beaumont	0053309	No	Single Fmly	4	$66,084	MVU
Beaumont	0067986	No	Single Fmly	3	$46,710	-
Beaumont	0045446	Yes	Single Fmly	4	$46,066	-
Beaumont	0002558	No	Other-Nonres	5	$60,783	-
Beaumont	0122200	Yes	Other-Nonres	2	$194,825	-
Beaumont	0121255	No	Single Fmly	2	$60,386	-
Beaumont	0002670	No	Single Fmly	3	$29,910	-
Beaumont	0067905	Yes	Single Fmly	2	$35,991	-
Beaumont	0026687	No	Single Fmly	3	$38,061	-
Beaumont	0037275	Yes	Single Fmly	5	$226,525	MV
Beaumont	0067936	No	Other-Nonres	3	$42,446	-
Beaumont	0002350	No	Other-Nonres	3	$65,496	-
Beaumont	0013038	No	Single Fmly	6	$48,263	-
Beaumont	0080899	No	Single Fmly	2	$6,573	-
Beaumont	0067908	No	Single Fmly	2	$14,111	-
Beaumont	0122479	No	Single Fmly	2	$8,411	-
Beaumont	0017248	Yes	Single Fmly	4	$119,606	-
Beaumont	0048680	No	Single Fmly	2	$2,483	-
Beaumont	0044024	No	Assmd Condo	3	$188,218	-
Beaumont	0043701	No	Single Fmly	5	$71,699	MVU
Beaumont	0007714	No	Single Fmly	10	$191,607	MVU
Beaumont	0043626	No	Single Fmly	3	$25,071	-
Beaumont	0048067	No	Single Fmly	2	$25,197	-
Beaumont	0043229	No	Single Fmly	2	$15,163	-
Beaumont	0044116	No	Single Fmly	2	$17,480	-
Beaumont	0153951	Yes	Single Fmly	2	$31,256	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0067930	No	Single Fmly	2	$4,594	-
Beaumont	0069691	No	Single Fmly	5	$33,516	MVU
Beaumont	0122368	No	Single Fmly	3	$27,716	-
Beaumont	0158059	Yes	Single Fmly	2	$53,145	-
Beaumont	0043477	No	Other Resid	3	$39,591	-
Beaumont	0067951	Yes	Single Fmly	3	$36,681	-
Beaumont	0084043	No	Other-Nonres	5	$44,749	-
Beaumont	0002564	Yes	Other Resid	6	$67,028	MV
Beaumont	0017444	No	Single Fmly	4	$75,195	-
Beaumont	0067958	No	Single Fmly	3	$51,093	-
Beaumont	0042996	No	Single Fmly	4	$79,633	-
Beaumont	0025505	Yes	Single Fmly	2	$21,212	-
Beaumont	0067923	Yes	Single Fmly	3	$61,622	-
Beaumont	0048683	No	Single Fmly	2	$14,160	-
Beaumont	0017443	No	Single Fmly	4	$48,259	-
Beaumont	0043642	No	Single Fmly	6	$150,001	MVU
Beaumont	0116303	No	Single Fmly	2	$2,180	-
Beaumont	0120017	No	Single Fmly	2	$25,557	-
Beaumont	0044677	No	Single Fmly	2	$30,927	-
Beaumont	0044377	No	Single Fmly	3	$38,336	-
Beaumont	0067938	No	Single Fmly	5	$151,489	MVU
Beaumont	0044563	No	Single Fmly	3	$63,948	-
Beaumont	0121192	No	Single Fmly	3	$47,322	-
Beaumont	0125281	No	Single Fmly	2	$26,813	-
Beaumont	0121008	No	Single Fmly	4	$164,751	MVU
Beaumont	0048024	No	Single Fmly	2	$2,588	-
Beaumont	0001249	No	Single Fmly	16	$150,821	-
Beaumont	0001350	No	Single Fmly	13	$123,846	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0018763	No	Single Fmly	2	$10,928	-
Beaumont	0067910	Yes	Single Fmly	5	$54,614	-
Beaumont	0151749	No	Single Fmly	3	$4,871	-
Beaumont	0120304	No	Single Fmly	3	$72,328	-
Beaumont	0114423	No	Single Fmly	2	$17,521	-
Beaumont	0125992	Yes	Single Fmly	2	$31,592	-
Beaumont	0125273	Yes	Single Fmly	2	$7,962	-
Beaumont	0072233	No	Single Fmly	5	$57,943	MVU
Beaumont	0124682	No	Single Fmly	4	$53,765	-
Beaumont	0126927	No	Single Fmly	2	$15,831	-
Beaumont	0121953	Yes	Single Fmly	2	$18,925	-
Beaumont	0067956	No	Single Fmly	2	$18,742	-
Beaumont	0042987	No	Single Fmly	3	$57,944	-
Beaumont	0119960	No	Single Fmly	2	$3,483	-
Beaumont	0122244	Yes	Single Fmly	2	$65,915	-
Beaumont	0121004	Yes	Single Fmly	2	$180,070	-
Beaumont	0122032	No	Single Fmly	3	$92,692	-
Beaumont	0115532	Yes	Single Fmly	3	$246,558	-
Beaumont	0122242	Yes	Single Fmly	2	$152,383	-
Beaumont	0067964	Yes	Single Fmly	7	$47,265	MV
Beaumont	0148788	Yes	Single Fmly	2	$3,933	-
Beaumont	0013146	No	Single Fmly	3	$132,349	-
Beaumont	0054021	No	Single Fmly	4	$174,452	-
Beaumont	0121193	Yes	Single Fmly	3	$50,810	-
Beaumont	0067940	No	Single Fmly	3	$52,300	-
Beaumont	0001915	No	Single Fmly	6	$107,137	MVU
Beaumont	0121248	Yes	Single Fmly	2	$27,770	-
Beaumont	0002664	No	Single Fmly	5	$61,704	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0123219	Yes	Single Fmly	3	$168,724	-
Beaumont	0044509	No	Single Fmly	4	$78,377	-
Beaumont	0073387	No	Single Fmly	3	$12,246	-
Beaumont	0121913	No	Single Fmly	3	$31,783	-
Beaumont	0067963	Yes	Single Fmly	7	$125,037	MV
Beaumont	0182144	No	Single Fmly	2	$8,494	-
Beaumont	0181222	No	Single Fmly	2	$47,385	-
Beaumont	0116244	No	Single Fmly	4	$62,794	-
Beaumont	0160118	No	Single Fmly	2	$5,804	-
Beaumont	0120037	No	Single Fmly	2	$13,621	-
Beaumont	0122047	No	Single Fmly	2	$25,367	-
Beaumont	0121406	No	Single Fmly	2	$47,048	-
Beaumont	0121011	Yes	Single Fmly	3	$7,303	-
Beaumont	0073388	No	Single Fmly	6	$198,169	MVU
Beaumont	0043469	No	Single Fmly	5	$43,863	-
Beaumont	0036436	No	Single Fmly	3	$16,224	-
Beaumont	0025316	No	Single Fmly	4	$56,616	-
Beaumont	0067941	No	Single Fmly	3	$38,538	-
Beaumont	0121275	Yes	Single Fmly	2	$21,064	-
Beaumont	0121372	No	Single Fmly	3	$44,027	-
Beaumont	0122391	No	Single Fmly	3	$77,942	-
Beaumont	0043174	No	Single Fmly	5	$86,509	MVU
Beaumont	0025455	No	Single Fmly	7	$208,942	MVU
Beaumont	0041309	Yes	Single Fmly	4	$25,759	-
Beaumont	0160195	No	Single Fmly	2	$39,507	-
Beaumont	0069886	No	Single Fmly	3	$27,554	-
Beaumont	0157054	No	Single Fmly	2	$67,667	-
Beaumont	0070674	No	Single Fmly	2	$84,068	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Beaumont	0112944	Yes	Single Fmly	2	$136,809	-
Beaumont	0113800	Yes	Single Fmly	2	$71,415	-
Beaumont	0071441	Yes	Single Fmly	2	$100,318	-
Beaumont	0070124	Yes	Single Fmly	2	$86,669	-
Beaumont	0073393	No	Single Fmly	2	$45,636	-
Beaumont	0070006	SDF	Single Fmly	8	$533,292	V
Beaumont	0073386	SDF	Single Fmly	6	$518,909	V
Beaumont	0013074	Yes	Single Fmly	2	$121,983	-
Beaumont	0013261	Yes	Single Fmly	5	$98,251	-
Beaumont	0115904	No	Single Fmly	2	$41,501	-
Beaumont	0071593	Yes	Assmd Condo	2	$66,356	-
Beaumont	0073394	No	Single Fmly	2	$117,062	-
Groves	0158057	Yes	Single Fmly	2	$6,580	-
Groves	0212638	No	Single Fmly	2	$8,559	-
Groves	0166491	No	Single Fmly	2	$8,371	-
Groves	0165547	No	Single Fmly	2	$35,486	-
Groves	0240001	Yes	Single Fmly	3	$67,437	-
Groves	0166488	Yes	Single Fmly	2	$41,798	-
Groves	0178844	No	Single Fmly	2	$24,219	-
Groves	0179760	No	Single Fmly	2	$32,253	-
Groves	0073544	No	Single Fmly	5	$52,562	-
Groves	0181067	No	Single Fmly	2	$17,571	-
Groves	0240289	No	Single Fmly	2	$13,882	-
Groves	0160604	No	Single Fmly	2	$15,594	-
Groves	0153959	No	Single Fmly	2	$28,097	-
Groves	0148796	No	Single Fmly	2	$6,149	-
Groves	0239948	No	Single Fmly	2	$13,847	-
Groves	0239950	No	Single Fmly	2	$49,883	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Groves	0167200	No	Single Fmly	3	$66,186	-
Groves	0179719	No	Single Fmly	2	$2,726	-
Groves	0173542	Yes	Single Fmly	2	$54,810	-
Groves	0148797	No	Single Fmly	2	$25,011	-
Groves	0164893	No	Single Fmly	2	$30,830	-
Groves	0025570	No	Single Fmly	2	$5,916	-
Groves	0165766	Yes	Single Fmly	3	$65,093	-
Groves	0018654	No	Single Fmly	2	$23,364	-
Groves	0026439	No	Single Fmly	2	$16,767	-
Groves	0122123	No	Single Fmly	4	$61,325	-
Groves	0239758	No	Single Fmly	2	$23,586	-
Groves	0165373	No	Single Fmly	3	$50,691	-
Groves	0035811	No	Other Resid	2	$24,221	-
Groves	0127798	Yes	Single Fmly	2	$10,617	-
Groves	0166755	No	Other-Nonres	2	$36,409	-
Groves	0165938	No	Other-Nonres	2	$136,473	-
Groves	0048991	No	Single Fmly	2	$4,069	-
Groves	0046237	No	Other-Nonres	3	$14,951	-
Nederland	0080461	SDF	Single Fmly	4	$135,837	V
Nederland	0151764	Yes	Single Fmly	2	$60,411	-
Nederland	0177321	Yes	Single Fmly	2	$3,018	-
Nederland	0167359	Yes	Single Fmly	2	$9,853	-
Nederland	0184788	No	Single Fmly	2	$42,169	-
Nederland	0080462	No	Single Fmly	3	$126,812	-
Nederland	0151762	Yes	Single Fmly	2	$28,833	-
Nederland	0108336	SDF	Single Fmly	3	$166,368	V
Nederland	0148769	No	Single Fmly	2	$60,463	-
Nederland	0120095	SDF	Other-Nonres	4	$174,127	VN

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Nederland	0163517	No	Single Fmly	2	$64,748	-
Nederland	0157073	Yes	Single Fmly	2	$60,693	-
Nederland	0120317	No	Single Fmly	2	$4,951	-
Nederland	0108428	Yes	Single Fmly	3	$24,251	-
Nederland	0108431	No	Single Fmly	3	$62,615	-
Nederland	0152853	No	Single Fmly	2	$57,422	-
Nederland	0108351	No	Single Fmly	2	$16,475	-
Nederland	0153448	No	Single Fmly	2	$78,644	-
Nederland	0108429	No	Single Fmly	3	$10,015	-
Nederland	0157076	No	Single Fmly	2	$102,000	-
Nederland	0157074	No	Single Fmly	2	$33,370	-
Nederland	0108352	No	Single Fmly	3	$56,515	-
Nederland	0108547	Yes	Other-Nonres	5	$32,927	-
Nederland	0167853	No	Other-Nonres	4	$43,456	-
Nederland	0184364	No	Other-Nonres	2	$221,712	-
Nederland	0112589	No	Single Fmly	3	$30,912	-
Nederland	0073827	No	Single Fmly	7	$102,499	VU
Nederland	0199335	Yes	Single Fmly	2	$33,740	-
Nederland	0158682	No	Single Fmly	2	$61,901	-
Nederland	0108243	No	Single Fmly	2	$16,416	-
Nederland	0148779	Yes	Single Fmly	2	$34,330	-
Nederland	0080463	Yes	Single Fmly	3	$112,358	-
Nederland	0080464	No	Single Fmly	4	$122,651	-
Nederland	0080465	Yes	Single Fmly	3	$80,097	-
Nederland	0080466	SDF	Single Fmly	5	$112,375	V
Nederland	0043005	No	Single Fmly	2	$2,980	-
Nederland	0041191	No	Single Fmly	11	$63,676	VU
Nederland	0025453	No	Other-Nonres	3	$5,913	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Nederland	0148785	No	Single Fmly	2	$67,781	-
Nederland	0108233	No	Single Fmly	2	$13,664	-
Nederland	0144557	Yes	Single Fmly	2	$51,731	-
Nederland	0148775	No	Single Fmly	2	$61,064	-
Nederland	0154378	Yes	Other-Nonres	2	$65,490	-
Nederland	0108229	Yes	Single Fmly	2	$26,697	-
Nederland	0108235	No	Single Fmly	2	$4,564	-
Nederland	0116427	Yes	Single Fmly	6	$40,088	-
Nederland	0212439	No	Other-Nonres	2	$20,627	-
Nederland	0181107	No	Single Fmly	2	$54,439	-
Nederland	0153948	No	Single Fmly	2	$9,861	-
Nederland	0181750	No	Single Fmly	3	$42,981	-
Nederland	0080467	No	Single Fmly	4	$44,718	-
Nederland	0073581	Yes	Single Fmly	4	$36,154	-
Nederland	0108514	Yes	Single Fmly	3	$68,400	-
Nederland	0073582	No	Single Fmly	3	$27,735	-
Nederland	0108028	No	Single Fmly	2	$53,577	-
Nederland	0152831	Yes	Single Fmly	2	$77,440	-
Nederland	0109443	No	Single Fmly	2	$17,940	-
Nederland	0153953	Yes	Single Fmly	2	$34,696	-
Nederland	0108318	Yes	Single Fmly	3	$91,043	-
Nederland	0158063	No	Single Fmly	2	$95,355	-
Nederland	0182998	No	Single Fmly	2	$95,097	-
Nederland	0108116	Yes	Single Fmly	3	$58,059	-
Nederland	0157668	No	Single Fmly	2	$68,321	-
Nederland	0108280	No	Single Fmly	2	$38,020	-
Nederland	0108316	No	Single Fmly	3	$89,909	-
Nederland	0148798	Yes	Single Fmly	2	$54,943	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Nederland	0151765	Yes	Single Fmly	2	$50,069	-
Nederland	0144556	Yes	Single Fmly	2	$20,126	-
Nederland	0158062	No	Single Fmly	2	$19,185	-
Nederland	0157848	No	Single Fmly	2	$79,411	-
Nederland	0108433	Yes	Single Fmly	4	$165,672	-
Nederland	0160073	No	Single Fmly	2	$67,371	-
Nederland	0148791	No	Single Fmly	2	$36,405	-
Nederland	0108237	No	Single Fmly	2	$21,449	-
Nederland	0160071	Yes	Single Fmly	2	$133,921	-
Port Arthur	0121692	No	Single Fmly	2	$2,237	-
Port Arthur	0183693	Yes	Single Fmly	2	$69,074	-
Port Arthur	0046046	No	Single Fmly	4	$72,094	-
Port Arthur	0043993	No	Single Fmly	2	$30,300	-
Port Arthur	0018413	No	Single Fmly	2	$4,589	-
Port Arthur	0181881	Yes	Single Fmly	2	$125,502	-
Port Arthur	0191554	Yes	Single Fmly	3	$141,128	-
Port Arthur	0182778	No	Single Fmly	2	$31,017	-
Port Arthur	0158061	SDF	Single Fmly	5	$79,472	V
Port Arthur	0026126	Yes	Single Fmly	5	$89,436	-
Port Arthur	0148789	SDF	Single Fmly	5	$105,153	V
Port Arthur	0025772	SDF	Single Fmly	7	$130,266	V
Port Arthur	0043531	No	Single Fmly	5	$72,270	VU
Port Arthur	0017271	No	Single Fmly	2	$14,959	-
Port Arthur	0148776	No	Single Fmly	2	$100,676	-
Port Arthur	0025217	No	Single Fmly	3	$29,308	-
Port Arthur	0239760	No	Single Fmly	2	$49,578	-
Port Arthur	0025668	Yes	Single Fmly	5	$35,885	-
Port Arthur	0016038	Yes	Single Fmly	4	$20,229	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0044089	No	Single Fmly	3	$37,206	-
Port Arthur	0183097	Yes	Single Fmly	2	$61,940	-
Port Arthur	0181246	No	Other-Nonres	2	$82,900	-
Port Arthur	0121182	Yes	Single Fmly	3	$110,547	-
Port Arthur	0045140	No	Single Fmly	3	$11,081	-
Port Arthur	0157060	No	Single Fmly	3	$49,839	-
Port Arthur	0040436	No	Single Fmly	2	$11,254	-
Port Arthur	0240282	Yes	Single Fmly	2	$133,359	-
Port Arthur	0181273	Yes	Single Fmly	2	$78,582	-
Port Arthur	0043740	No	Single Fmly	2	$7,085	-
Port Arthur	0015184	Yes	Single Fmly	5	$91,835	-
Port Arthur	0239940	No	Single Fmly	2	$13,266	-
Port Arthur	0067850	No	Single Fmly	4	$14,094	-
Port Arthur	0162789	No	Other Resid	2	$32,559	-
Port Arthur	0163773	No	Assmd Condo	2	$106,620	-
Port Arthur	0163515	No	Other Resid	2	$26,741	-
Port Arthur	0164169	No	Other Resid	2	$45,394	-
Port Arthur	0128020	No	Single Fmly	3	$21,417	-
Port Arthur	0018764	No	Single Fmly	2	$17,876	-
Port Arthur	0033274	No	Single Fmly	2	$11,377	-
Port Arthur	0039658	No	Single Fmly	2	$11,629	-
Port Arthur	0039659	No	Assmd Condo	2	$39,934	-
Port Arthur	0043279	No	Single Fmly	2	$16,616	-
Port Arthur	0016071	No	Single Fmly	2	$39,845	-
Port Arthur	0036493	No	Single Fmly	2	$17,130	-
Port Arthur	0026537	No	Single Fmly	2	$45,033	-
Port Arthur	0067833	No	Single Fmly	2	$18,477	-
Port Arthur	0017502	No	Single Fmly	2	$4,405	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0017477	No	Single Fmly	2	$14,964	-
Port Arthur	0026213	Yes	Single Fmly	3	$101,381	-
Port Arthur	0240281	No	Single Fmly	2	$7,869	-
Port Arthur	0244472	Yes	Single Fmly	2	$69,408	-
Port Arthur	0179771	No	Single Fmly	2	$44,488	-
Port Arthur	0018696	No	Single Fmly	2	$14,235	-
Port Arthur	0045668	No	Other-Nonres	2	$8,971	-
Port Arthur	0025188	No	Other-Nonres	5	$73,368	-
Port Arthur	0044418	No	Other-Nonres	8	$61,774	VNU
Port Arthur	0026111	No	Other-Nonres	2	$4,369	-
Port Arthur	0239941	Yes	Other-Nonres	2	$149,791	-
Port Arthur	0186628	Yes	Single Fmly	2	$82,978	-
Port Arthur	0183915	No	Other-Nonres	2	$397,735	-
Port Arthur	0179222	No	Single Fmly	2	$116,900	-
Port Arthur	0190401	SDF	Other-Nonres	2	$652,024	PN
Port Arthur	0179200	No	Assmd Condo	2	$532,276	-
Port Arthur	0179440	No	Single Fmly	2	$406,159	VU
Port Arthur	0181124	No	Single Fmly	2	$117,500	-
Port Arthur	0049019	No	Other-Nonres	3	$7,749	-
Port Arthur	0045629	No	Other-Nonres	2	$10,315	-
Port Arthur	0025220	SDF	Other-Nonres	10	$535,976	PN
Port Arthur	0025577	No	Other-Nonres	2	$18,633	-
Port Arthur	0186523	No	Single Fmly	2	$8,367	-
Port Arthur	0157061	No	Single Fmly	2	$48,131	-
Port Arthur	0179663	Yes	Single Fmly	2	$153,617	-
Port Arthur	0180138	Yes	Single Fmly	2	$199,051	-
Port Arthur	0181767	Yes	Single Fmly	2	$180,870	-
Port Arthur	0181851	No	Single Fmly	2	$189,100	VU

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0181125	No	Single Fmly	2	$112,788	VU
Port Arthur	0026049	No	Single Fmly	2	$19,873	-
Port Arthur	0017672	No	Single Fmly	2	$11,569	-
Port Arthur	0158058	No	Single Fmly	2	$19,005	-
Port Arthur	0122910	No	Single Fmly	3	$41,241	-
Port Arthur	0179078	No	Other-Nonres	2	$54,258	-
Port Arthur	0025172	No	Single Fmly	2	$25,839	-
Port Arthur	0179781	Yes	Single Fmly	2	$33,484	-
Port Arthur	0157059	Yes	Single Fmly	2	$38,540	-
Port Arthur	0017297	No	Single Fmly	2	$8,632	-
Port Arthur	0040469	No	Single Fmly	2	$18,438	-
Port Arthur	0180881	No	Single Fmly	2	$75,873	-
Port Arthur	0181228	Yes	Single Fmly	2	$79,229	-
Port Arthur	0181314	No	Single Fmly	2	$8,238	-
Port Arthur	0043554	No	Single Fmly	2	$3,365	-
Port Arthur	0183963	Yes	Single Fmly	2	$12,401	-
Port Arthur	0182783	No	Single Fmly	2	$125,696	-
Port Arthur	0178112	Yes	Single Fmly	2	$43,007	-
Port Arthur	0180880	No	Single Fmly	2	$65,197	-
Port Arthur	0185394	No	Single Fmly	2	$145,387	-
Port Arthur	0184075	Yes	Single Fmly	2	$88,838	-
Port Arthur	0179666	No	Single Fmly	2	$95,291	-
Port Arthur	0185462	Yes	Single Fmly	2	$50,458	-
Port Arthur	0043706	No	Single Fmly	2	$12,992	-
Port Arthur	0212548	Yes	Single Fmly	2	$11,334	-
Port Arthur	0179778	No	Single Fmly	2	$65,262	-
Port Arthur	0184986	SDF	Single Fmly	2	$187,249	V
Port Arthur	0183694	Yes	Single Fmly	2	$182,101	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0179748	Yes	Single Fmly	2	$28,369	-
Port Arthur	0026839	No	Single Fmly	4	$102,819	-
Port Arthur	0180080	Yes	Single Fmly	2	$46,149	-
Port Arthur	0184110	No	Single Fmly	2	$105,200	-
Port Arthur	0191141	No	Single Fmly	2	$37,588	-
Port Arthur	0026429	No	Single Fmly	3	$5,824	-
Port Arthur	0043287	No	Other-Nonres	2	$48,900	-
Port Arthur	0178175	Yes	Single Fmly	2	$136,457	-
Port Arthur	0182111	Yes	Single Fmly	2	$404,954	-
Port Arthur	0181445	Yes	Single Fmly	2	$263,089	-
Port Arthur	0182136	Yes	Assmd Condo	2	$586,755	-
Port Arthur	0183157	SDF	Single Fmly	2	$369,716	V
Port Arthur	0181955	No	Single Fmly	2	$246,306	VU
Port Arthur	0178197	Yes	Other-Nonres	2	$102,752	-
Port Arthur	0177177	Yes	Single Fmly	2	$66,748	-
Port Arthur	0181355	Yes	Single Fmly	2	$191,496	-
Port Arthur	0177163	Yes	Single Fmly	2	$24,803	-
Port Arthur	0183308	Yes	Single Fmly	2	$135,645	-
Port Arthur	0179216	Yes	Single Fmly	2	$66,637	-
Port Arthur	0178190	Yes	Single Fmly	2	$126,081	-
Port Arthur	0160104	No	Single Fmly	2	$32,629	-
Port Arthur	0116245	No	Single Fmly	2	$14,691	-
Port Arthur	0035930	No	Single Fmly	5	$124,516	VU
Port Arthur	0026465	No	Single Fmly	2	$4,231	-
Port Arthur	0158043	No	Single Fmly	3	$16,135	-
Port Arthur	0182779	No	Single Fmly	2	$43,978	-
Port Arthur	0239759	No	Single Fmly	2	$24,722	-
Port Arthur	0160056	No	Single Fmly	3	$9,199	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0047348	No	Single Fmly	6	$36,195	-
Port Arthur	0176706	No	Single Fmly	2	$29,034	-
Port Arthur	0180151	Yes	Single Fmly	2	$36,221	-
Port Arthur	0049655	No	Single Fmly	13	$81,463	VU
Port Arthur	0042615	No	Single Fmly	2	$6,241	-
Port Arthur	0026746	No	Single Fmly	4	$14,707	-
Port Arthur	0181363	Yes	Other-Nonres	2	$179,744	-
Port Arthur	0017582	No	Other-Nonres	2	$14,296	-
Port Arthur	0148790	Yes	Other-Nonres	2	$49,255	-
Port Arthur	0180882	No	Single Fmly	2	$9,856	-
Port Arthur	0179009	No	Single Fmly	2	$32,967	-
Port Arthur	0238882	Yes	Single Fmly	2	$16,097	-
Port Arthur	0180883	No	Single Fmly	2	$4,530	-
Port Arthur	0153449	SDF	Single Fmly	5	$45,145	V
Port Arthur	0026488	No	Single Fmly	2	$9,676	-
Port Arthur	0157063	No	Single Fmly	3	$12,409	-
Port Arthur	0026522	Yes	Single Fmly	3	$13,412	-
Port Arthur	0035476	No	Single Fmly	2	$9,544	-
Port Arthur	0017438	No	Other-Nonres	4	$67,340	PNU
Port Arthur	0157058	No	Single Fmly	2	$9,073	-
Port Arthur	0179717	Yes	2-4 Family	3	$30,450	-
Port Arthur	0178772	No	Single Fmly	2	$9,591	-
Port Arthur	0158053	No	Other-Nonres	3	$168,900	-
Port Arthur	0178771	No	Single Fmly	2	$17,431	-
Port Arthur	0041485	No	Single Fmly	3	$11,872	-
Port Arthur	0025562	No	Single Fmly	2	$22,315	-
Port Arthur	0240279	No	Single Fmly	2	$37,789	-
Port Arthur	0044571	No	Single Fmly	3	$8,639	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0184077	No	Single Fmly	2	$51,943	-
Port Arthur	0180264	No	Single Fmly	2	$20,698	-
Port Arthur	0178770	No	Single Fmly	2	$41,723	-
Port Arthur	0018482	No	Single Fmly	2	$11,038	-
Port Arthur	0180162	Yes	Single Fmly	2	$29,457	-
Port Arthur	0173145	No	Single Fmly	2	$13,006	-
Port Arthur	0039584	No	Single Fmly	4	$40,633	-
Port Arthur	0018444	No	Single Fmly	2	$31,545	PU
Port Arthur	0158052	No	Single Fmly	2	$16,852	-
Port Arthur	0073356	No	Single Fmly	3	$9,619	-
Port Arthur	0070053	No	Other-Nonres	2	$10,989	-
Port Arthur	0244554	No	Single Fmly	2	$54,045	-
Port Arthur	0043795	No	Single Fmly	2	$18,377	-
Port Arthur	0178998	No	Single Fmly	2	$153,400	-
Port Arthur	0178897	Yes	Single Fmly	2	$53,477	-
Port Arthur	0191890	No	Single Fmly	2	$163,200	PU
Port Arthur	0181708	SDF	Single Fmly	2	$390,511	V
Port Arthur	0162606	No	Single Fmly	2	$25,753	-
Port Arthur	0069866	No	Single Fmly	2	$6,385	-
Port Arthur	0179773	No	Single Fmly	3	$40,961	-
Port Arthur	0183034	No	Single Fmly	2	$16,780	-
Port Arthur	0037866	No	Single Fmly	3	$28,910	-
Port Arthur	0148787	No	Single Fmly	2	$14,174	-
Port Arthur	0158050	Yes	Single Fmly	2	$47,988	-
Port Arthur	0025154	No	Single Fmly	2	$31,859	-
Port Arthur	0026151	No	Single Fmly	2	$33,739	-
Port Arthur	0076301	Yes	Single Fmly	4	$51,543	-
Port Arthur	0154084	Yes	Single Fmly	2	$24,729	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0048784	No	Single Fmly	2	$9,268	-
Port Arthur	0154136	No	Single Fmly	2	$26,086	-
Port Arthur	0067839	No	Single Fmly	8	$195,360	VU
Port Arthur	0122980	No	Single Fmly	3	$97,516	-
Port Arthur	0026266	No	Single Fmly	2	$4,040	-
Port Arthur	0157064	Yes	Single Fmly	3	$59,999	-
Port Arthur	0158060	No	Other Resid	2	$120,398	-
Port Arthur	0044729	Yes	Single Fmly	3	$10,656	-
Port Arthur	0067846	No	Other-Nonres	3	$28,577	-
Port Arthur	0153955	No	Single Fmly	3	$45,599	-
Port Arthur	0184624	No	Single Fmly	2	$75,251	-
Port Arthur	0015989	No	Single Fmly	2	$29,135	-
Port Arthur	0026168	No	Single Fmly	2	$18,394	-
Port Arthur	0239721	Yes	Single Fmly	2	$95,833	-
Port Arthur	0183696	No	Single Fmly	2	$48,619	-
Port Arthur	0015126	No	Single Fmly	3	$80,405	-
Port Arthur	0122981	Yes	Single Fmly	4	$182,330	-
Port Arthur	0157066	No	Single Fmly	2	$43,629	-
Port Arthur	0039204	No	Single Fmly	3	$25,238	-
Port Arthur	0026588	No	Single Fmly	2	$8,636	-
Port Arthur	0026179	No	Single Fmly	2	$3,759	-
Port Arthur	0070125	No	Single Fmly	2	$6,361	-
Port Arthur	0148801	No	Single Fmly	2	$36,473	-
Port Arthur	0040259	Yes	Single Fmly	3	$37,080	-
Port Arthur	0018748	Yes	Single Fmly	2	$19,248	-
Port Arthur	0178165	No	Single Fmly	2	$15,848	-
Port Arthur	0016075	No	Single Fmly	2	$12,746	-
Port Arthur	0182278	No	Single Fmly	2	$149,353	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0179741	Yes	Single Fmly	2	$226,309	-
Port Arthur	0148778	No	Single Fmly	2	$21,488	-
Port Arthur	0039990	No	Single Fmly	2	$3,259	-
Port Arthur	0160605	Yes	Single Fmly	4	$32,861	-
Port Arthur	0121521	No	Single Fmly	2	$8,142	-
Port Arthur	0179067	No	Single Fmly	2	$7,213	-
Port Arthur	0015179	No	Single Fmly	2	$4,209	-
Port Arthur	0017256	Yes	Single Fmly	3	$35,981	-
Port Arthur	0179089	Yes	Single Fmly	2	$89,077	-
Port Arthur	0017339	Yes	Single Fmly	4	$119,309	-
Port Arthur	0183160	Yes	Single Fmly	2	$116,406	-
Port Arthur	0016044	Yes	Single Fmly	4	$225,909	-
Port Arthur	0026284	Yes	Single Fmly	3	$69,861	-
Port Arthur	0026714	Yes	Single Fmly	4	$170,018	-
Port Arthur	0183695	No	Single Fmly	2	$200,265	-
Port Arthur	0181388	No	Other-Nonres	2	$98,457	PNU
Port Arthur	0185445	Yes	Single Fmly	2	$19,106	-
Port Arthur	0244159	Yes	Single Fmly	2	$6,001	-
Port Arthur	0080912	No	Single Fmly	2	$4,863	-
Port Arthur	0197230	No	Single Fmly	3	$69,257	-
Port Arthur	0042551	No	Single Fmly	2	$16,857	-
Port Arthur	0026487	No	Single Fmly	2	$14,434	-
Port Arthur	0182784	No	Single Fmly	2	$40,483	-
Port Arthur	0036863	No	Single Fmly	5	$21,564	-
Port Arthur	0035778	Yes	Single Fmly	4	$12,502	-
Port Arthur	0067845	No	Single Fmly	2	$4,644	-
Port Arthur	0158047	Yes	Single Fmly	2	$16,268	-
Port Arthur	0240109	Yes	Single Fmly	2	$19,504	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0240284	No	Single Fmly	2	$40,465	-
Port Arthur	0160057	Yes	Single Fmly	2	$25,881	-
Port Arthur	0157065	Yes	Single Fmly	2	$57,037	-
Port Arthur	0046161	No	Single Fmly	2	$14,792	-
Port Arthur	0239942	Yes	Single Fmly	2	$31,798	-
Port Arthur	0240100	Yes	Single Fmly	2	$88,370	-
Port Arthur	0240676	Yes	Single Fmly	2	$128,955	-
Port Arthur	0239722	No	Single Fmly	2	$68,560	-
Port Arthur	0240111	No	Single Fmly	2	$11,371	-
Port Arthur	0025821	No	Single Fmly	2	$5,625	-
Port Arthur	0018631	No	Single Fmly	2	$29,506	-
Port Arthur	0177210	Yes	Other-Nonres	2	$210,072	-
Port Arthur	0043780	No	2-4 Family	2	$2,573	-
Port Arthur	0025311	No	Single Fmly	3	$16,117	-
Port Arthur	0015136	No	Single Fmly	2	$11,454	-
Port Arthur	0033264	No	Single Fmly	2	$12,349	-
Port Arthur	0178195	No	Single Fmly	2	$82,305	-
Port Arthur	0023243	No	Single Fmly	3	$8,001	-
Port Arthur	0068035	No	Single Fmly	2	$27,235	-
Port Arthur	0048901	No	Other-Nonres	2	$13,220	-
Port Arthur	0146219	No	Single Fmly	2	$62,409	-
Port Arthur	0043272	No	Single Fmly	2	$19,266	-
Port Arthur	0043036	No	Single Fmly	3	$6,943	-
Port Arthur	0178901	No	Other-Nonres	2	$399,300	-
Port Arthur	0183138	No	Other-Nonres	2	$1,025,600	-
Port Arthur	0177058	No	2-4 Family	2	$64,000	-
Port Arthur	0177123	No	Single Fmly	2	$23,300	-
Port Arthur	0182274	No	Single Fmly	2	$92,630	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Arthur	0183132	No	Single Fmly	2	$201,764	-
Port Arthur	0043391	No	Single Fmly	3	$8,365	-
Port Arthur	0083549	No	Single Fmly	3	$40,436	-
Port Arthur	0044523	No	Single Fmly	2	$20,439	-
Port Arthur	0026216	No	Single Fmly	2	$22,813	-
Port Arthur	0167671	No	Single Fmly	2	$92,681	-
Port Arthur	0181923	No	Single Fmly	2	$488,277	MVU
Port Arthur	0144555	No	Single Fmly	2	$116,031	-
Port Arthur	0179375	Yes	Single Fmly	2	$244,316	-
Port Arthur	0180142	No	Single Fmly	2	$69,500	-
Port Arthur	0181807	No	Single Fmly	2	$155,109	-
Port Arthur	0238125	Yes	Single Fmly	2	$337,696	-
Port Arthur	0181364	Yes	Single Fmly	2	$700,000	MV
Port Arthur	0025694	Yes	Single Fmly	3	$16,411	-
Port Neches	0108117	No	Single Fmly	2	$12,755	-
Port Neches	0160055	No	Single Fmly	2	$13,716	-
Port Neches	0160049	Yes	Single Fmly	2	$61,248	-
Port Neches	0240283	Yes	Single Fmly	2	$61,201	-
Port Neches	0160054	No	Single Fmly	2	$18,904	-
Port Neches	0163795	Yes	Single Fmly	3	$57,456	-
Port Neches	0125284	No	Single Fmly	3	$10,074	-
Port Neches	0038458	No	Single Fmly	3	$5,284	-
Port Neches	0158044	No	Single Fmly	2	$6,641	-
Port Neches	0239723	Yes	Single Fmly	2	$89,706	-
Port Neches	0117149	No	Single Fmly	3	$42,584	-
Port Neches	0121919	No	Single Fmly	4	$13,328	-
Port Neches	0181744	No	Single Fmly	2	$9,687	-
Port Neches	0127223	Yes	Single Fmly	3	$43,309	-

COMMUNITY NAME	PROPERTY	INSURED	BUILDING TYPE	LOSSES	TOTAL PAID	SRL INDICATOR
Port Neches	0080414	No	Other-Nonres	4	$278,651	VNU
Port Neches	0182782	No	Single Fmly	2	$10,935	-
Port Neches	0147441	No	Single Fmly	2	$8,681	-
Port Neches	0038382	Yes	Single Fmly	2	$20,193	-
Port Neches	0181378	No	Single Fmly	2	$65,742	-
Port Neches	0179531	Yes	Single Fmly	2	$269,884	-
Port Neches	0076703	Yes	Single Fmly	4	$58,048	-
Port Neches	0108425	No	Single Fmly	6	$116,641	VU
Port Neches	0113302	No	Single Fmly	2	$20,894	-
Port Neches	0157062	No	Single Fmly	2	$43,361	-
Port Neches	0179765	No	Single Fmly	2	$19,209	-
Port Neches	0180884	Yes	Single Fmly	2	$25,024	-
Port Neches	0073897	No	Single Fmly	3	$49,693	-
Port Neches	0080415	No	Single Fmly	3	$59,179	-
Port Neches	0038168	No	Single Fmly	2	$3,941	-
Port Neches	0045286	No	Single Fmly	4	$16,746	-

SECTION 6: LIGHTNING

Hazard Description

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes the thunder, which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning often strikes outside of heavy rain and might occur as far as 10 miles away from any rainfall.

According to FEMA, an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct lightning strikes also have the ability to cause significant damage to buildings, critical facilities, and infrastructure. Lightning is also responsible for igniting wildfires that can result in widespread damages to property before firefighters have the ability to contain and suppress the resultant fire.

Location

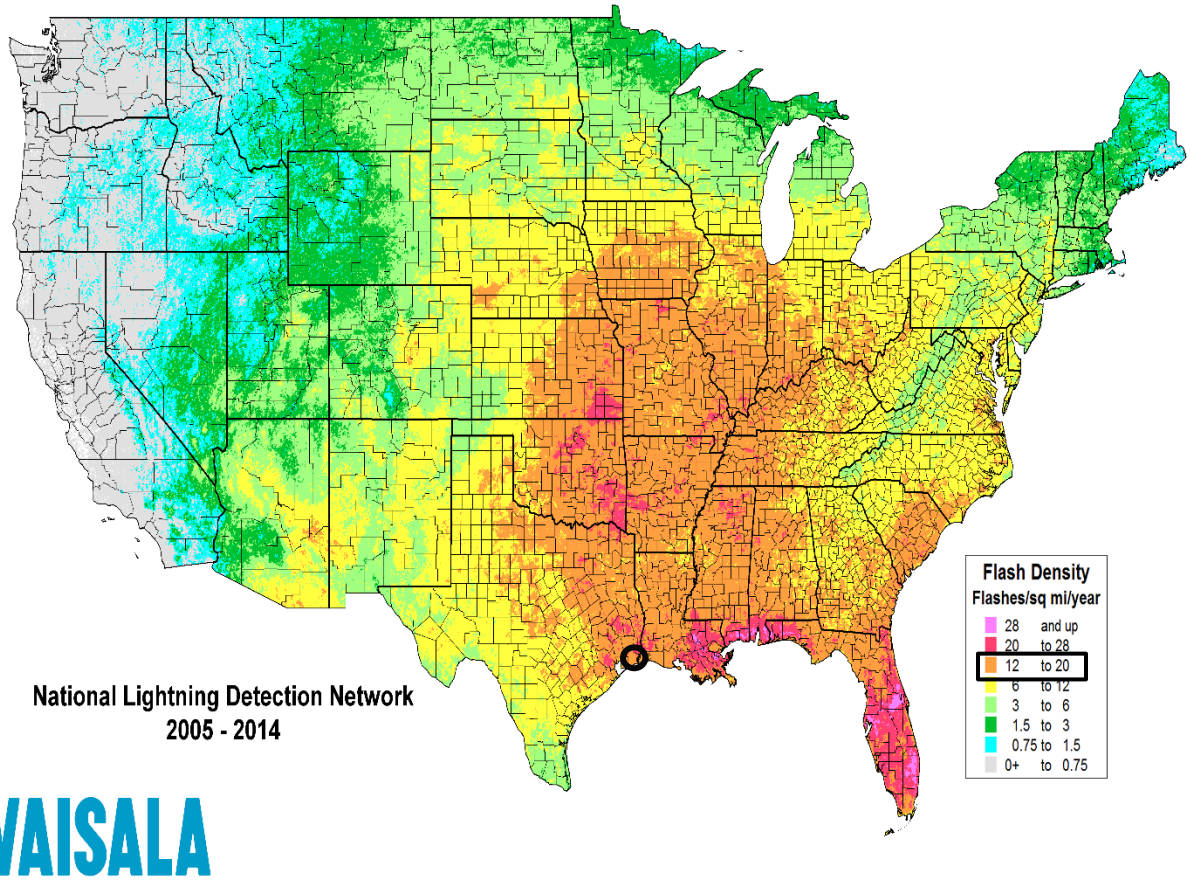
Lightning can strike in any geographic location, and is considered a common occurrence in Texas. The Jefferson County planning area is located in a region of the country that is moderately susceptible to lightning strikes. Therefore lightning could occur at any location within the Jefferson County planning area. It is assumed that the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is uniformly exposed to the threat of lightning.

Extent

The planning area considers a flash density of less than two to be a minor severity and a flash density of three or greater to be a major severity. Any lightning strike that causes death or property damage is considered a major severity. Vaisala's U.S. National Lightning Detection Network lightning flash density

map (Figure 6-1) shows a range of 12 to 20 lightning flashes per square mile per year for the Jefferson County planning area, including the SETRPC and all participating jurisdictions.

Figure 6-1. Lightning Flash Density, 2005-2014[1]



Historical Occurrences

Table 6-1 depicts historical occurrences of lightning for the Jefferson County planning area, including all participating jurisdictions, with associated damages according to the National Center for Environmental Information (NCEI) data. Since January 1996, 11 recorded lightning events are known to have impacted Jefferson County, based upon NCEI records.

The NCEI is a national data source organized under the National Oceanic and Atmospheric Administration and is the largest archive available for climate data. However, it is important to note that the incidents factored into this risk assessment only include incidents that were reported to the NCEI. SETRPC is located within the City of Beaumont. There may be some occurrences that have occurred for the SETRPC and may not have been recorded, but are included in the City of Beaumont occurrence data because of their

[1] The black circle indicates the Jefferson County planning area.

location. Damage estimates provided in Table 6-1 and Table 6-2 have been modified to reflect the damage in 2016 dollars.

Table 6-1. Historical Lightning Events, 1996-2016

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Beaumont	8/12/1996	9:00 PM	0	1	$15,249	$0
Beaumont	7/12/1999	2:00 PM	0	1	$0	$0
Port Arthur	8/29/2007	8:00 PM	1	0	$0	$0
Port Arthur	7/23/2009	2:22 PM	0	8	$5,576	$0
Beaumont	7/5/2011	3:45 PM	0	0	$31,910	$0
Beaumont	7/6/2011	2:00 PM	0	0	$106,367	$0
Beaumont	7/6/2011	4:50 PM	0	0	$265,918	$0
Groves	7/19/2011	5:20 AM	0	0	$74,457	$0
Beaumont	8/19/2014	3:00 PM	0	0	$5,053	$0
Jefferson County	12/23/2014	12:55 PM	0	0	$50,533	$0
Port Neches	6/30/2015	10:39 AM	0	0	$1,009	$0

Table 6-2. Summary of Historical Lightning Events, 1996-2016

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	1	0	0	$50,533	$0
Beaumont	6	0	2	$424,497	$0
Bevil Oaks	0	0	0	$0	$0
China	0	0	0	$0	$0
Groves	1	0	0	$74,457	$0
Nederland	0	0	0	$0	$0
Nome	0	0	0	$0	$0
Port Arthur	2	1	8	$5,576	$0
Port Neches	1	0	0	$1,009	$0
TOTAL LOSSES	**11**	**1**	**10**	**$556,073**	

Based on the list of historical lightning events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, 7 of the events have occurred since the 2011 Plan.

Significant Past Events

August 12, 1996 – Beaumont

An unusual storm system produced extensive lightning in the area. As many as 9,000 lightning strikes that evening resulted in one man injured, one house fire, and several telephone poles damaged.

July 6, 2011 – Jefferson County

An upper level disturbance helped produce thunderstorms that had numerous lightning strikes in southeast Texas. A two story home on the west side of Beaumont was struck by lightning. The resulting fire was quickly put out, but not before the home was severely damaged. Excessive lightning also caused a fire at the Stone Hearth Apartments. One unit with eight apartments was on fire and the roof partially collapsed. Damage estimates exceeded $350,000.

July 19, 2011 – Groves

An upper level low pressure area helped produce thunderstorms that had numerous lightning strikes in southeast Texas. A house that was struck by lightning caught fire in Groves. The fire started in the attic of the two story home, and caused considerable water damage on the first floor and fire damage on the second floor.

Probability of Future Events

Based on historical records and input from the planning team, the probability of occurrence for future lightning events in the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is considered highly likely, or an event probable in the next year. According to NOAA, the Jefferson County planning area is located in an area of the country that experiences 12-20 lightning flashes per square mile per year (approximately 13,332 to 22,220 flashes per year). Given this estimated frequency of occurrence, it can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the planning area.

Vulnerability and Impact

Vulnerability is difficult to evaluate since lightning events can occur at different strength levels, in random locations, and can create a broad range of damages depending on the strike location. Due to the randomness of these events, all existing and future structures, and facilities in the Jefferson County planning area could potentially be impacted and remain vulnerable to possible injury and property loss from lightning strikes.

The direct and indirect losses associated with these events include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources. The entire population of Jefferson County is considered exposed to the lightning hazard. The peak lightning season in the State of Texas is from June to August; however, most fatalities occur in July. Fatalities occur most often when people are outdoors and/or participating in some form of recreation.

Section 6: Lightning

Populations located outdoors are considered at risk and more vulnerable to a lightning strike compared to populations inside a structure. Moving to a lower risk location will decrease a person's vulnerability.

The entire general building stock and all infrastructure of Jefferson County are considered exposed to the lightning hazard. Lightning can be responsible for damages to buildings, cause electrical, forest and/or wildfires, and damage infrastructure such as power transmission lines and communication towers. Agricultural losses can be extensive due to lightning and resulting fires.

The following critical facilities would be vulnerable to lightning events in each participating jurisdiction:

Table 6-2. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	2 Fire Stations, 2 Police Stations, 32 Schools, Port Authority Facility, 5 Water District Facilities, 3 Drainage District Facilities, 4 Hospitals
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	Fire Station, Police Station, 4 Schools
Nederland	Fire Station, Police Station, Water District Facility, 3 Hospitals, Airport, 8 Schools
Nome	Fire Station
Port Arthur	Fire Station, Police Station, Drainage District Facility, 2 Port Authority Facilities, 2 Hospitals, 14 Schools
Port Neches	Fire Station, Police Station, 5 Schools
SETRPC	SETRPC Facility

The impact of lightning experienced in the Jefferson County planning area has resulted in ten injuries and one fatality. While property damage and shutdown of critical facilities would be limited, the risk posed to residents provides a "Substantial" impact of lightning events experienced in the Jefferson County planning area, including the SETRPC and all participating jurisdictions, with multiple potential injuries and fatalities. Overall, the average loss estimate for Jefferson County, including the SETRPC and all participating jurisdictions, (in 2016 dollars) is $556,073 (Table 6-2), with an approximate annual loss estimate of $26,480 (Table 6-3).

Table 6-3. Potential Annualized Losses by Jurisdiction, 1996-2016[2]

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$50,533	$2,406
Beaumont	$424,497	$20,214
Bevil Oaks	$0	$0
China	$0	$0
Groves	$74,457	$3,546
Nederland	$0	$0
Nome	$0	$0
Port Arthur	$5,576	$266
Port Neches	$1,009	$48
SETRPC	$0	$0
Planning Area	**$556,073**	**$26,480**

Assessment of Impacts

Lightning events have the potential to pose a significant risk to people, and can create dangerous and difficult situations for public health and safety officials. Impacts to the planning area can include:

- Individuals exposed to the storm can be directly struck, posing significant health risks and potential death.
- Structures can be damaged or crushed by falling trees damaged by lightning, which can result in physical harm to the occupants.
- Lightning strikes can result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Lightning strikes can be associated with structure fires and wildfires, creating additional risk to residents and first responders.
- The Lower Neches Wildlife Management Area may see an elevated risk of wildfire during lightning events.
- Residents and visitors engaged in outdoor recreational activities along Sabine River and Sabine Lake may be at greater risk during lightning events.
- Emergency operations and services may be significantly impacted due to power outages and/or loss of communications.

[2] Values are in 2016 dollars.

- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Economic disruption due to power outages and fires negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by lightning events may be negatively impacted while utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.

The economic and financial impacts of lightning on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the county, communities, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any lightning event.

SECTION 7: HURRICANE

Hazard Description

According to the National Oceanic and Atmospheric Administration (NOAA), a hurricane is an intense tropical weather system of strong thunderstorms with well-defined surface circulation and maximum sustained winds of 74 miles per hour (mph) or higher. In the Northern Hemisphere, circulation of winds near the Earth's surface is counterclockwise.

Hurricanes often begin as tropical depressions that intensify into tropical storms when maximum sustained winds increase to between 35 – 64 knots (39 – 73 mph). At these wind speeds, the storm becomes more organized and circular in shape and begins to resemble a hurricane. Tropical storms resulting in high winds and heavy rainfall can be equally problematic without ever becoming a hurricane and can be dangerous to people and property, resulting in high winds and heavy rainfall, as Tropical Storm Frances did for southeast Texas in September 1998. Once sustained winds reach or exceed 74 mph, the storm becomes a hurricane. The intensity of a land falling hurricane is expressed in categories relating wind speeds to potential damage. Tropical storm-force winds are strong enough to be dangerous to those caught in them. For this reason, emergency managers plan to have evacuations completed and personnel sheltered before winds of tropical storm-force arrive, which precedes the arrival of hurricane-force winds.

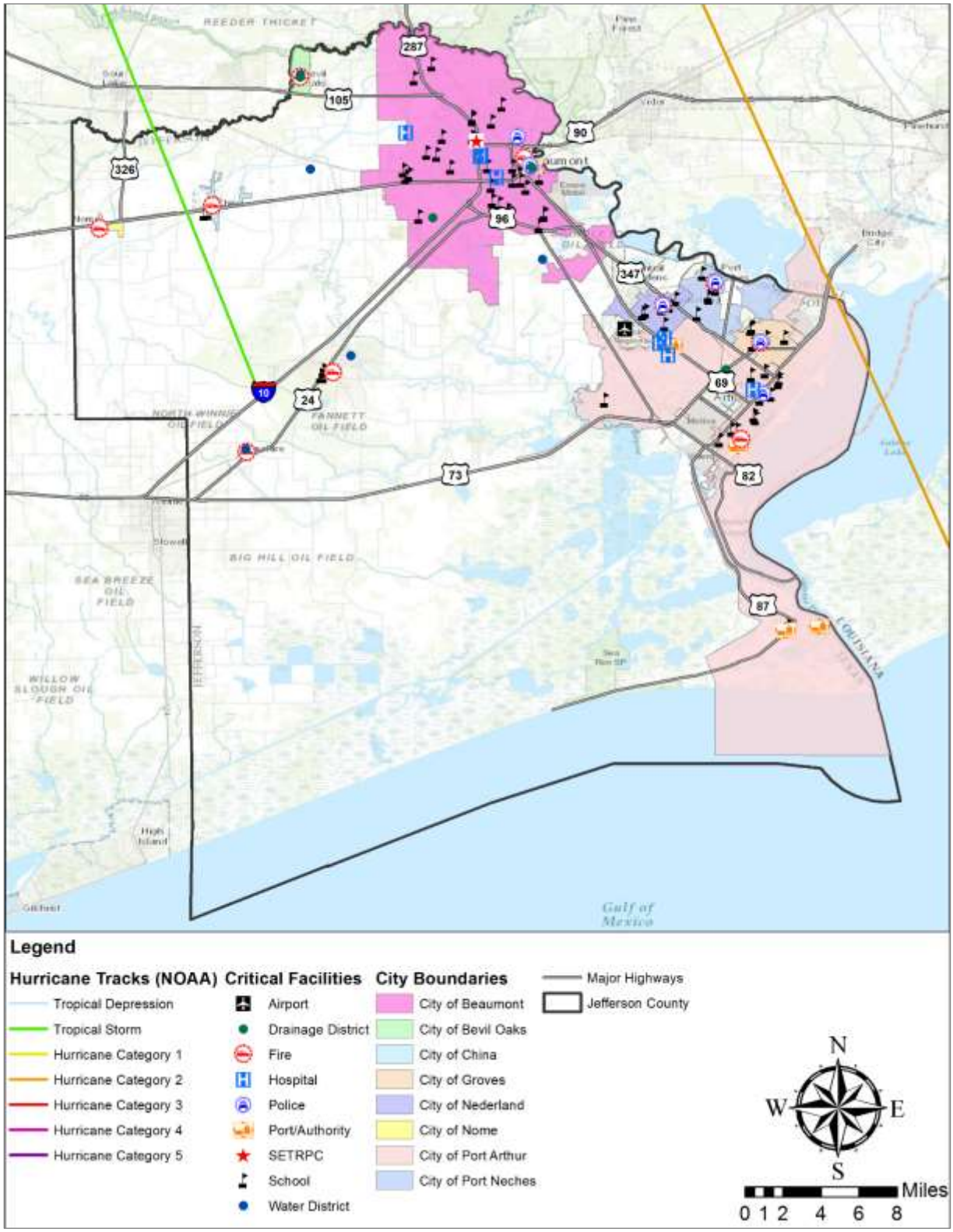
According to the National Hurricane Center (NHC), the greatest potential for loss of life related to a hurricane is from storm surge. This happens when low pressure and high circular winds "pile" the water into a dome shape that can be 50-100 miles wide. The surge travels with the storm and is most severe on the right side of the storm, relative to the direction the storm travels. The surge can be 15 feet deep, topped by waves, and make landfall ahead of the center, or "eye" of the hurricane. Wind-driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with normal high tides.

Texas has some of the highest coastal erosion rates in the country, eroding at an average rate of 4.1 feet per year, according to the Texas General Land Office. Coastal erosion is caused by large storms, flooding, sea level rise, and human activities that wear away the beaches and bluffs along the ocean. Erosion can have long-term economic and social consequences. Coastal erosion is fully profiled in Section 15 of the plan.

Location

As a coastal community, the Jefferson County planning area is vulnerable to threats directly and indirectly related to a hurricane event, such as high-force winds, storm surge, flooding, and coastal erosion (Section 15). Hurricanes and/or tropical storms can impact Jefferson County from June to November, the official Atlantic U.S. hurricane season. The Jefferson County planning area, including the SETRPC and all participating jurisdictions, is in a moderate to high risk area for hurricane wind speeds up to 155 mph as shown in Figure 7-1.

Figure 7-1. Location of Historic Hurricane Tracks



Extent

As a hurricane develops, the barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 mph, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 mph, the storm is deemed a hurricane.

Hurricanes are categorized according to the strength and intensity of their winds using the Saffir-Simpson Hurricane Scale (Table 7-1). A Category 1 storm has the lowest wind speeds, while a Category 5 hurricane has the highest. However, a lower category storm can inflict greater damage than higher category storms depending on where they strike, the amount of storm surge, other weather they interact with, and how slow they move.

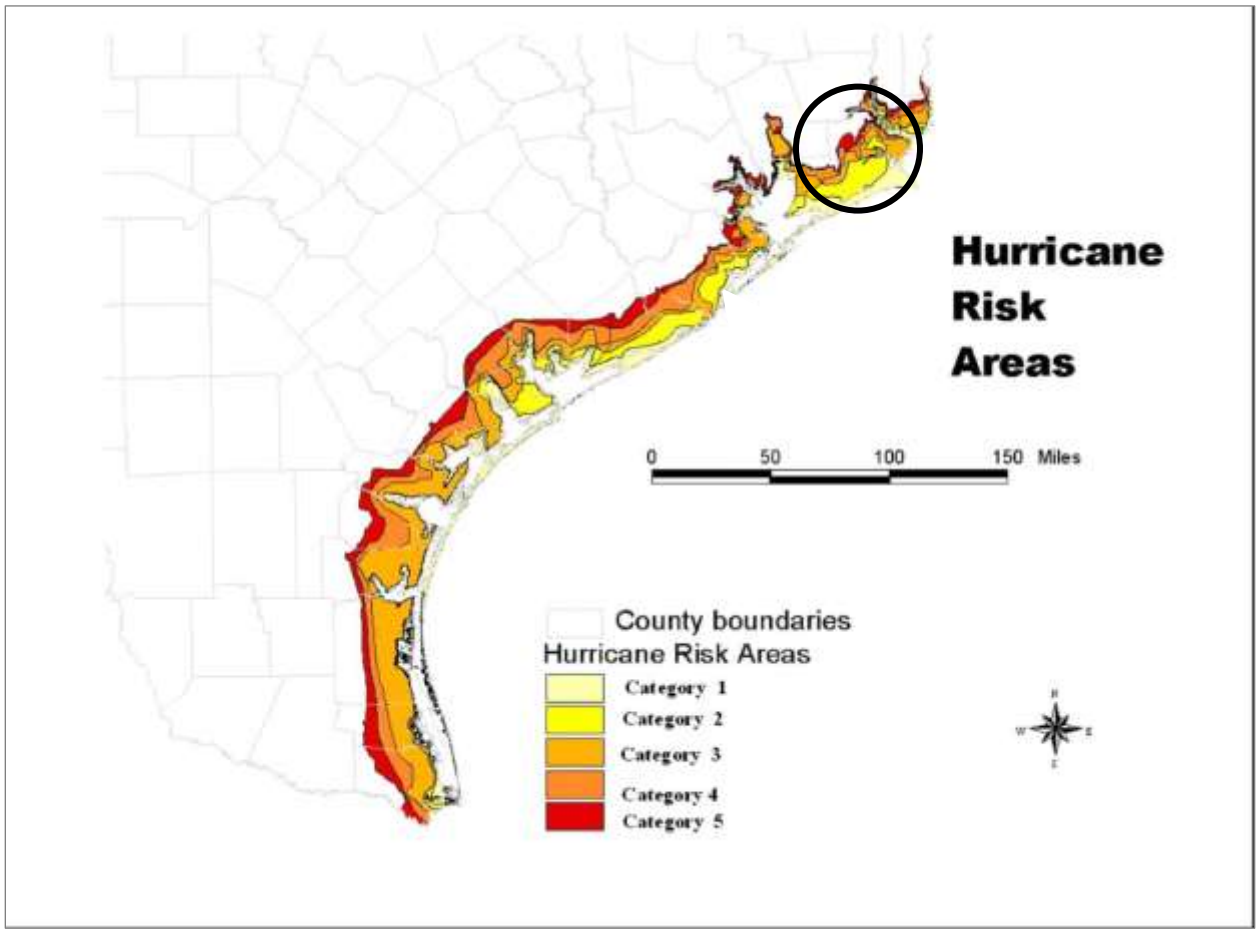
Table 7-1. Extent Scale for Hurricanes[1]

CATEGORY	MAXIMUM SUSTAINED WIND SPEED (Mph)	MINIMUM SURFACE PRESSURE (Millibars)	STORM SURGE (Feet)
1	74 – 95	Greater than 980	3 – 5
2	96 – 110	979 – 965	6 – 8
3	111 – 130	964 – 945	9 – 12
4	131 – 155	944 – 920	13 – 18
5	155 +	Less than 920	19+

Based on the historical storm tracks for hurricanes and tropical storms, as well as the location of Jefferson County, the average extent to be mitigated is a Category 4 storm. The Jefferson County planning area, including the SETRPC and all participating jurisdictions, has experienced wind speeds up to 155 mph, therefore a Category 4 should be mitigated in the event of a hurricane. Figure 7-2 displays the location of hurricane risk by storm category along the Gulf Coast.

[1] Source: National Hurricane Center

Figure 7-2. Location of Hurricane Risk along the Texas Coast



The planning area is located along the coast, and therefore all participating jurisdictions including the SETRPC have a greater risk, with all land and buildings being vulnerable to all storms, category 1 through 5.

Historical Occurrences

Previous occurrences include storms that had a direct path through the Jefferson County study area. Table 7-2 below lists the storms that have impacted the Jefferson County planning area during the years of 1996-2016.

Table 7-2. Historic Hurricane/Tropical Storm Events, 1996-2016[2]

YEAR	STORM NAME	CATEGORY	PROPERTY DAMAGE	CROP DAMAGE
1998	Charlie	Tropical Storm	$88,430	$0

[2] Only events resulting in injury, fatality, or damages are listed.

YEAR	STORM NAME	CATEGORY	PROPERTY DAMAGE	CROP DAMAGE
1998	Earl	Category 2	$14,738	$0
1998	Frances	Tropical Storm	$7,369,202	$0
2001	Allison	Tropical Storm	$0	$0
2005	Rita	Category 3	$1,537,608,808	$0
2007	Humberto	Category 1	$28,966,153	$0
2008	Edouard	Tropical Storm	$278,951	$0
2008	Ike	Category 2	$669,482,544	$0
TOTALS			**$2,243,808,826**	**$0**

Based on the list of historical hurricane events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, none of the events occurred after the 2011 Plan.

Significant Past Events

Tropical Storm Frances, September 9-11, 1998 – Jefferson County

Tropical Storm Frances was the third tropical system to impact southeast Texas in 3 weeks, and caused the worst damage. Wind gusts in excess of 50 mph occurred along the coast on September 11th, but most of the damage occurred from the high tides. At Sabine Pass, the tide reading reached 5.3 ft. Mean Sea Level (MSL), which was one of the highest tides in the last 30 years. On top of the high tides, heavy rain lasting several days dropped 8 to 10 inches of rain across the region. At Sea Rim State Park, water got to the top of the dunes, which is 8 to 9 feet higher than normal.

Jefferson County incurred millions of dollars in storm damages, primarily a result of road damages. Highway 87 between Sabine Pass and Port Arthur received major damage. Sabine Pass was totally isolated from road traffic for three days due to high water. Nearly every home and business in Sabine Pass had salt water flooding (over 70 places).

Hurricane Rita, September 18-26, 2005 – Jefferson County

Hurricane Rita made landfall just east of the Texas – Louisiana border. The hurricane moved northwest and across southeast Texas in the morning hours of September 24th as a dangerous Category 3 hurricane with sustained winds of 120 mph. Along the Jefferson County coast, storm surges near 10 feet occurred near Sabine Pass, where over 90 percent of the homes were severely damaged or destroyed. The storm surge backed up the Sabine River, and flooded a small section of neighboring Orange with around 4 to 5 feet of storm surge. Winds blew over 100 mph across the entire region, snapping and uprooting trees, and damaged over 125,000 homes and businesses. Some homes in neighboring Jasper and Newton counties did not have electricity restored for over six weeks. Six fatalities were indirectly attributed to the storm in the City of Beaumont where a family died of carbon monoxide poisoning after running a generator inside their apartment.

Probability of Future Events

Based on historical occurrences of significant hurricane events, the probability of future events is highly likely, with a hurricane event probable in the next year for the Jefferson County planning area, including the SETRPC and all participating jurisdictions.

Vulnerability and Impact

Hurricanes and Tropical storms can cause major damage to large areas; hence all existing buildings, facilities and populations are equally exposed and vulnerable to this hazard and could potentially be impacted. The Jefferson County planning area features multiple mobile or manufactured home parks throughout the planning area and all participating jurisdictions. These parks are typically more vulnerable to hurricane events than typical site built structures. In addition, manufactured homes are located sporadically throughout the planning area, including all jurisdictions. These homes would also be more vulnerable. The U.S. Census data indicates a total of 3,138 manufactured homes located in the Jefferson County planning area, including all participating jurisdictions (Table 7-3). In addition, 65.4% (approximately 69,478 structures) of the single family residential (SFR) structures in the Jefferson County planning area were built before 1980.[3] These structures would typically be built to lower or less stringent construction standards than newer construction, and may be more susceptible to damages during significant events.

Table 7-3. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Beaumont	718	33,386
Bevil Oaks	27	361
China	87	249
Groves	69	5,388
Nederland	219	5,473
Nome	45	107
Port Arthur	234	16,809
Port Neches	82	3,887
SETRPC	0	0
Jefferson County[4]	**3,138**	**69,478**

[3] Source: U.S. Census Bureau data estimates for 2014.

[4] County totals include all participating jurisdictions and unincorporated areas.

The following critical facilities would be vulnerable to hurricane events in each participating jurisdiction, respectively.

Table 7-4. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	2 Fire Stations, 2 Police Stations, 32 Schools, Port Authority Facility, 5 Water District Facilities, 3 Drainage District Facilities, 4 Hospitals
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	Fire Station, Police Station, 4 Schools
Nederland	Fire Station, Police Station, Water District Facility, 3 Hospitals, Airport, 8 Schools
Nome	Fire Station
Port Arthur	Fire Station, Police Station, Drainage District Facility, 2 Port Authority Facilities, 2 Hospitals, 14 Schools
Port Neches	Fire Station, Police Station, 5 Schools
SETRPC	SETRPC Facility

Table 7-5 shows impact or loss estimation for storms impacting the county. Damages are reported on a countywide basis and are not available for each participating jurisdiction. Annual loss estimates were based on the 21 year reporting period for such damages (Table 7-2). The average annual loss estimate for Jefferson County, which includes the SETRPC and all participating jurisdictions, is approximately $106.85 million.

Table 7-5. Summary of Hurricane Events and Potential Annualized Losses, 1996-2016[5]

JURISDICTION	NUMBER OF EVENTS	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	11	$2,243,808,827	$106,848,039

The potential severity of impact from a hurricane for the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is classified as substantial; meaning multiple deaths, complete shutdown of critical facilities and services for 30 days or more, and more than 50 percent of property would be destroyed or have major damage.

[5] Values are in 2016 dollars.

Assessment of Impacts

Hurricane events have the potential to pose a significant risk to people, and can create dangerous and difficult situations for public health and safety officials. Impacts to the planning area can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees, causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Coastal communities may suffer substantial damage, requiring immediate shelter and long term displacement assistance.
- Driving conditions in all jurisdictions may be dangerous during a hurricane event, especially over elevated bridges, heightening the risk of injury and accidents during evacuations if not timed properly.
- Additional resources may be required for emergency preparedness and response during the summer months due to increases in populations along the coast.
- Emergency evacuations may be necessary prior to a hurricane landfall, requiring emergency responders, evacuation routing, and temporary shelters.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- During hurricane landfall, first responders may be prevented from responding to calls, as the winds may reach a speed in which their vehicles and equipment are unsafe to operate.
- Hurricane events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Extreme hurricane events may rupture gas lines and down trees and power lines, increasing the risk of structure fires during and after a storm event.
- Extreme hurricane events may lead to prolonged evacuations during search and rescue, in addition to immediate recovery efforts requiring additional emergency personnel and resources to prevent entry and protect citizens and property.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Private sector entities that the city and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.

- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by the hurricane may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to hurricane damage.
- Large scale hurricanes can have significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.

The economic and financial impacts of a hurricane on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the county, communities, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any hurricane event.

SECTION 8: EXTREME HEAT

Hazard Description

Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period. Extreme heat during the summer months is a common occurrence throughout the State of Texas, and Jefferson County is no exception. Severe, excessive summer heat is characterized by a combination of exceptionally high temperatures and humidity. When these conditions persist over a period of time, it is defined as a heat wave. Jefferson County and all participating jurisdictions typically experience extended heat waves.

Although heat can damage buildings and facilities, it presents a more significant threat to the safety and welfare of citizens. The major human risks associated with severe summer heat include: heat cramps; sunburn; dehydration; fatigue; heat exhaustion; and even heat stroke. The most vulnerable populations to heat casualties are children and the elderly or infirmed, who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being.

Location

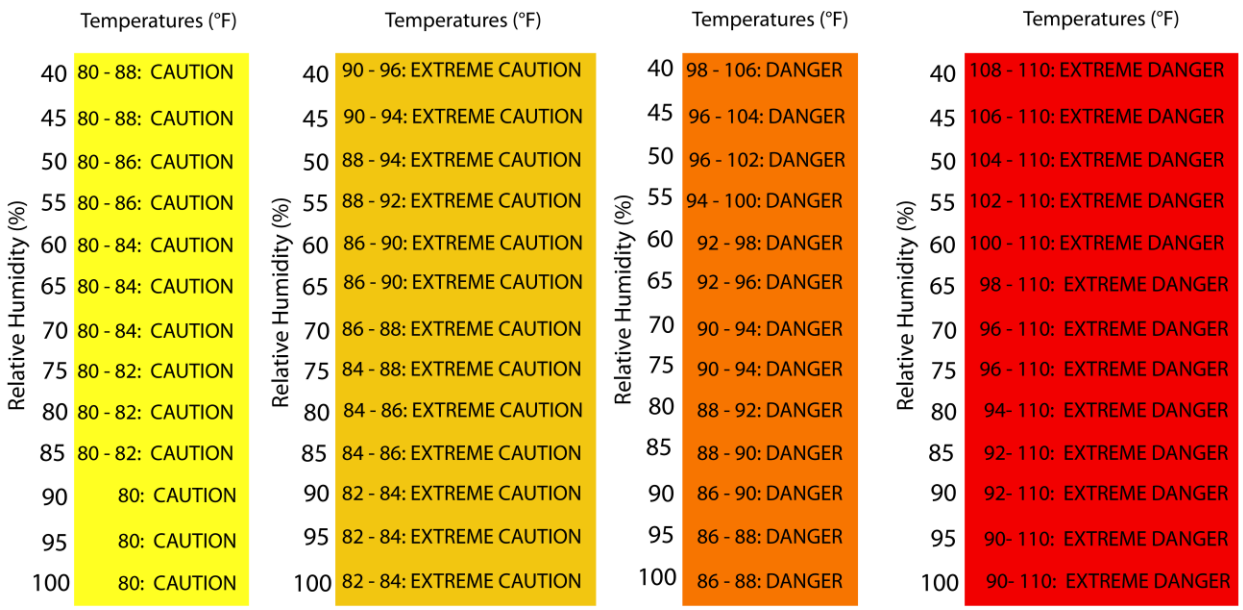
Two heat related deaths have been reported in the Jefferson County area, including one in 2008 and one in 2011[1]. In addition, there have been heat related deaths reported in neighboring counties, including Liberty and Chambers County. There is no specific geographic scope to the extreme heat hazard. Extreme heat could occur anywhere within the Jefferson County planning area including the SETRPC and all participating jurisdictions.

[1] Sources: Texas Department of State Health Services (2008) and Beaumont Enterprise (2011)

Extent

The magnitude or intensity of an extreme heat event is measured according to temperature in relation to the percentage of humidity. According to the National Oceanic Atmospheric Administration (NOAA), this relationship is referred to as the "Heat Index," and is depicted in Figure 8-1. This index measures how hot it feels outside when humidity is combined with high temperatures.

Figure 8-1. Extent Scale for Extreme Summer Heat[2]



The Extent Scale in Figure 8-1 displays varying categories of caution depending on the relative humidity combined with the temperature. For example, when the temperature is at 90 degrees Fahrenheit (ºF) or lower, caution should be exercised if the humidity level is at or above 40 percent.

The shaded zones on the chart indicate varying symptoms or disorders that could occur depending on the magnitude or intensity of the event. "Caution" is the first category of intensity and it indicates when fatigue due to heat exposure is possible. "Extreme Caution" indicates that sunstroke, muscle cramps, or heat exhaustion are possible, and a "Danger" level means that these symptoms are likely. "Extreme Danger" indicates that heat stroke is likely. The National Weather Service (NWS) initiates alerts based on the Heat Index as shown in Table 8-1.

[2] Source: NOAA

Table 8-1. Heat Index & Warnings

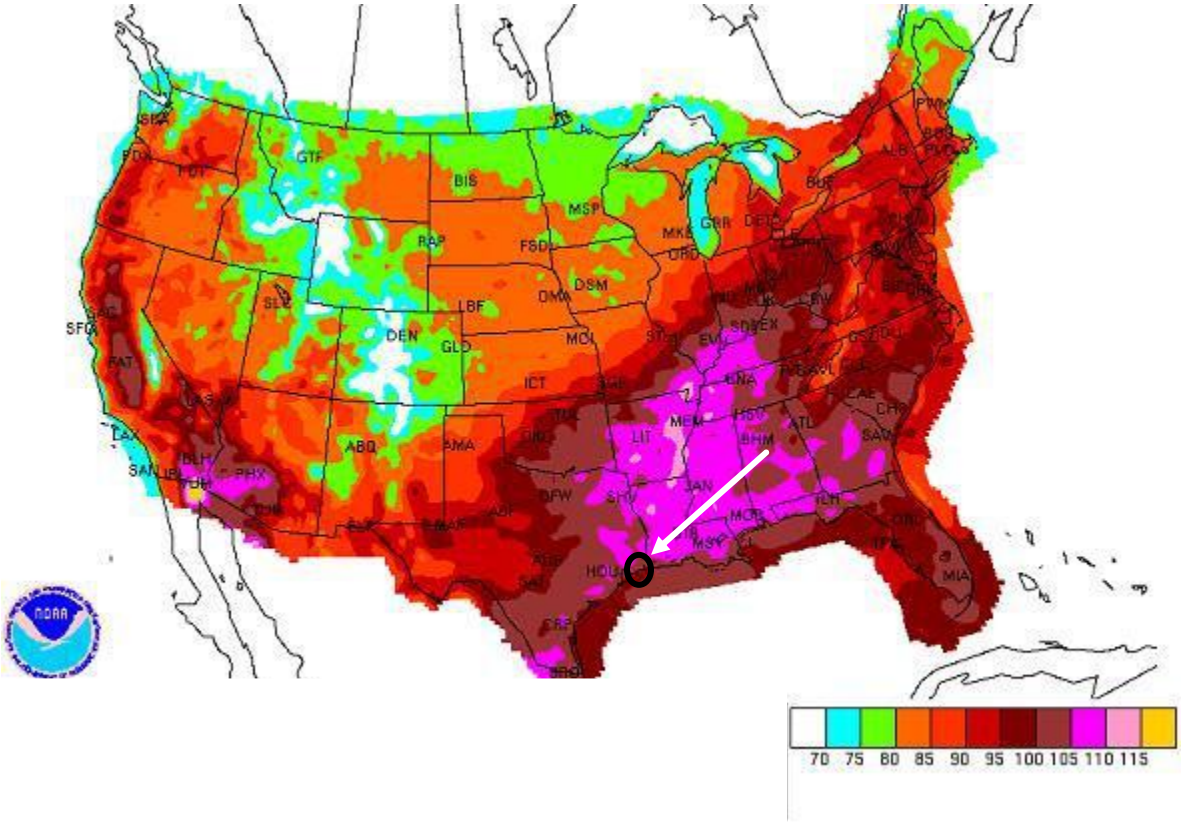
CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
Extreme Danger	125°F and higher	Heat stroke or sun stroke likely.	A heat advisory will be issued to warn that the Heat Index may exceed 105°F.
Danger	103 – 124°F	Sunstroke, muscle cramps, and/or heat exhaustion are likely. Heatstroke possible with prolonged exposure and/or physical activity.	
Extreme Caution	90 – 103°F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.	An Excessive Heat Warning is issued if the Heat Index rises above 105°F at least 3 hours during the day or above 80°F at night.
Caution	80 – 90°F	Fatigue is possible with prolonged exposure and/or physical activity.	

Jefferson County's terrain is relatively level terrain, with limited elevation variations located in Southeast Texas. The county features saltwater marshes along the southern border of the county adjacent to the Gulf of Mexico, the northern portion of the county is heavily forested with Southern Yellow Pine, and the area along the middle of the county is primarily coastal prairie.

Due to its geography, and its warm, sunny, and humid subtropical climate, the Jefferson County planning area can expect an extreme heat event each summer. Citizens, especially children and the elderly, should exercise caution by staying out of the heat for prolonged periods when a heat advisory or excessive heat warning is issued. Also at risk are those working or remaining outdoors.

Figure 8-2 displays the daily maximum heat index as derived from NOAA and based on data compiled from 1838 to 2015. The black circle shows the Jefferson County area. The brown and pink colors indicate a daily maximum heat index of 100-110° F. The Jefferson County planning area, including the SETRPC and all participating jurisdictions, could experience extreme heat from 90°F to 110°F and should mitigate to the extent of "danger", which can include sunstroke, muscle cramps, heat exhaustion, and potential heatstroke with prolonged exposure.

Figure 8-2. Average Daily Maximum Heat Index Days[3]



Historical Occurrences

Every summer, the hazard of heat related illness becomes a significant public health issue throughout much of the United States. Mortality from all causes increases during heat waves, and excessive heat is an important contributing factor to deaths from other causes, particularly among the elderly. Preliminary data suggest that by August 21, 2009, record high summer temperatures in Texas resulted in more than 120 heat related deaths statewide. Table 8-2 depicts historical occurrences of mortality from heat from 1994 to 2004, sourced from the Texas Department of State Health Services, and 2005 to 2016, sourced from the NCEI database.

Table 8-2. Extreme Heat Related Deaths in Texas

YEAR	DEATHS
1994	1
1995	12
1996	10

[3] Source: NCEI; the black circle indicates the Jefferson County planning area.

YEAR	DEATHS
1997	2
1998	66
1999	22
2000	71
2001	20
2002	1
2003	0
2004	3
2005	49
2006	2
2007	2
2008	7
2009	6
2010	4
2011	20
2012	2
2013	1
2014	0
2015	5
2016	1

Because the Texas Department of State Health Services reports on total events statewide, previous occurrences for extreme heat are derived from the NCEI database. According to heat related incidents located solely within Jefferson County, there is two heat waves[4] on record for Jefferson County (Table 8-3). Historical extreme heat information, as provided by the NCEI, shows extreme heat activity across a multi-county forecast area for each event. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by each event. All participating jurisdictions including the SETRPC are reported under Jefferson County events. Only

[4] Even though Jefferson County experiences heat waves each summer, NCEI data only records events reported. Based on reports, only two events are on record.

extreme heat events that have been reported have been factored into this Risk Assessment. It is likely additional extreme heat occurrences have gone unreported before and during the recording period.

Table 8-3. Historical Extreme Heat Events, 1996-2016

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	8/29/2000	0	0	$0	$0
Jefferson County	9/1/2000	0	0	$0	$0
TOTALS		**0**	**0**	**$0**	**$0**

Based on the list of historical extreme heat events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, none of the events occurred after the 2011 Plan.

Probability of Future Events

According to historical records, the Jefferson County planning area has experienced 2 events in a 21 year reporting period. This provides a frequency of occurrence of 1 event every five years. This frequency supports an occasional probability of future events for the entire planning area including the SETRPC and all participating jurisdictions.

Vulnerability and Impact

There is no defined geographic boundary for extreme heat events. While all of Jefferson County is exposed to extreme temperatures, existing buildings, infrastructure, and critical facilities are not likely to sustain significant damage from extreme heat events. Therefore, any estimated property losses associated with the extreme heat hazard are anticipated to be minimal across the area.

However, extreme temperatures do present a significant threat to life and safety for the population of the county as a whole. For example, heat casualties are typically caused by a lack of adequate air-conditioning or heat exhaustion. The most vulnerable populations to heat casualties are the elderly or infirmed, who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being.

Populations over 65 in the Jefferson County planning area are estimated at 13% of the total population and children under the age of 5 exceed 6% or an estimated total of 50,074[5] potentially vulnerable residents in the planning area based on age (Table 8-4).

[5] US Census Bureau 2014 data for Jefferson County

Table 8-4. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5
Beaumont	15,539	8,087
Bevil Oaks	290	42
China	183	25
Groves	2,685	971
Nederland	2,371	976
Nome	56	11
Port Arthur	6,344	5,073
Port Neches	1,939	904
Jefferson County[6]	**32,774**	**17,300**

Another segment of the population at risk are those whose jobs consist of strenuous labor outdoors. Livestock and crops can become stressed, decreasing in quality or in production, during times of extreme heat. Extreme high temperatures can have significant secondary impacts, leading to droughts, water shortages, increased fire danger, and prompt excessive demands for energy. The possibility of rolling blackouts increases with unseasonably high temperatures in what is a normally mild month with low power demands.

Typically more than 12 hours of warning time would be given before the onset of an extreme heat event. Only minor property damage would result. The potential impact of excessive summer heat is considered "Minor" as injuries and/or illnesses do not result in permanent disability.

In terms of vulnerability to structures, the impact from extreme heat would be negligible. It is possible that critical facilities and infrastructure could be shut down for 24 hours if cooling units are running constantly, leading to a temporary power outage. Less than ten percent of residential and commercial property could be damaged if extreme heat events lead to structure fires.

The potential impact of extreme heat for the Jefferson County planning area, including the SETRPC and all participating jurisdictions, can be considered "Minor", resulting in few injuries and minimal disruption to the quality of life. Based on historical records over a 21 year period, annualized losses for the entire Jefferson County planning area are negligible.

[6] County totals include all participating jurisdictions and unincorporated areas.

Assessment of Impacts

The greatest risk from extreme heat is to public health and safety. Potential impacts to the community may include:

- Vulnerable populations, particularly the elderly and infants, can face serious or life-threatening health problems from exposure to extreme heat including hyperthermia; heat cramps; heat exhaustion; and heat stroke (or sunstroke).
- Response personnel including utility workers, public works personnel, and any other professions where individuals are required to work outside, are more subject to extreme heat related illnesses since their exposure would typically be greater.
- High energy demand periods can outpace the supply of energy, potentially creating the need for rolling brownouts which would elevate the risk of illness to vulnerable residents.
- Highways and roads may be damaged by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle.
- Vehicle engines and cooling systems typically run harder during extreme heat events, resulting in increases in mechanical failures.
- Extreme heat events during times of drought can exacerbate the environmental impacts associated with drought, decreasing water and air quality, and further degrading wildlife habitat.
- Extreme heat increases ground-level ozone (smog), increasing the risk of respiratory illnesses.
- Tourism and recreational activities predominant in the Sabine Lake area and Sea Rim State Park may be negatively impacted during extreme heat events, reducing seasonal revenue.
- Food suppliers can anticipate an increase in food costs due to increases in production costs and crop and livestock losses.
- Fisheries may be negatively impacted by extreme heat, suffering damage to fish habitats (either natural or man-made), and a loss of fish and/or other aquatic organisms due to decreased water flows or availability.
- Negatively impacted water suppliers may face increased costs resulting from the transport water or develop supplemental water resources.
- Outdoor activities may see an increase in injury or illness during extreme heat events.

The economic and financial impacts of extreme heat on the community will depend on the duration of the event, demand for energy, drought associated with extreme heat, and many other factors. The level of preparedness and the amount of planning done by the jurisdiction, local businesses, and citizens will impact the overall economic and financial conditions before, during, and after an extreme heat event.

SECTION 9: HAIL

Hazard Description

Hailstorm events are a potentially damaging outgrowth of severe thunderstorms. During the developmental stages of a hailstorm, ice crystals form within a low pressure front due to the rapid rising of warm air into the upper atmosphere, and the subsequent cooling of the air mass. Frozen droplets gradually accumulate into ice crystals until they fall as round or irregularly shaped masses of ice typically greater than 0.75 inches in diameter. The size of hailstones is a direct result of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a by-product of heating on the Earth's surface. Higher temperature gradients above Earth's surface result in increased suspension time and hailstone size.

Location

Hailstorms are an extension of severe thunderstorms that could potentially cause severe damage. As a result, they are not confined to any specific geographic location, and can vary greatly in size, location, intensity, and duration. Therefore, the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is equally at risk to the hazard of hail.

Extent

The National Weather Service (NWS) classifies a storm as "severe" if there is hail 0.75 inches in diameter (approximately the size of a penny) or greater, based on radar intensity or as seen by observers. The intensity category of a hailstorm depends on hail size and the potential damage it could cause, as depicted in the National Center for Environmental Information (NCEI) Intensity Scale in Table 9-1.

Table 9-1. Hail Intensity and Magnitude[1]

SIZE CODE	INTENSITY CATEGORY	SIZE (Diameter Inches)	DESCRIPTIVE TERM	TYPICAL DAMAGE
H0	Hard Hail	Up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33 – 0.60	Marble	Slight damage to plants and crops
H2	Potentially Damaging	0.60 – 0.80	Dime	Significant damage to plants and crops
H3	Severe	0.80 – 1.20	Nickel	Severe damage to plants and crops
H4	Severe	1.2 – 1.6	Quarter	Widespread glass and auto damage
H5	Destructive	1.6 – 2.0	Half Dollar	Widespread destruction of glass, roofs, and risk of injuries
H6	Destructive	2.0 – 2.4	Ping Pong Ball	Aircraft bodywork dented and brick walls pitted
H7	Very Destructive	2.4 – 3.0	Golf Ball	Severe roof damage and risk of serious injuries
H8	Very Destructive	3.0 – 3.5	Hen Egg	Severe damage to all structures
H9	Super Hailstorms	3.5 – 4.0	Tennis Ball	Extensive structural damage, could cause fatal injuries
H10	Super Hailstorms	4.0 +	Baseball	Extensive structural damage, could cause fatal injuries

The intensity scale in Table 9-1 ranges from H0 to H10, with increments of intensity or damage potential in relation to hail size (distribution and maximum), texture, fall speed, speed of storm translation, and strength of the accompanying wind. Based on available data regarding the previous occurrences for the area, the Jefferson County planning area, including the SETRPC and all participating jurisdictions, may experience hailstorms ranging from an H0 to an H7. Jefferson County can mitigate a storm from low risk (hard hail) to a serious hailstorm with golf ball sized hail that leads to severe roof damage and could cause serious injuries.

Historical Occurrences

Historical evidence shown in Figure 9-1 demonstrates that the planning area is vulnerable to hail events overall, which typically result from severe thunderstorm activity. Only those events for Jefferson County, including the SETRPC and all participating jurisdictions, with latitude and longitude available were plotted (Figure 9-1). Historical events with reported damages, injuries, or fatalities are shown in Table 9-2. A total of 58 reported historical hail events impacted Jefferson County between 1996 and August 2016 (Table 9-3). These events were reported to NCEI and NOAA databases, and may not represent all hail events to have occurred during the past 21 years. It is important to note that the SETRPC is located within the City

[1] Source: NCEI Intensity Scale, based on the TORRO Hailstorm Intensity Scale.

of Beaumont. There may be some occurrences that have occurred for the SETRPC and may not have been recorded, but are included in the City of Beaumont occurrence data because of their location. Only hail events that have been reported have been factored into this Risk Assessment. It is likely that additional hail occurrences have gone unreported before and during the recording period.

Figure 9-1. Spatial Historical Hail Events, 1996–2016

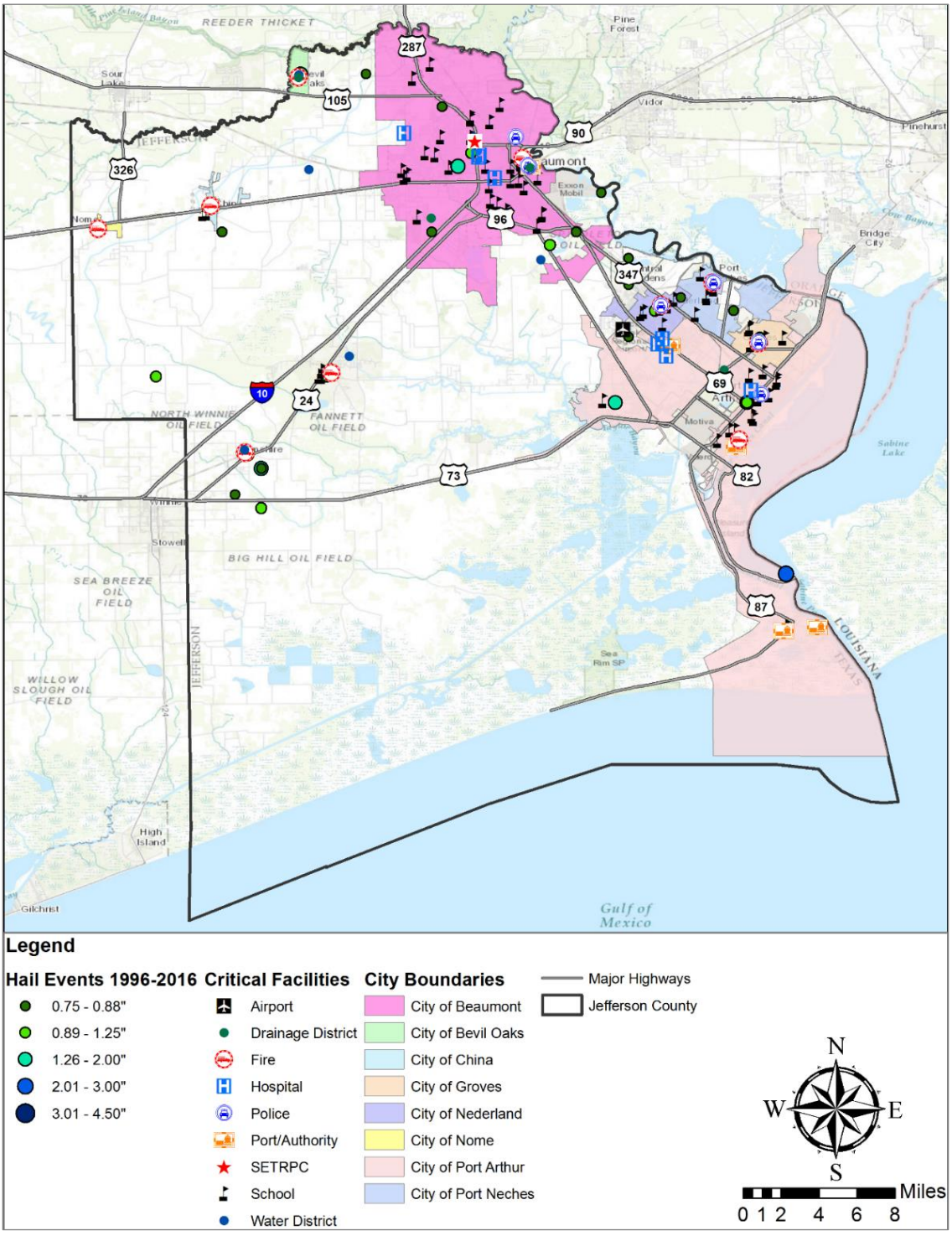


Table 9-2. Historical Hail Events, 1996-2016[2]

JURISDICTION	Date	MAGNITUDE	INJURIES	FATALITIES	PROPERTY DAMAGE	CROP DAMAGE
Beaumont	4/12/1996	1.75	0	0	$0	$0
Beaumont	9/9/1997	0.75	0	0	$0	$0
Jefferson County	1/21/1998	0.75	0	0	$0	$0
Jefferson County	1/21/1998	1	0	0	$0	$0
Port Arthur	1/21/1998	0.75	0	0	$0	$0
Port Neches	3/7/1998	0.75	0	0	$0	$0
Nederland	7/17/1998	0.88	0	0	$0	$0
Port Arthur	5/11/1999	1.75	0	0	$0	$0
Jefferson County	8/3/1999	0.75	0	0	$0	$0
Beaumont	8/31/1999	0.75	0	0	$0	$0
Jefferson County	4/2/2000	1.75	0	0	$0	$0
Beaumont	4/2/2000	0.75	0	0	$0	$0
Port Arthur	4/2/2000	1.75	0	0	$0	$0
Jefferson County	4/3/2000	0.88	0	0	$0	$0
Bevil Oaks	9/1/2000	1.75	0	0	$0	$0
Jefferson County	9/2/2000	0.75	0	0	$0	$0
Nederland	7/1/2001	0.75	0	0	$0	$0
Nederland	3/13/2003	0.75	0	0	$0	$0
Jefferson County	4/7/2003	0.75	0	0	$0	$0
Port Arthur	4/7/2003	2.75	0	0	$0	$0
Port Arthur	4/8/2003	0.88	0	0	$0	$0
Beaumont	4/20/2003	1.5	0	0	$0	$0
China	4/20/2003	0.75	0	0	$0	$0
Port Arthur	8/21/2003	0.88	0	0	$0	$0
Port Arthur	4/30/2004	1	0	0	$0	$0

[2] Damages reported in 2016 dollars.

Section 9: Hail

JURISDICTION	Date	MAGNITUDE	INJURIES	FATALITIES	PROPERTY DAMAGE	CROP DAMAGE
Groves	5/13/2004	0.75	0	0	$0	$0
Nederland	5/13/2004	0.88	0	0	$0	$0
Port Arthur	5/13/2004	0.75	0	0	$0	$0
Beaumont	9/18/2004	0.75	0	0	$0	$0
Beaumont	6/15/2005	0.75	0	0	$0	$0
Bevil Oaks	7/11/2005	0.88	0	0	$0	$0
Beaumont	12/4/2005	0.75	0	0	$0	$0
Groves	6/14/2007	0.75	0	0	$0	$0
Jefferson County	12/20/2007	0.75	0	0	$0	$0
Jefferson County	2/12/2008	0.75	0	0	$0	$0
Groves	5/22/2008	0.88	0	0	$0	$0
Beaumont	3/25/2009	0.75	0	0	$0	$0
Bevil Oaks	3/27/2009	0.88	0	0	$0	$0
Bevil Oaks	3/27/2009	1.5	0	0	$0	$0
Beaumont	2/26/2010	0.75	0	0	$0	$0
Jefferson County	3/29/2011	0.75	0	0	$0	$0
Jefferson County	6/6/2011	0.75	0	0	$0	$0
Beaumont	6/6/2011	1	0	0	$0	$0
Groves	6/6/2011	0.75	0	0	$0	$0
Port Arthur	6/6/2011	0.75	0	0	$0	$0
Port Arthur	6/6/2011	0.75	0	0	$0	$0
Port Arthur	9/29/2011	1	0	0	$0	$0
Groves	4/2/2012	0.75	0	0	$0	$0
Beaumont	6/8/2012	1	0	0	$0	$0
China	5/10/2013	0.75	0	0	$0	$0
Jefferson County	5/22/2013	1	0	0	$0	$0
Bevil Oaks	7/12/2013	0.88	0	0	$0	$0
Beaumont	7/3/2014	0.88	0	0	$0	$0

JURISDICTION	Date	MAGNITUDE	INJURIES	FATALITIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	4/19/2015	1	0	0	$0	$0
Jefferson County	4/27/2015	1	0	0	$0	$0
Beaumont	4/27/2015	1	0	0	$0	$0
Port Arthur	4/27/2015	1.75	0	0	$0	$0
Port Arthur	1/8/2016	1.25	0	0	$0	$0

Table 9-3. Historical Hail Events Summary, 1996-2016[3]

JURISDICTION	Number of Events	MAGNITUDE	INJURIES	FATALITIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	20	2.75 inches	0	0	$0	$0
Beaumont	10	1.75 inches	0	0	$0	$0
Bevil Oaks	5	1.75 inches	0	0	$0	$0
China	2	0.75 inches	0	0	$0	$0
Groves	5	0.88 inches	0	0	$0	$0
Nederland	4	0.88 inches	0	0	$0	$0
Nome	0	N/A	0	0	$0	$0
Port Arthur	11	1.75 inches	0	0	$0	$0
Port Neches	1	0.75 inches	0	0	$0	$0
SETRPC	0	N/A	0	0	$0	$0
TOTAL LOSSES	**52**	**(Max Extent)**	**0**	**0**	**$0**	

Based on the list of historical hail events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, 18 events have occurred since the 2011 Plan.

Significant Past Events

May 11, 1999 – Port Arthur

On May 11, 1999 a hail storm brought half dollar size hail to the City of Port Arthur. Hail of sizes up to 1.75 inches damaged several cars in the area.

March 25-27, 2009 – Jefferson County/Bevil Oaks

A 3-day series of severe weather across southeast Texas began when a squall line of severe thunderstorms developed across central Texas during the evening hours on March 25,2009 and moved rapidly eastward

[3] Values are in 2016 dollars.

across Southeast Texas. A few reports of wind damage and large hail were received. An industrial plant along the Neches River ESE of Beaumont reported penny size hail. A Beaumont TV station reported nickel size hail in Bevil Oaks.

Probability of Future Events

Based on available records of historic events, 58 events in a 21 year reporting period for the Jefferson County planning area provides a frequency of occurrence of 2 to 3 events every year. This frequency supports a "highly likely" probability of future events for the entire planning area including the SETRPC and all participating jurisdictions. The numbers listed for the jurisdictions within the County are historical events that are known to have specifically impacted those jurisdictions.

Vulnerability and Impact

Damage from hail approaches $1 billion in the U.S. each year. Much of the damage inflicted by hail impacts crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also most commonly damaged by hail.

Utility systems on roofs at school districts and critical facilities would be vulnerable and could be damaged. Hail could cause a significant threat to people as they could be struck by hail and falling trees and branches. Outdoor activities and events may elevate the risk to residents and visitors in the planning area when a hailstorm strikes with little warning. Older structures not built to current codes may be more vulnerable to damages than newer structures.

The Jefferson County planning area features multiple mobile or manufactured home parks throughout the planning area and all participating jurisdictions. These parks are typically more vulnerable to hail events than typical site built structures. In addition, manufactured homes are located sporadically throughout the planning area, including all jurisdictions. These homes would also be more vulnerable. The U.S. Census data indicates a total of 3,138 manufactured homes located in the Jefferson County planning area, including all participating jurisdictions (Table 9-4). In addition, 65.4% (approximately 69,478 structures) of the single family residential (SFR) structures in the Jefferson County planning area were built before 1980.[4] These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant hail events.

Table 9-4. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Beaumont	718	33,386
Bevil Oaks	27	361
China	87	249

[4] Source: U.S. Census Bureau data estimates for 2014.

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Groves	69	5,388
Nederland	219	5,473
Nome	45	107
Port Arthur	234	16,809
Port Neches	82	3,887
SETPRC	0	0
Jefferson County[5]	**3,138**	**69,478**

The following critical facilities would be vulnerable to hail events in each participating jurisdiction:

Table 9-5. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	2 Fire Stations, 2 Police Stations, 32 Schools, Port Authority Facility, 5 Water District Facilities, 3 Drainage District Facilities, 4 Hospitals
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	Fire Station, Police Station, 4 Schools
Nederland	Fire Station, Police Station, Water District Facility, 3 Hospitals, Airport, 8 Schools
Nome	Fire Station
Port Arthur	Fire Station, Police Station, Drainage District Facility, 2 Port Authority Facilities, 2 Hospitals, 14 Schools
Port Neches	Fire Station, Police Station, 5 Schools
SETRPC	SETRPC Facility

First responders could not be able to respond to calls due to blocked roads. Also, hail could cause power outages which could cause health and safety risks to more vulnerable populations in the planning area.

Hail has been known to cause injury to humans, and occasionally has been fatal. There are no reported damages to crops or property in the planning area, including the SETRPC and all participating jurisdictions. Based on historic loss and damages, the impact of hail damages on the Jefferson County planning area,

[5] County totals includes all participating jurisdictions and unincorporated areas.

including the SETRPC and all participating jurisdictions, can be considered "Limited". This severity of impact indicates minor injuries that are treatable with first aid, Jefferson County area facilities shut down for 24 hours or less, and less than 10% of property destroyed or with major damage.

Table 9-4. Potential Annualized Losses by Jurisdiction, 1996-2016

JURISDICTION	PROPERTY & CROP DAMAGE	ANNUAL LOSS ESTIMATE
Jefferson County	$0	$0
Beaumont	$0	$0
Bevil Oaks	$0	$0
China	$0	$0
Groves	$0	$0
Nederland	$0	$0
Nome	$0	$0
Port Arthur	$0	$0
Port Neches	$0	$0
SETRPC	$0	$0
Planning Area	**$0**	**$0**

Assessment of Impacts

Hail events have the potential to pose a significant risk to people and can create dangerous situations. Impacts to the planning area can include:

- Hail may create hazardous road conditions during and immediately following an event, delaying first responders from preserving or providing for public health and safety.
- Individuals and first responders who are exposed to the storm may be struck by hail, falling branches, or downed trees resulting in injuries or possible fatalities.
- Residential structures can be damaged by falling trees, which can result in physical harm to occupants.
- Large hail events will likely cause extensive roof damage to residential structures, along with siding damage and broken windows, creating a spike in insurance claims and a rise in premiums.
- Automobile damage may be extensive depending on the size of the hail and length of the storm.
- Hail events can result in power outages over widespread areas, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.

- First responders are exposed to downed power lines, damaged structures, hazardous spills, and debris that often accompany hail events, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Downed power lines and large debris, such as downed trees, can result in the inability of emergency response vehicles to access areas of the community.
- Hazardous road conditions may prevent critical staff from reporting for duty, limiting response capabilities.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by the hail event may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by large hail events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A significant hail event could significantly damage agricultural crops, resulting in extensive economic losses for the community and surrounding area.
- Hail events may injure or kill livestock and wildlife.
- A large hail event could impact the accessibility of recreational areas and parks due to extended power outages or debris clogged access roads.

The economic and financial impacts of hail will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning conducted by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of any hail event.

SECTION 10: THUNDERSTORM WIND

Hazard Description

Thunderstorms create extreme wind events which includes straight line winds. Wind is the horizontal motion of the air past a given point, beginning with differences in air pressures. Pressure that is higher at one place than another sets up a force pushing from the high pressure toward the low pressure; the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air is accelerated.

Thunderstorms are created when heat and moisture near the Earth's surface are transported to the upper levels of the atmosphere. By-products of this process are the clouds, precipitation, and wind that become the thunderstorm.

According to the National Weather Service (NWS), a thunderstorm occurs when thunder accompanies rainfall. Radar observers use the intensity of radar echoes to distinguish between rain showers and thunderstorms.

Straight line winds can have gusts of 100 miles per hour (mph) or more. Unlike tornadoes, windstorms have a broader path that is several miles wide and can cover several counties. Straight line wind may down trees and power lines, overturn mobile homes, and cause damage to well-built structures.

Straight line winds are responsible for most thunderstorm wind damages. One type of straight line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado and make air travel extremely hazardous.

Location

Thunderstorm wind events can develop in any geographic location and are considered a common occurrence in Texas. Therefore, a thunderstorm wind event could occur at any location within Jefferson County's planning area, as these storms develop randomly and are not confined to any geographic area

within the County. It is assumed that the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is uniformly exposed to the threat of thunderstorm winds.

Extent

The extent or magnitude of a thunderstorm wind event is measured by the Beaufort Wind Scale. Table 10-1 describes the different intensities of wind in terms of speed and effects, from calm to violent and destructive.

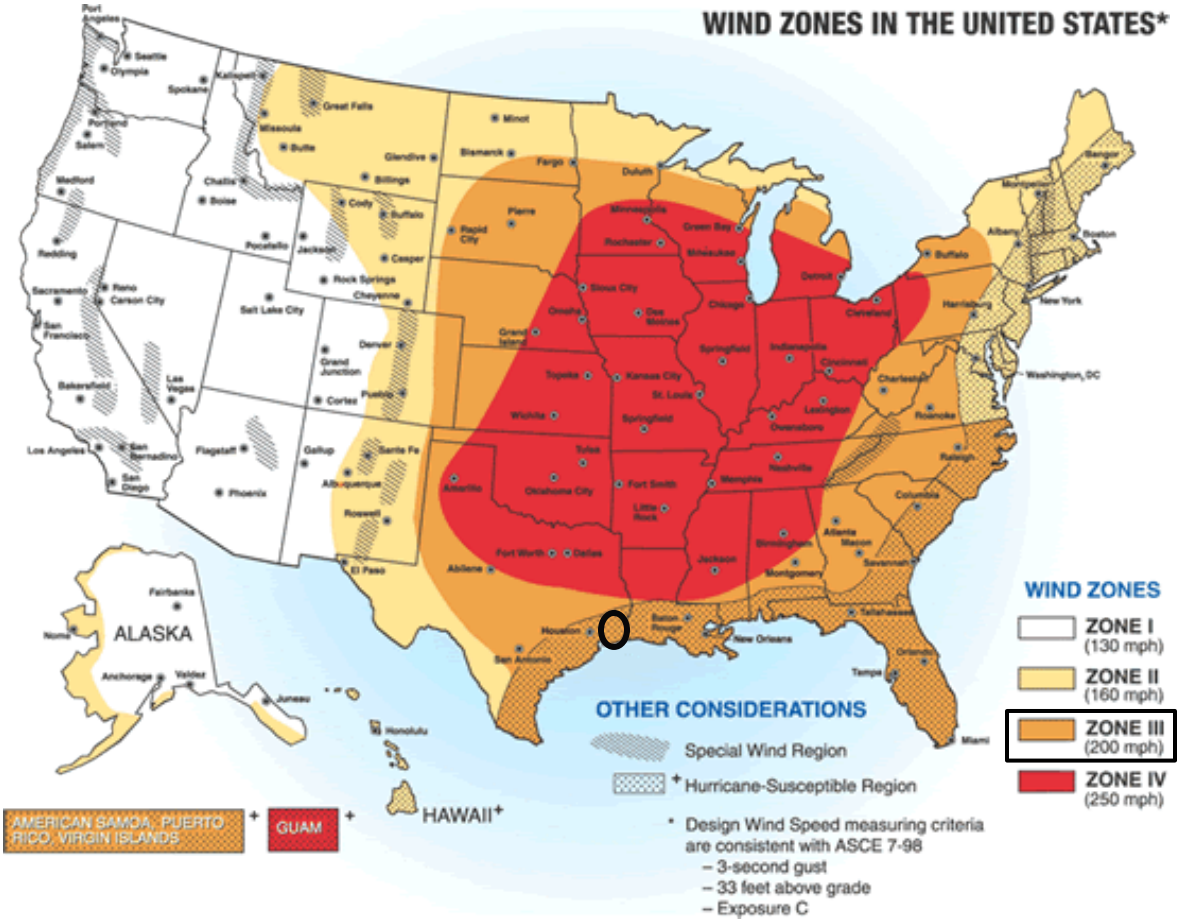
Table 10-1. Beaufort Wind Scale[1]

FORCE	WIND (KNOTS)	WMO CLASSIFICATION	APPEARANCE OF WIND EFFECTS
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Dust, leaves and loose paper lifted, small tree branches move
5	19-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger tree branches moving, whistling in wires
7	32-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Whole trees in motion, resistance felt walking against wind
9	47-54	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Seldom experienced on land, trees broken or uprooted, considerable structural damage
11	64-72	Violent Storm	If experienced on land, widespread damage
12	73+	Hurricane	Violence and destruction

Figure 10-1 displays the wind zones as derived from the National Oceanic and Atmospheric Administration (NOAA).

[1] Source: World Meteorological Organization

Figure 10-1. Wind Zones in the United States[2]



On average, the planning area experiences 3 to 4 thunderstorm wind events every year. The County is located within the Zone III, meaning the entire planning area including the SETRPC and all participating jurisdictions can experience winds up to 200 mph. Jefferson County has experienced a significant wind event – an event with winds above 64 knots in the range of "Force 11" on the Beaufort Wind Scale.

Historical Occurrences

Tables 10-2, 10-3, and 10-4 depict historical occurrences of thunderstorm wind events for the Jefferson County planning area according to the National Center for Environmental Information (NCEI) data. Since January 1996, 77 thunderstorm wind events are known to have impacted Jefferson County, based upon NCEI records. Table 10-3 presents information on known historical events impacting the Jefferson County planning area, with resulting damages. It is important to note that high wind events associated with other hazards, such as tornadoes, are not accounted for in this section.

The NCEI is a national data source organized under NOAA and is the largest archive available for climate data. Only NCEI reported incidents were factored into this risk assessment. It is important to note that the

[2] Source: NOAA; the black circle indicates the Jefferson County planning area.

Section 10: Thunderstorm Wind

SETRPC is located within the City of Beaumont. There may be some occurrences that have occurred for the SETRPC and may not have been recorded, but are included in the City of Beaumont occurrence data because of their location. In the tables that follow throughout this section, some occurrences seem to appear multiple times in one table. This is due to reports from various locations throughout the County. In addition, property damage estimates are not always reported. When this occurs, estimates are provided when reasonable. Where an estimate has been provided in a table for losses, the dollar amounts have been altered to indicate the damage in 2016 dollars.

Table 10-2. Historical Thunderstorm Wind Events, With Reported Damages, 1996-2016

MAXIMUM WIND SPEED RECORDED (KNOTS)	NUMBER OF REPORTED EVENTS
0-30	0
31-40	0
41-50	19
51-60	20
61-70	4
71-80	0
81-90	0
91-100	0
Unknown	34

Table 10-3. Historical Thunderstorm Wind Events, 1996-2016[3]

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Beaumont	5/29/1996	9:15 PM	Unknown	0	0	$15,249	$0
Beaumont	8/12/1996	10:40 PM	Unknown	0	0	$7,625	$0
China	4/5/1997	2:39 AM	Unknown	0	0	$7,454	$0
Beaumont	8/21/1997	5:30 PM	Unknown	0	0	$29,814	$0
Groves	8/22/1997	4:25 PM	Unknown	0	0	$14,907	$0
Nederland	12/3/1997	5:12 AM	Unknown	0	1	$74,536	$0
Port Arthur	2/10/1998	2:30 PM	Unknown	0	0	$29,357	$0
Port Arthur	2/10/1998	2:40 PM	57 knots	0	0	$14,679	$0

[3] Only recorded events with fatalities, injuries, or damages are listed. Magnitude is listed when available. Damage values are in 2016 dollars.

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Nederland	2/22/1998	12:30 AM	Unknown	0	0	$14,679	$0
Port Arthur	3/16/1998	1:00 PM	Unknown	0	0	$146,786	$0
China	7/14/1998	1:50 PM	Unknown	0	0	$220,179	$0
Beaumont	8/13/1998	3:52 PM	Unknown	0	0	$22,018	$0
Beaumont	8/14/1998	12:00 PM	Unknown	1	1	$110,089	$0
Beaumont	8/29/1998	8:00 PM	Unknown	0	0	$73,393	$0
Beaumont	5/10/1999	7:00 AM	Unknown	0	0	$143,614	$0
Beaumont	5/29/1999	11:10 AM	Unknown	0	0	$7,181	$0
Beaumont	7/12/1999	1:50 PM	Unknown	0	0	$7,181	$0
Groves	8/3/1999	4:50 PM	Unknown	0	0	$143,614	$0
Beaumont	8/20/1999	6:30 PM	Unknown	0	0	$71,807	$0
Beaumont	8/31/1999	1:15 PM	Unknown	0	0	$35,904	$0
Port Arthur	4/3/2000	3:30 AM	52 knots	0	0	$27,789	$0
Beaumont	7/23/2000	2:05 PM	Unknown	0	0	$2,779	$0
Jefferson County	8/11/2000	3:30 PM	Unknown	0	0	$2,779	$0
Bevil Oaks	9/2/2000	6:55 PM	Unknown	0	0	$2,779	$0
Nederland	9/2/2000	5:50 PM	Unknown	0	0	$2,779	$0
Nome	2/28/2001	6:30 AM	Unknown	0	0	$33,775	$0
Port Arthur	3/14/2001	6:15 PM	Unknown	0	0	$6,755	$0
Port Arthur	3/14/2001	5:45 PM	63 knots	0	0	$6,755	$0
Beaumont	5/26/2001	3:00 PM	Unknown	0	0	$13,510	$0
China	10/11/2001	11:30 AM	Unknown	0	0	$13,510	$0
Jefferson County	5/17/2002	8:17 AM	Unknown	0	0	$33,249	$0
Groves	7/16/2002	8:00 AM	65 knots	0	0	$1,994,950	$0
Beaumont	8/26/2002	6:10 PM	Unknown	0	0	$33,249	$0
Beaumont	8/27/2002	12:00 PM	Unknown	0	0	$6,650	$0
Beaumont	10/28/2002	11:25 PM	Unknown	0	0	$6,650	$0
Nederland	10/29/2002	1:07 AM	Unknown	0	0	$6,650	$0

Section 10: Thunderstorm Wind

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Port Arthur	12/23/2002	11:15 PM	Unknown	0	0	$6,650	$0
Port Arthur	12/30/2002	10:45 PM	Unknown	0	0	$6,650	$0
Beaumont	5/11/2004	5:00 PM	50 knots	0	0	$31,665	$0
Groves	11/27/2004	12:25 AM	50 knots	0	0	$25,332	$0
Beaumont	5/29/2005	7:45 PM	50 knots	0	0	$30,627	$0
Beaumont	6/15/2005	5:20 PM	50 knots	0	0	$2,450	$0
China	8/7/2005	5:15 PM	50 knots	0	0	$2,450	$0
Jefferson County	4/29/2006	11:39 AM	50 knots	0	0	$59,341	$0
Jefferson County	7/17/2006	5:00 PM	50 knots	0	0	$5,934	$0
Beaumont	8/27/2007	4:50 PM	50 knots	0	0	$23,079	$0
Beaumont	8/27/2007	4:10 PM	50 knots	0	0	$2,308	$0
Jefferson County	6/25/2008	11:55 AM	50 knots	0	0	$5,556	$0
Jefferson County	8/3/2008	5:00 PM	57 knots	0	0	$11,113	$0
Beaumont	2/1/2009	1:50 PM	50 knots	0	0	$5,576	$0
Beaumont	7/18/2009	4:25 PM	52 knots	0	0	$2,230	$0
Beaumont	8/16/2010	12:45 PM	52 knots	0	0	$1,097	$0
Beaumont	8/16/2010	12:40 PM	52 knots	0	0	$5,486	$0
Beaumont	8/16/2010	12:40 PM	52 knots	0	1	$27,431	$0
Port Arthur	8/16/2010	1:30 PM	52 knots	0	0	$1,097	$0
Jefferson County	8/23/2010	6:30 PM	52 knots	0	0	$3,292	$0
Beaumont	3/30/2011	3:00 AM	48 knots	0	0	$1,064	$0
Groves	10/31/2013	8:33 AM	61 knots	0	0	$5,135	$0
Groves	4/27/2016	5:44 AM	50 knots	0	0	$5,000	$0

Table 10-4. Summary of Historical Thunderstorm Wind Events, 1996-2016[4]

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	8	57 knots	0	0	$121,263	$0
Beaumont	35	63 knots	1	2	$719,727	$0
Bevil Oaks	1	Unknown	0	0	$2,779	$0
China	4	50 knots	0	0	$243,593	$0
Groves	6	65 knots	0	0	$2,188,939	$0
Nederland	4	Unknown	0	1	$98,643	$0
Nome	1	Unknown	0	0	$33,775	$0
Port Arthur	17	63 knots	0	0	$246,517	$0
Port Neches	1	50 knots	0	0	$0	$0
SETRPC	0	N/A	0	0	$0	$0
TOTAL LOSSES	**77**	**50-65 knots**	**1**	**3**	**$3,655,236**	

Based on the list of historical thunderstorm wind events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, 7 events have occurred since the 2011 Plan.

Significant Past Events

July 14, 1998 – China

Severe thunderstorm winds blew down trees across China in western Jefferson County. A home under construction was leveled due to the estimated 60 mph winds. Houses and barns next door were not damaged. The China Elementary School had parts of its roof torn off, and debris from the roof went through the windows of a classroom. No injuries were reported.

August 14, 1998 – Beaumont

Two men were in a house under construction when a combination of wind and rain caused the collapse of the building. One man was killed, and the other was slightly injured.

July 16, 2002 – Groves

High winds associated with a severe thunderstorm blew down numerous trees and power lines. The most significant damage was to the Groves Middle School, where the gymnasium lost part of its roof and one wall.

[4] Values are in 2016 dollars.

April 29, 2006 – Jefferson County
Severe thunderstorm winds produced damages in the county estimated at $50,000. An old rice dryer was wrapped around a utility pole. A small building was moved 2 feet off its blocks.

Probability of Future Events

Most thunderstorm winds occur during the spring, in the months of March, April, and May, and in the fall, during the month of September. Based on available records of historic events, 77 events in a 21 year reporting period provides a frequency of occurrence of 3 to 4 events every year. Even though the intensity of thunderstorm wind events is not always damaging for the Jefferson County planning area, the frequency of occurrence for a thunderstorm wind event is highly likely, meaning that an event is probable within the next year for the Jefferson County planning area, including the SETRPC and all participating jurisdictions.

Vulnerability and Impact

Vulnerability is difficult to evaluate since thunderstorm wind events can occur at different strength levels, in random locations, and can create relatively narrow paths of destruction. Due to the randomness of these events, all existing and future structures, and facilities in Jefferson County could potentially be impacted and remain vulnerable to possible injury and property loss from strong winds.

Trees, power lines and poles, signage, manufactured housing, radio towers, concrete block walls, storage barns, windows, garbage receptacles, brick facades, and vehicles, unless reinforced, are vulnerable to thunderstorm wind events. The Jefferson County planning area features multiple mobile or manufactured home parks throughout the planning area and all participating jurisdictions. These parks are typically more vulnerable to thunderstorm wind events than typical site built structures. In addition, manufactured homes are located sporadically throughout the planning area, including all jurisdictions. These homes would also be more vulnerable. The U.S. Census data indicates a total of 3,138 manufactured homes located in the Jefferson County planning area, including all participating jurisdictions (Table 10-5). In addition, 65.4% (approximately 69,478 structures) of the single family residential (SFR) structures in the Jefferson County planning area were built before 1980.[5] These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant thunderstorm wind events.

Table 10-5. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Beaumont	718	33,386
Bevil Oaks	27	361
China	87	249

[5] Source: U.S. Census Bureau data estimates for 2014.

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Groves	69	5,388
Nederland	219	5,473
Nome	45	107
Port Arthur	234	16,809
Port Neches	82	3,887
SETRPC	0	0
Jefferson County[6]	**3,138**	**69,478**

More severe damage involves windborne debris; in some instances, patio furniture and other lawn items have been reported to have been blown around by wind and, very commonly, debris from damaged structures in turn have caused damage to other buildings not directly impacted by the event.

The following critical facilities would be vulnerable to thunderstorm wind events in each participating jurisdiction:

Table 10-6. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	2 Fire Stations, 2 Police Stations, 32 Schools, Port Authority Facility, 5 Water District Facilities, 3 Drainage District Facilities, 4 Hospitals
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	Fire Station, Police Station, 4 Schools
Nederland	Fire Station, Police Station, Water District Facility, 3 Hospitals, Airport, 8 Schools
Nome	Fire Station
Port Arthur	Fire Station, Police Station, Drainage District Facility, 2 Port Authority Facilities, 2 Hospitals, 14 Schools
Port Neches	Fire Station, Police Station, 5 Schools
SETRPC	SETRPC Facility

[6] County totals include all participating jurisdictions and unincorporated areas.

A thunderstorm wind event can also result in traffic disruptions, injuries, and in rare cases, fatalities. The impact of extreme winds experienced in the Jefferson County planning area has resulted in three injuries and one fatality. While damages and shutdown of critical facilities would have a minor impact on the planning area, historic injuries and fatalities indicate an impact of "Substantial" with multiple potential deaths and injuries. Overall, the average loss estimate (in 2016 dollars) is $3,655,236, having an approximate annual loss estimate of $174,058 (Table 10-7).

Table 10-7. Potential Annualized Losses by Jurisdiction, 1996-2016

JURISDICTION	PROPERTY & CROP LOSS	AVERAGE ANNUALIZED LOSSES
Jefferson County	$121,263	$5,774
Beaumont	$719,727	$34,273
Bevil Oaks	$2,779	$132
China	$243,593	$11,600
Groves	$2,188,939	$104,235
Nederland	$98,643	$4,697
Nome	$33,775	$1,608
Port Arthur	$246,517	$11,739
Port Neches	$0	$0
SETRPC	$0	$0
Planning Area	**$3,655,236**	**$174,058**

Assessment of Impacts

Thunderstorm wind events have the potential to pose a significant risk to people, and can create dangerous and difficult situations for public health and safety officials. Impacts to the planning area can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees, causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- During exceptionally heavy wind events, first responders may be prevented from responding to calls, as the winds may reach a speed in which their vehicles and equipment are unsafe to operate.

- Thunderstorm wind events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.
- County or City departments may be damaged, delaying response and recovery efforts for the entire community.
- Private sector entities that the County or City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by extreme wind events may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to extreme winds.
- Large scale wind events can have significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.
- Sabine Lake is a large recreational lake that attracts fishing and boating activities throughout the year. A large thunderstorm wind event could impact recreational water activities, placing boaters and campers in imminent danger, potentially requiring emergency services or lake evacuation.
- Recreational areas and parks may be damaged or inaccessible due to downed trees or debris, causing temporary impacts to area businesses.

The economic and financial impacts of thunderstorm winds on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any thunderstorm wind event.

SECTION 11: TORNADO

Hazard Description

Tornadoes are among the most violent storms on the planet. A tornado is a rapidly rotating column of air extending between, and in contact with, a cloud and the surface of the earth. The most violent tornadoes are capable of tremendous destruction, with wind speeds of 250 miles per hour (mph) or more. In extreme cases, winds may approach 300 mph. Damage paths can be in excess of 1 mile wide and 50 miles long.

The most powerful tornadoes are produced by "Supercell Thunderstorms." Supercell Thunderstorms are created when horizontal wind shears (winds moving in different directions at different altitudes) begin to rotate the storm. This horizontal rotation can be tilted vertically by violent updrafts, and the rotation radius can shrink, forming a vertical column of very quickly swirling air. This rotating air can eventually reach the ground, forming a tornado.

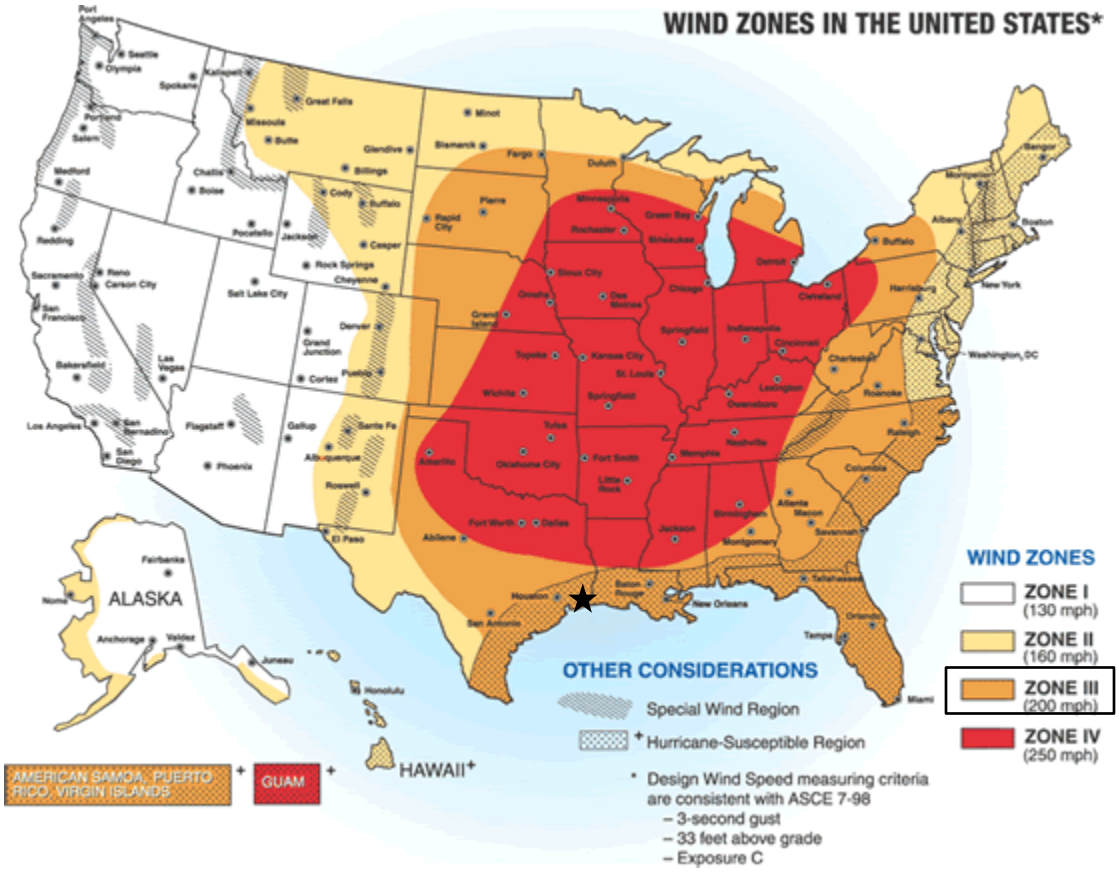
Table 11-1. Tornado Variations

WEAK TORNADOES	STRONG TORNADOES	VIOLENT TORNADOES
• 69% of all tornadoes • Less than 5% of tornado deaths • Lifetime 1-10+ minutes • Winds less than 110 mph	• 29% of all tornadoes • Nearly 30% of all tornado deaths • May last 20 minutes or longer • Winds 110 – 205 mph	• 2% of all tornadoes • 70% of all tornado deaths • Lifetime can exceed 1 hour • Winds greater than 205 mph

Location

As with thunderstorms, tornadoes do not have any specific geographic boundary and can occur throughout the Jefferson County planning area, including the SETRPC and all participating jurisdictions. It is assumed that the Jefferson County planning area is equally exposed to tornado activity. Jefferson County is located in Wind Zone III (Figure 11-1), where tornado winds can be as high as 200 mph.

Figure 11-1. FEMA Wind Zones in the United States[1]



Extent

The destruction caused by tornadoes ranges from light to inconceivable depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, such as residential homes (particularly mobile homes).

Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (Table 11-2). Since February 2007, the Fujita Scale has been replaced by the Enhanced Fujita Scale (Table 11-3), which retains the same basic design and 6 strength categories as the previous scale. The newer scale

[1] Jefferson County is indicated by the star.

reflects more refined assessments of tornado damage surveys, standardization, and damage consideration to a wider range of structures.

Table 11-2. The Fujita Tornado Scale[2]

F-SCALE NUMBER	INTENSITY	WIND SPEED (MPH)	TYPE OF DAMAGE DONE	PERCENT OF APPRAISED STRUCTURE VALUE LOST DUE TO DAMAGE
F0	Gale Tornado	40 – 72	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	None Estimated
F1	Moderate Tornado	73 – 112	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; attached garages may be destroyed.	0% – 20%
F2	Significant Tornado	113 – 157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	50% – 100%
F3	Severe Tornado	158 – 206	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.	100%
F4	Devastating Tornado	207 – 260	Well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	100%
F5	Incredible Tornado	261 – 318	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles flying through the air in excess of 330 yards; trees debarked; steel reinforced concrete badly damaged.	100%

[2] Source: http://www.tornadoproject.com/fscale/fscale.htm

Table 11-3. Enhanced Fujita Scale for Tornados

STORM CATEGORY	DAMAGE LEVEL	3 SECOND GUST (MPH)	DESCRIPTION OF DAMAGES	PHOTO EXAMPLE
EF0	Gale	65 – 85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	
EF1	Weak	86 – 110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; attached garages may be destroyed.	
EF2	Strong	111 – 135	Considerable damage; roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	
EF3	Severe	136 – 165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.	
EF4	Devastating	166 – 200	Well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	
EF5	Incredible	200+	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles flying through the air in excess of 330 yards; trees debarked; steel reinforced concrete badly damaged.	

Both the Fujita Scale and Enhanced Fujita Scale should be referenced in reviewing previous occurrences since tornado events prior to 2007 will follow the original Fujita Scale. The largest magnitude reported within the planning area is F3 on the Fujita Scale, a "Severe Tornado." Based on the planning areas location in Wind Zone III, the planning area could experience anywhere from an EF0 to an EF5 depending on the wind speed.

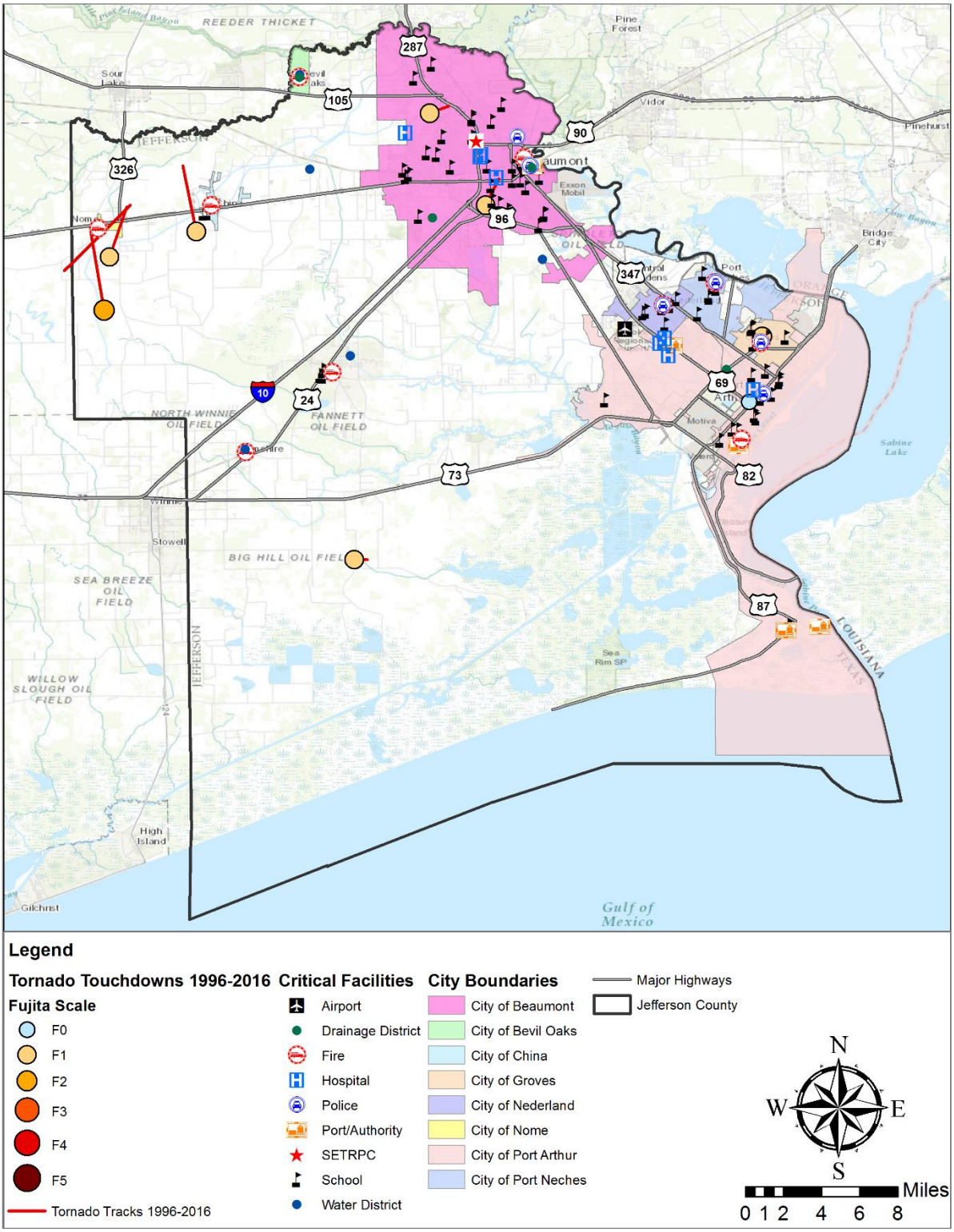
The events in Jefferson County have been between F0 and F3 (Table 11-4). Therefore, the range of intensity that the Jefferson County planning area, including the SETRPC and all participating jurisdictions, would be expected to mitigate is a tornado event that would be a low to severe risk, an EF0 to EF5.

Historical Occurrences

The NCEI is a national data source organized under NOAA and is the largest archive available for climate data. Only NCEI reported incidents were factored into this risk assessment. It is likely that a number of occurrences have gone unreported over the past 21 years. It is important to note that the SETRPC is located within the City of Beaumont. There may be some occurrences that have occurred for the SETRPC and may not have been recorded, but are included in the City of Beaumont occurrence data because of their location.

Figure 11-2 identifies the locations of previous occurrences in the Jefferson County planning area from 1996 to 2016. A total of 10 events have been recorded by the Storm Prediction Center (National Oceanic and Atmospheric Administration – NOAA) and the National Center for Environmental Information (NCEI) databases for the Jefferson County planning area, including the SETRPC and all participating jurisdictions. The most significant event reported occurred in Jefferson County near the Parkdale Mall area on August 18, 2009. The EF1 tornado was 100 yards wide and stayed on the ground in Jefferson County for just under 1 mile. The area impacted by the tornado was densely populated with commercial development and damages exceeded 22 million dollars (2016 dollar value).

Figure 11-2. Spatial Historical Tornado Events, 1996-2016[3]



[3] Source: NOAA Records

Table 11-4. Historical Tornado Events, 1996-2016[4]

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Port Arthur	7/14/1997	3:05 PM	F0	0	3	$74,536	$0
Nome	1/1/1999	11:45 PM	F3	0	5	$718,070	$0
Jefferson County	4/3/2000	3:08 AM	F1	0	1	$138,944	$0
Groves	4/3/2000	3:20 AM	F1	0	0	$4,168,310	$0
Bevil Oaks	10/12/2001	2:04 PM	F0	0	0	$0	$0
Beaumont	10/13/2001	3:55 AM	F1	0	0	$1,350,994	$0
Beaumont	11/18/2003	1:00 AM	F0	0	0	$130,033	$0
China	10/16/2006	5:00 AM	F1	0	0	$356,043	$0
Beaumont	8/18/2009	12:57 PM	F1	0	10	$22,304,870	$0
Nome	6/9/2010	4:32 AM	F1	0	0	$109,725	$0

Table 11-5. Summary of Historical Tornado Events, 1996-2016[5]

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	FATALITIES	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	1	F1	0	1	$138,944	$0
Beaumont	3	F1	0	10	$23,785,897	$0
Bevil Oaks	1	F0	0	0	$0	$0
China	1	F1	0	0	$356,043	$0
Groves	1	F1	0	0	$4,168,310	$0
Nederland	0	N/A	0	0	$0	$0
Nome	2	F3	0	5	$827,795	$0
Port Arthur	1	F0	0	3	$74,536	$0
Port Neches	0	N/A	0	0	$0	$0
SETRPC	0	N/A	0	0	$0	$0
TOTAL LOSSES	**10**	**(Max Extent)**	**0**	**19**	**$29,351,525**	

[4] Values are in 2016 dollars.
[5] Values are in 2016 dollars.

Based on the list of historical tornado events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, no events have occurred since the 2011 Plan.

Significant Past Events

January 1, 1999 – Nome

A strong tornado that developed in Liberty County moved into western Jefferson County, destroying several rice dryers, 2 mobile homes, and a brick house. 5 people were injured in the mobile homes and brick house. 2 people received broken necks and other injuries after they were ejected from a mobile home.

A fiberglass tub from the destroyed brick home was found 1 mile away. Cancelled checks and other paperwork were found 7 miles away in southern Hardin County. This tornado was strongest southwest of Nome, and was weakening as it passed through the small community of Nome. At least 20 homes received minor damage, such as blown off shingles, and many trees were blown down.

October 16, 2006 – China/Jefferson County

An abundance of moisture and high wind shear resulted in several tornadoes and flash floods across southeast Texas. A tornado destroyed 5 mobile homes and damaged an additional 20 homes just east of China. Trees and power lines were blown down.

August 18, 2009 – Jefferson County

An EF1 Tornado touched down just west of the Kohl's Department Store in the Parkdale Mall area. The tornado struck the Kohl's, tearing off part of its roof and collapsing the front entrance. Damage to the store forced it to close for several weeks. The tornado continued to the northeast and crossed a Walmart parking lot, flipping over 4 vehicles and damaging dozens of others. Further to the northeast, the tornado struck Parkdale Mall, damaging the roofs of several department stores. The tornado lifted in the east parking lot of Parkdale Mall before reaching Highway 69. Numerous photographs and videos of the tornado were taken.

Probability of Future Events

Tornadic storms can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller, high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. According to historical records, Jefferson County experiences a tornado touchdown approximately every year. This frequency supports a highly likely probability of future events for the Jefferson County planning area, including the SETRPC and all participating jurisdictions.

Vulnerability and Impact

Because tornadoes often cross jurisdictional boundaries, all existing and future buildings, facilities, and populations in Jefferson County are considered to be exposed to this hazard and could potentially be impacted. The damage caused by a tornado is typically a result of high wind velocity, wind-blown debris, lightning, and large hail.

The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Consequently, the vulnerability of humans and property is difficult to evaluate since tornadoes form at different strengths, in random locations, and create relatively narrow paths of destruction. Although tornadoes strike at random, making all buildings vulnerable, three types of structures are more likely to suffer damage:

- Manufactured Homes;
- Homes on crawlspaces (more susceptible to lift); and
- Buildings with large spans, such as shopping malls, gymnasiums, and factories.

Tornadoes can possibly cause a significant threat to people as they could be struck by flying debris, falling trees/branches, utility lines, and poles. First responders could also not be able to respond to calls due to blocked roads. Tornadoes commonly cause power outages, which could cause health and safety risks to patients in hospitals or other vulnerable populations that rely on power for medical necessities.

The Jefferson County planning area features multiple mobile or manufactured home parks throughout the planning area and all participating jurisdictions. These parks are typically more vulnerable to tornado events than typical site built structures. In addition, manufactured homes are located sporadically throughout the planning area, including all jurisdictions. These homes would also be more vulnerable. The U.S. Census data indicates a total of 3,138 manufactured homes located in the Jefferson County planning area, including all participating jurisdictions (Table 11-6). In addition, 65.4% (approximately 69,478 structures) of the single family residential (SFR) structures in the Jefferson County planning area were built before 1980.[6] These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant tornado events.

Table 11-6. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Beaumont	718	33,386
Bevil Oaks	27	361
China	87	249
Groves	69	5,388
Nederland	219	5,473
Nome	45	107
Port Arthur	234	16,809
Port Neches	82	3,887
SETRPC	0	0
Jefferson County[7]	**3,138**	**69,478**

[6] Source: U.S. Census Bureau data estimates for 2014.
[7] County totals includes SETRPC and all participating jurisdictions and unincorporated areas.

The following critical facilities would be vulnerable to tornado events in each participating jurisdiction:

Table 11-7. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	2 Fire Stations, 2 Police Stations, 32 Schools, Port Authority Facility, 5 Water District Facilities, 3 Drainage District Facilities, 4 Hospitals
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	Fire Station, Police Station, 4 Schools
Nederland	Fire Station, Police Station, Water District Facility, 3 Hospitals, Airport, 8 Schools
Nome	Fire Station
Port Arthur	Fire Station, Police Station, Drainage District Facility, 2 Port Authority Facilities, 2 Hospitals, 14 Schools
Port Neches	Fire Station, Police Station, 5 Schools
SETRPC	SETRPC Facility

The average loss estimate of crops and property is $29,351,525 (in 2016 dollars), having an approximate annual loss estimate of $1,397,692. Based on historic loss and damages, the impact of tornadoes on the Jefferson County planning area, including the SETRPC and all participating jurisdictions, can be considered "Major", with more than 25 percent of property expected to be destroyed or with major damage, injuries and/or illness that result in permanent disability, and critical facilities shut down for at least 2 weeks.

Annualized losses are not included for the SETRPC as there have not been events or losses to effect the facilities separate and apart from a historical occurrence for the City of Beaumont.

Table 11-8. Potential Annualized Losses by Jurisdiction, 1996-2016

JURISDICTION	PROPERTY AND CROP DAMAGE	ANNUAL LOSS ESTIMATE
Jefferson County	$138,944	$6,616
Beaumont	$23,785,897	$1,132,662
Bevil Oaks	$0	$0
China	$356,043	$16,954
Groves	$4,168,310	$198,491
Nederland	$0	$0
Nome	$827,795	$39,419

JURISDICTION	PROPERTY AND CROP DAMAGE	ANNUAL LOSS ESTIMATE
Port Arthur	$74,536	$3,549
Port Neches	$0	$0
SETRPC	$0	$0

Assessment of Impacts

Tornadoes have the potential to pose a significant risk to the population and can create dangerous situations. Providing and preserving public health and safety is often difficult. Impacts to the planning area can include:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees, causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Manufactured homes may suffer substantial damage as they would be more vulnerable than typical site built structures.
- Sub-standard construction may suffer substantial damage as they are not built to code and would be more vulnerable to tornado events than code compliant structures.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Tornadoes often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Tornadoes can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders must enter the damage area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessments efforts. Therefore, they are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities, loss of communications, and damaged emergency vehicles and equipment.
- County or City departments may be damaged or destroyed, delaying response and recovery efforts for the entire community.
- Private sector entities that the County or City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.

- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the tornado may be negatively impacted while roads and utilities are being restored, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures destroyed by a tornado may not be rebuilt for years, reducing the tax base for the community.
- Large or intense tornadoes may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable and tourism can be unappealing for years following a large tornado, devastating directly related local businesses.

The economic and financial impacts of a tornado event on the community will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event.

SECTION 12: DROUGHT

Hazard Description

Drought is a period of time without substantial rainfall that persists from one year to the next. Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of anticipated natural precipitation reduction over an extended period of time, usually a season or more in length. Droughts can be classified as meteorological, hydrologic, agricultural, and socioeconomic. Table 12-1 presents definitions for these different types of drought.

Table 12-1. Drought Classification Definitions[1]

METEOROLOGICAL DROUGHT	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
HYDROLOGIC DROUGHT	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
AGRICULTURAL DROUGHT	Soil moisture deficiencies relative to water demands of plant life, usually crops.
SOCIOECONOMIC DROUGHT	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

Droughts are one of the most complex of all natural hazards as it is difficult to determine their precise beginning or end. In addition, droughts can lead to other hazards such as extreme heat and wildfires. Their impact on wildlife and area farming is enormous, often killing crops, grazing land, edible plants, and

[1] Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA

even in severe cases, trees. A secondary hazard to drought is wildfire because dying vegetation serves as a prime ignition source. Therefore, a heat wave combined with a drought is a very dangerous situation.

Location

Droughts occur regularly throughout Texas and Jefferson County, and are a frequent condition. However, they can vary greatly in their intensity and duration. The Drought Monitor (Figure 12-1) shows the study region is currently experiencing normal conditions. The planning area has experienced abnormally dry to exceptional drought conditions over the last ten years (Figure 12-2). There is no distinct geographic boundary to drought; therefore, it can occur throughout the Jefferson County planning area, including the SETRPC and all participating jurisdictions, equally.

Figure 12-1. U.S. Drought Monitor, December 2016

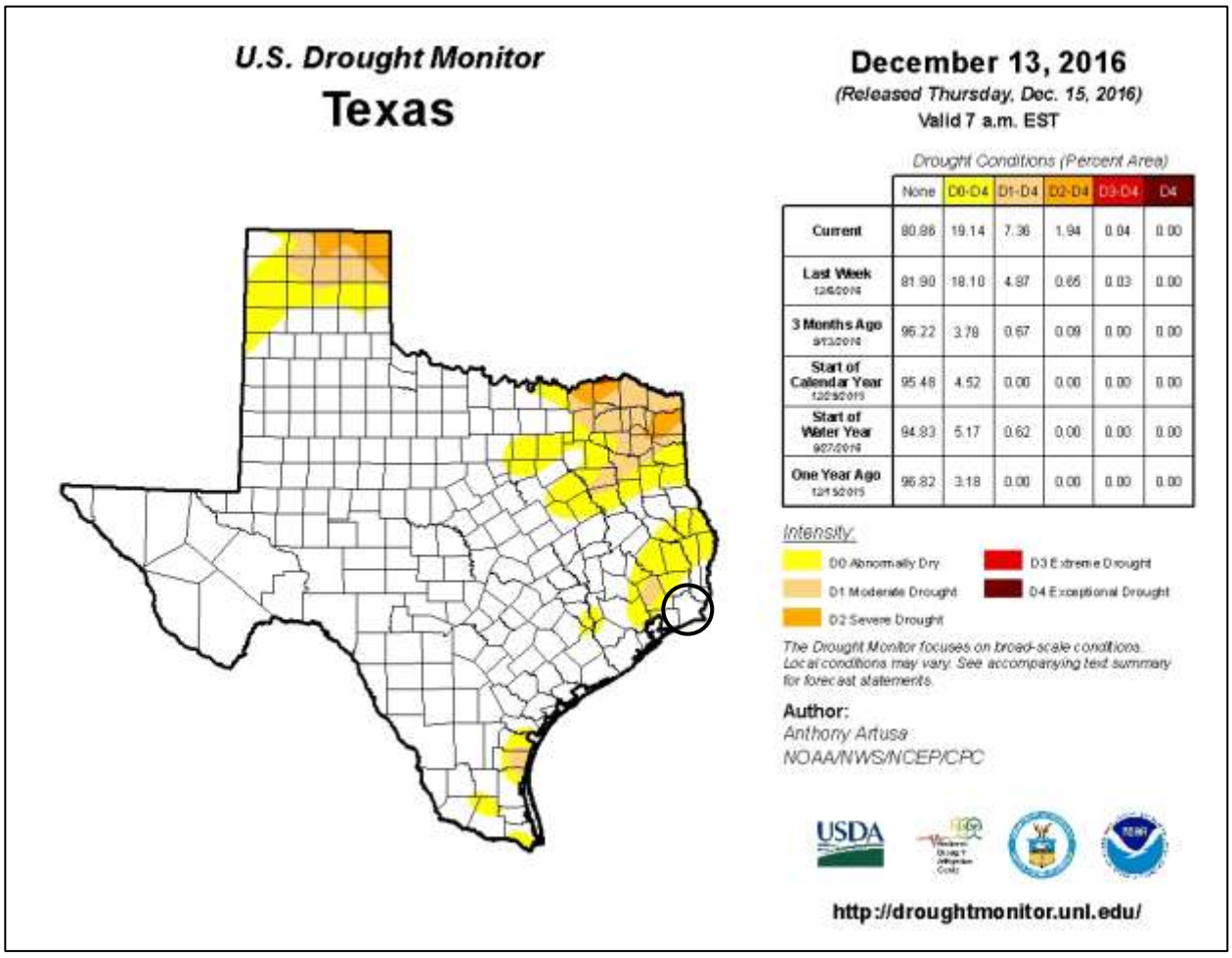
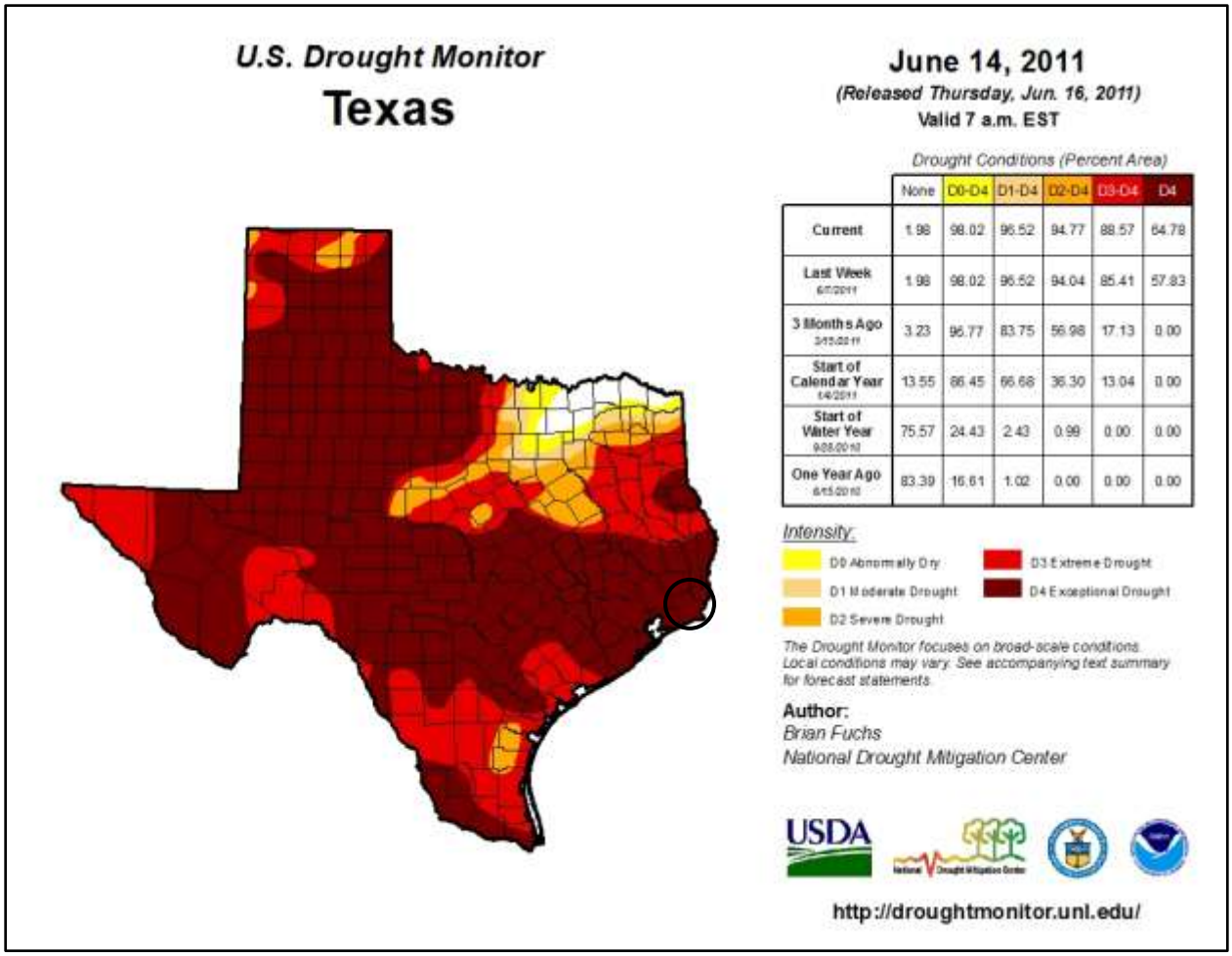


Figure 12-2. U.S. Drought Monitor, June 2011



Extent

The Palmer Drought Index is used to measure the extent of drought by measuring the duration and intensity of long-term drought-inducing circulation patterns. Long-term drought is cumulative, with the intensity of drought during the current month dependent upon the current weather patterns plus the cumulative patterns of previous months. The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop. Table 12-2 depicts magnitude of drought, while Table 12-3 describes the classification descriptions.

Table 12-2. Palmer Drought Index

DROUGHT INDEX	DROUGHT CONDITION CLASSIFICATIONS						
	Extreme	Severe	Moderate	Normal	Moderately Moist	Very Moist	Extremely Moist
Z Index	-2.75 and below	-2.00 to -2.74	-1.25 to -1.99	-1.24 to +.99	+1.00 to +2.49	+2.50 to +3.49	n/a
Meteorological	-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above
Hydrological	-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Table 12-3. Palmer Drought Category Descriptions[2]

CATEGORY	DESCRIPTION	POSSIBLE IMPACTS	PALMER DROUGHT INDEX
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 to -1.9
D1	Moderate Drought	Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-2.0 to -2.9
D2	Severe Drought	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-3.0 to -3.9
D3	Extreme Drought	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions.	-4.0 to -4.9
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.	-5.0 or less

Drought is monitored nationwide by the National Drought Mitigation Center (NDMC). Indicators are used to describe broad scale drought conditions across the United States. Indicators correspond to the intensity of drought.

[2] Source: National Drought Mitigation Center

Based on the historical occurrences for drought and the location of Jefferson County, the entire planning area, including the SEPRTC and all participating jurisdictions, can anticipate a range of drought from abnormally dry to exceptional, or D0 to D4 based on the Palmer Drought Category.

Historical Occurrences

Jefferson County may typically experience a severe drought. Table 12-4 and 12-5 list historical events that have occurred in Jefferson County as reported in the National Center for Environmental Information (NCEI). Historical drought information, as provided by the NCEI, shows drought activity across a multi-county forecast area for each event. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical drought data for the participating jurisdictions in the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is provided on a County-wide basis per the NCEI database.

Table 12-4. Historical Drought Years, 1996-2016

DROUGHT YEAR
1996
1998
2000
3 unique events

Table 12-5. Historical Drought Events, 1996-2016[3]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	5/1/1996	0	0	$0	$0
Jefferson County	5/20/1998	0	0	$0	$0
Jefferson County	6/1/1998	0	0	$0	$0
Jefferson County	7/1/1998	0	0	$0	$0
Jefferson County	2/1/2000	0	0	$0	$0
TOTALS		**0**	**0**	**$0**	

Based on the list of historical drought events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, no events have occurred since the 2011 Plan.

[3] Values are in 2016 dollars.

Significant Past Events

January - May, 1996 – Jefferson County

Rainfall totals from January through May averaged 10 to 15 inches below normal. The main areas affected include farming and fire protection. Crop damage in neighboring counties exceeded 1 million dollars. Drought conditions continue across southeast Texas through May.

May - July, 1998 – Jefferson County

Drought conditions began by mid-May, as southeast Texans had gone over 6 weeks without any significant rainfall. By the end of May, many locations had seen less than 0.10 inches of rain for the month. This was the start of a significant impact on agriculture and forestry resources. A mild to moderate drought continued across southeast Texas in the month of June. Only 2 days provided any relief from the dry weather, June 5 and June 26, 1998. Many places recorded less than 2 inches of rain for the entire month of June. Crop losses continued to mount, primarily in the rice business, as well as forestry resources.

February, 2000 – Jefferson County

The month of February was one of the 5 driest Februarys on record across southeast Texas. Less than 1 inch of rain fell across the entire region. The 2 month total for January and February 2000 was the second driest on record for the Beaumont/Port Arthur area, with less than 2.5 inches of rainfall.

Probability of Future Events

Based on available records of historic events, there have been 3 extended time periods of drought within a 21 year reporting period, which provides a frequency of occurrence of 1 event probable in the next 5 years. This frequency supports an occasional probability of future events. All participating jurisdictions including the SETRPC are included under the County.

Vulnerability and Impact

Loss estimates were based on 21 years of statistical data from the NCEI. A drought event frequency-impact was then developed to determine an impact profile on agriculture products and estimate potential losses due to drought in the area. Table 12-6 shows annualized exposure.

Table 12-6. Drought Event Damage Totals, 1996-2016

JURISDICTION	PROPERTY & CROP LOSS	ANNUALIZED LOSS ESTIMATES
Jefferson County	$0	$0

Drought impacts large areas and crosses jurisdictional boundaries. All existing and future buildings, facilities, and populations are exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages and crop/livestock losses on agricultural lands and typically have no impact on buildings.

In terms of vulnerability, population, agriculture, property, and environment are all vulnerable to drought. The average person will survive only a few days without water, and this timeframe can be drastically

shortened for those people with more fragile health – typically children, the elderly, and the ill. Populations over 65 in the Jefferson County planning area are estimated at 13% of the total population and children under the age of 5 exceed 6% – an estimated total of 50,074[4] potentially vulnerable residents in the planning area based on age (Table 12-7).

Table 12-7. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5
Beaumont	15,539	8,087
Bevil Oaks	290	42
China	183	25
Groves	2,685	971
Nederland	2,371	976
Nome	56	11
Port Arthur	6,344	5,073
Port Neches	1,939	904
Jefferson County[5]	**32,774**	**17,300**

The population is also vulnerable to food shortages when drought conditions exist and potable water is in short supply. Potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities. All residents in the Jefferson County planning area could be adversely affected by drought conditions, which could limit water supplies and present health threats. However, during summer drought, or hot and dry conditions, elderly persons, small children, infants, and the chronically ill who do not have adequate cooling units in their homes may become more vulnerable to injury and/or death.

The economic impact of droughts can be significant as it produces a complex web of effects that span many sectors of the economy and reach well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services. If droughts extend over a number of years, the direct and indirect economic impact can be significant.

Habitat damage is a vulnerability of the environment during periods of drought, for both aquatic and terrestrial species. The environment also becomes vulnerable during periods of extreme or prolonged drought due to severe erosion and land degradation.

The impact of droughts experienced in the Jefferson County planning area, including the SETRPC and all participating jurisdictions, has resulted in 0 injuries and fatalities. This supports a “limited” severity of

[4] U.S. Census Bureau 2014 data for Jefferson County
[5] County totals includes all participating jurisdictions and unincorporated areas.

impact, meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property is destroyed or sustains major damage. Annualized loss over the 21-year reporting period in Jefferson County is negligible.

Assessment of Impacts

The Drought Impact Reporter was developed in 2005 by the University of Nebraska-Lincoln to provide a national database of drought impacts. Droughts can have an impact on: agriculture; business and industry; energy; fire; plants and wildlife; relief, response, and restrictions; society and public health; tourism and recreation; and water supply and quality. Table 12-8 lists the drought impacts for Jefferson County from 2005 to 2016, based on reports received by the Drought Impact Reporter.

Table 12-8. Drought Impacts, 2005-2016

DROUGHT IMPACTS	
Agriculture	29
Business & Industry	3
Energy	1
Fire	9
Plants & Wildlife	21
Relief, Response, & Restrictions	12
Society & Public Health	5
Tourism & Recreation	1
Water Supply & Quality	10

Drought has the potential to impact people in the Jefferson County planning area. While it is rare that drought, in and of itself, leads to a direct risk to the health and safety of people in the U.S., severe water shortages could result in inadequate supply for human needs. Drought is also frequently associated with a variety of impacts, including:

- Recreational activities at Sabine Lake that rely on water may be curtailed, such as hunting and fishing, resulting in fewer tourists and lower revenue.
- The McFaddin National Wildlife Refuge area may be especially vulnerable as severe and prolonged drought can result in the reduction of a species, or cause the extinction of a species altogether.
- Plant life will suffer from long-term drought. Wind and erosion will also pose a threat to plant life as soil quality will decline.
- The number of health-related low-flow issues (e.g., diminished sewage flows, increased pollution concentrations, reduced firefighting capacity, and cross-connection contamination) will increase as the drought intensifies.

- Public safety from forest/range/wildfires will increase as water availability and/or pressure decreases.
- Respiratory ailments may increase as the air quality decreases.
- There may be an increase in disease due to wildlife concentrations (e.g., rabies, Rocky Mountain spotted fever, Lyme disease).
- Jurisdictions and residents may disagree over water use/water rights, creating conflict.
- Political conflicts may increase between municipalities, counties, states, and regions.
- Water management conflicts may arise between competing interests.
- Increased law enforcement activities may be required to enforce water restrictions.
- Severe water shortages could result in inadequate supply for human needs as well as lower quality of water for consumption.
- Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property.
- During drought there is an increased risk for wildfires and dust storms.
- The community may need increased operational costs to enforce water restriction or rationing.
- Prolonged drought can lead to increases in illness and disease related to drought.
- Utility providers can see decreases in revenue as water supplies diminish.
- Utilities providers may cut back energy generation and service to their customers in order to prioritize critical service needs.
- Hydroelectric power generation facilities and infrastructure would have significantly diminished generation capability. Dams simply cannot produce as much electricity from low water levels as they can from high water levels.
- Fish and wildlife food and habitat will be reduced or degraded over time during a drought and disease will increase, especially for aquatic life.
- Wildlife will move to more sustainable locations, creating higher concentrations of wildlife in smaller areas, increasing vulnerability and further depleting limited natural resources.
- Dry and dead vegetation will increase the risk of wildfire.
- Land subsidence threat increases as groundwater is depleted.
- Drought poses a significant risk to annual and perennial crop production and overall crop quality, leading to higher food costs.
- Drought related declines in production may lead to an increase in unemployment.
- Drought may limit livestock grazing resulting in decreased livestock weight, potential increased livestock mortality, and increased cost for feed.
- Negatively impacted water suppliers may face increased costs resulting from the transport water or develop supplemental water resources.
- Long term drought may negatively impact future economic development.

The overall extent of damages caused by periods of drought is dependent on its extent and duration. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a drought event.

SECTION 13: WILDFIRE

Hazard Description

A wildfire event can rapidly spread out of control and occurs most often in the summer, when the brush is dry and flames can move unchecked through a highly vegetative area. Wildfires can start as a slow burning fire along the forest floor, killing and damaging trees. The fires often spread more rapidly as they reach the tops of trees, with wind carrying the flames from tree to tree. Usually, dense smoke is the first indication of a wildfire.

A wildfire event often begins unnoticed and spreads quickly, lighting brush, trees, and homes on fire. For example, a wildfire may be started by a campfire that was not doused properly, tossed cigarette, burning debris, or arson.

Texas has seen a significant increase in the number of wildfires in the past 30 years, which included wildland, interface, or intermix fires. Wildland Urban Interface or Intermix (WUI) fires occur in areas where structures and other human improvements meet or intermingle with undeveloped wildland or vegetative fuels. Wildland fires are fueled almost exclusively by natural vegetation, while interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide the fuel.

Location

A wildfire event can be a potentially damaging consequence of drought. Wildfires can vary greatly in terms of size, location, intensity, and duration. While wildfires are not confined to any specific geographic location, they are most likely to occur in open grasslands. The threat to people and property from a wildfire event is greater in the fringe areas where developed areas meet open grass lands, such as the WUI. (Figures 13-1 through 13-9). It is estimated that 30 percent of the total population in Jefferson County live within the WUI. However, the entire Jefferson County planning area is at risk for wildfires.

Figure 13-1. Wildland Urban Interface Map – Jefferson County

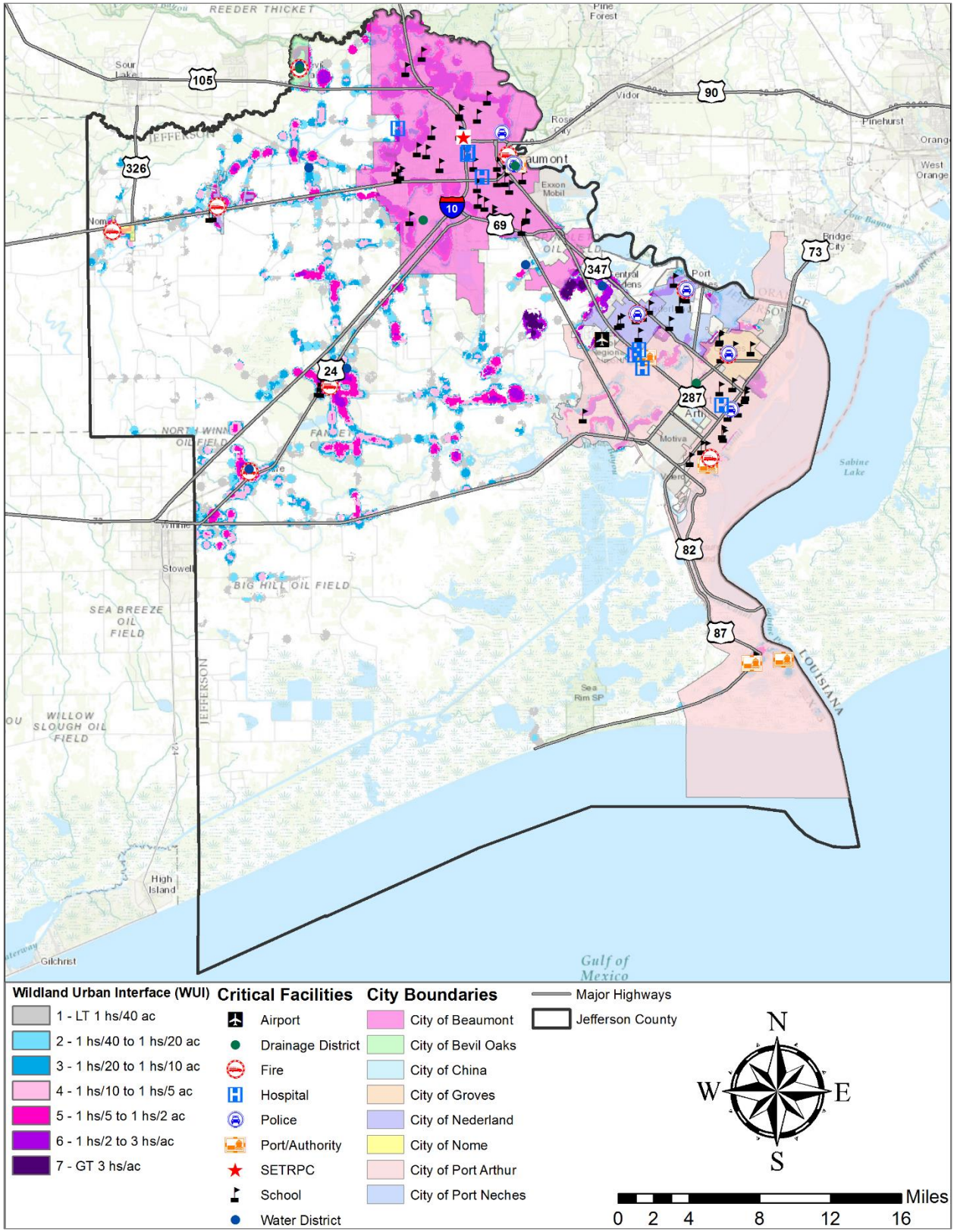
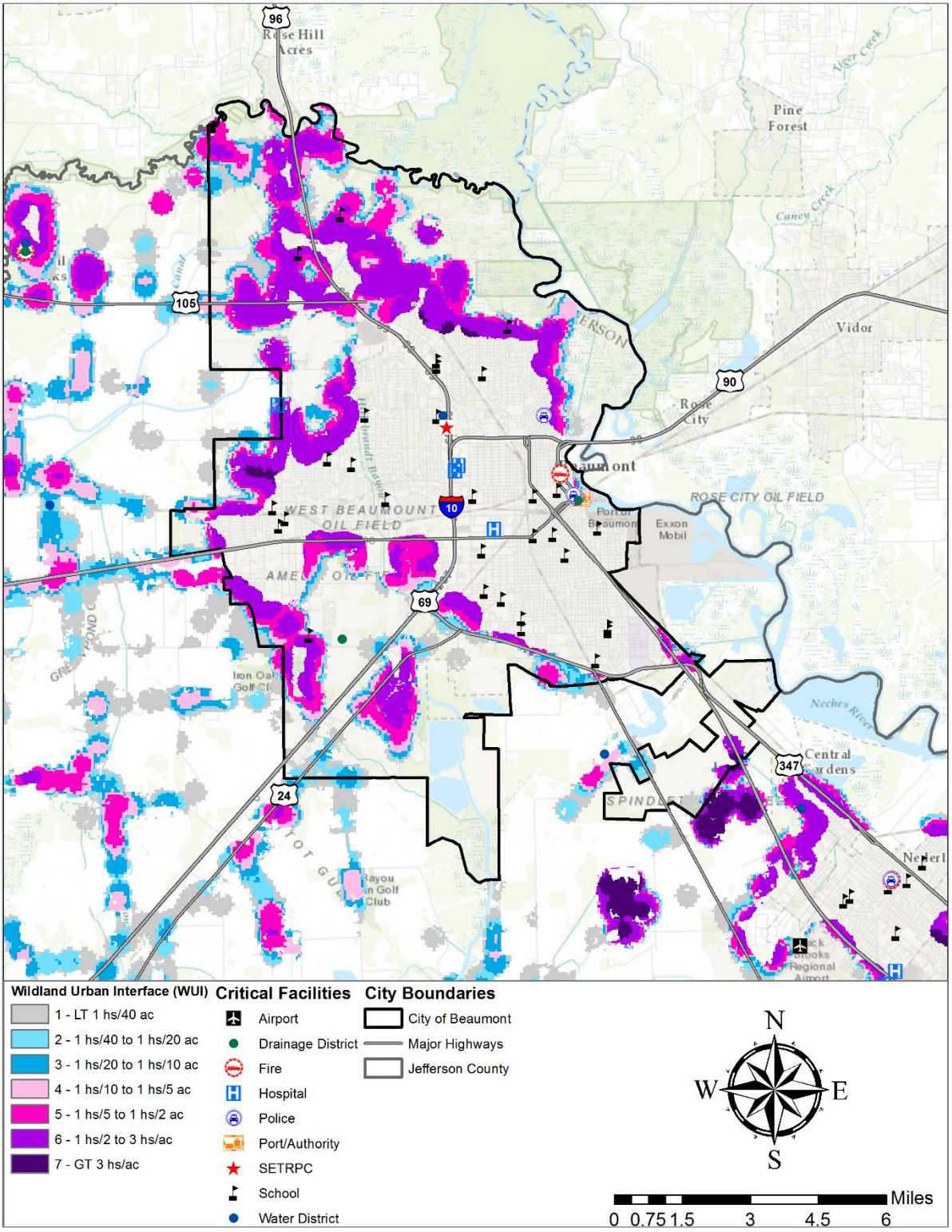
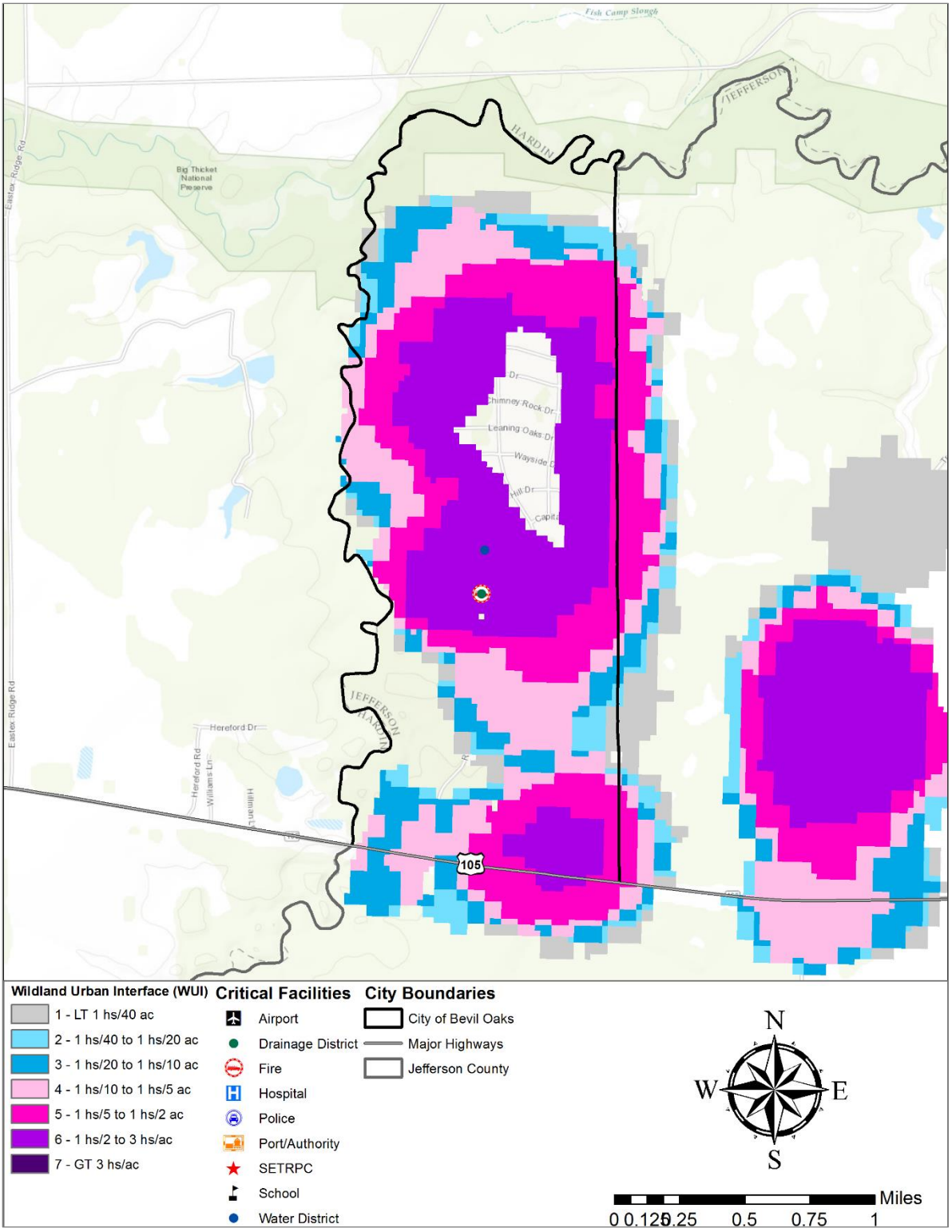


Figure 13-2. Wildland Urban Interface Map – City of Beaumont, SETRPC



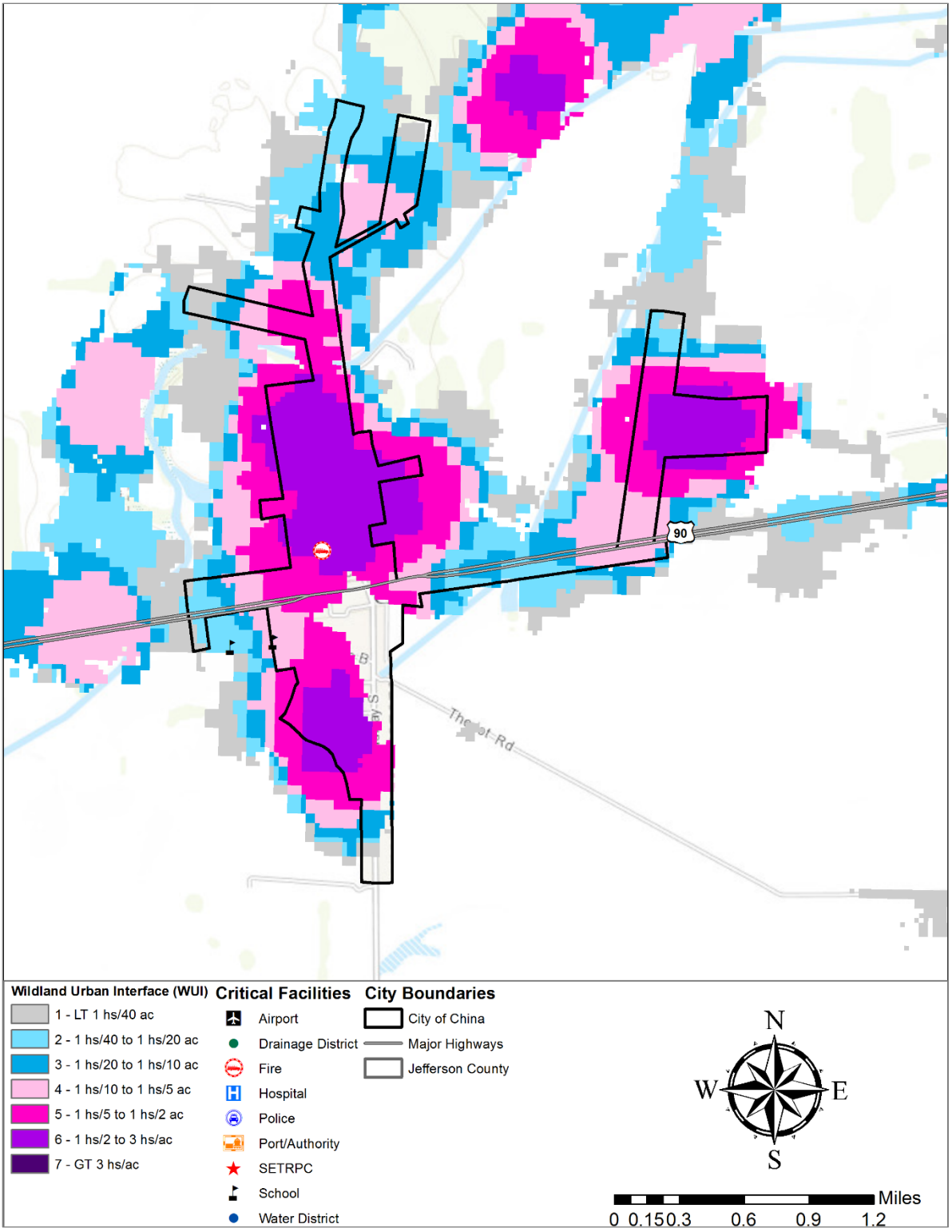
It is estimated that 23 percent of the total population in Beaumont live within the WUI. However, the entire City of Beaumont, including the SETRPC, is at risk for wildfires.

Figure 13-3. Wildland Urban Interface Map – City of Bevil Oaks



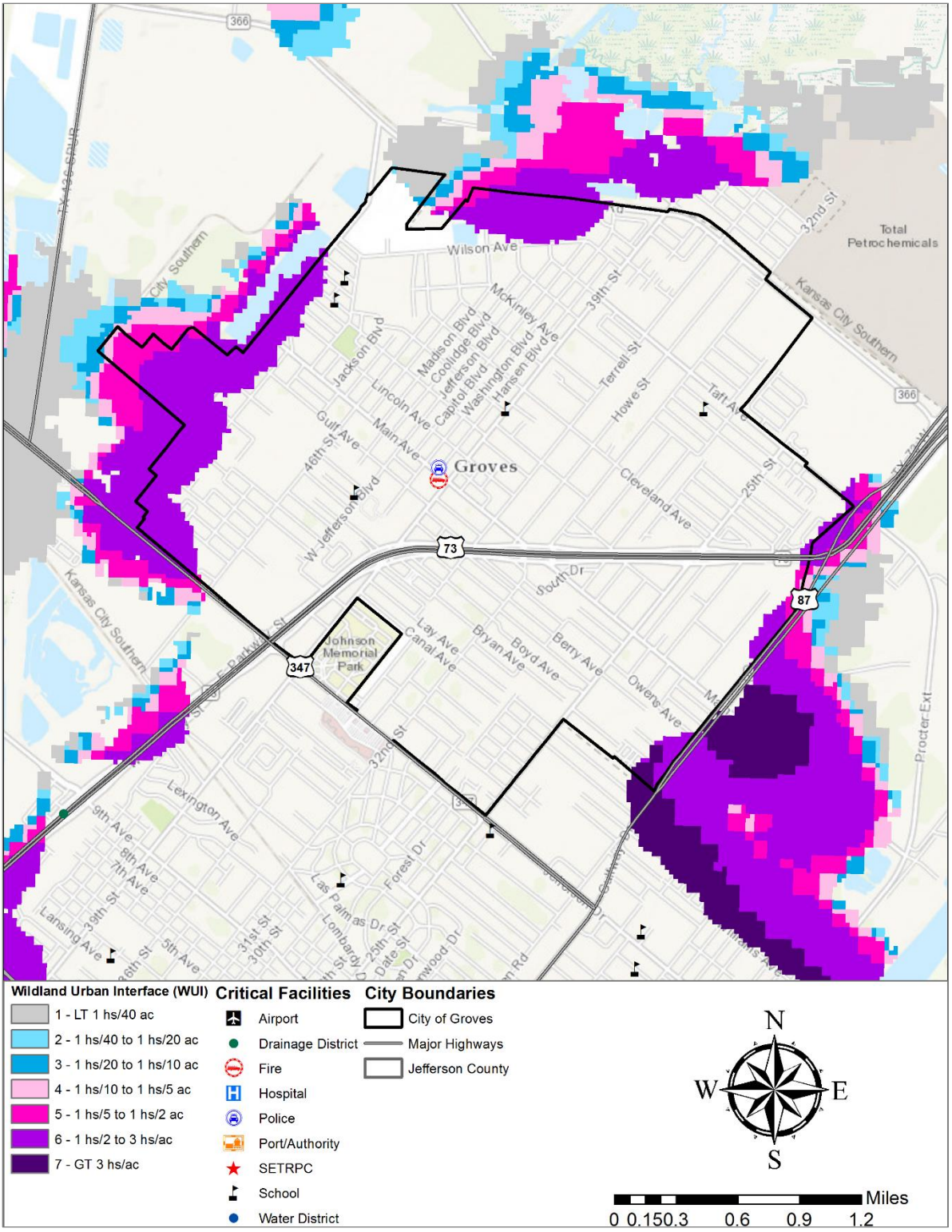
It is estimated that 83 percent of the total population in Bevil Oaks live within the WUI. However, the entire City of Bevil Oaks is at risk for wildfires.

Figure 13-4. Wildland Urban Interface Map – City of China



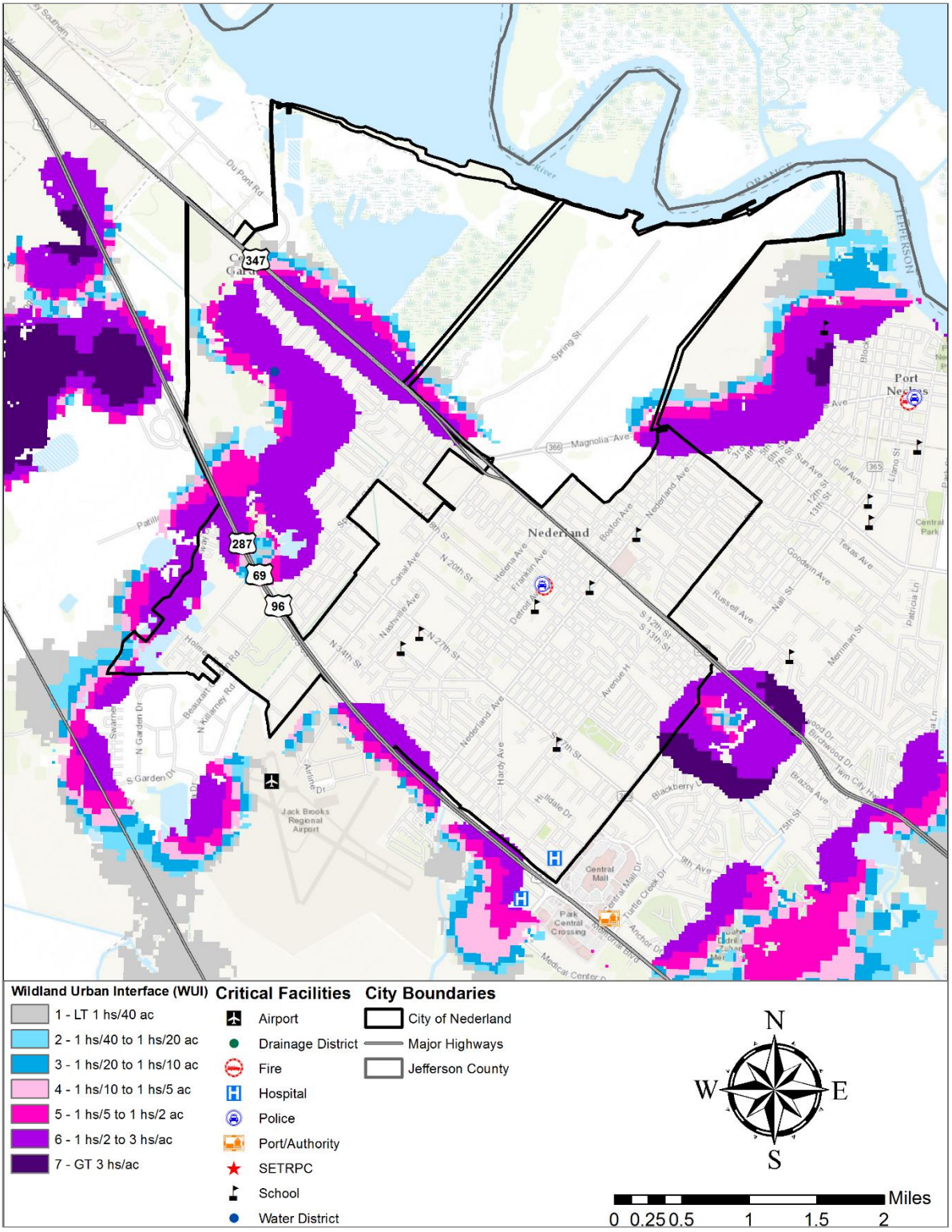
It is estimated that 96 percent of the total population in China live within the WUI. However, the entire City of China is at risk for wildfires.

Figure 13-5. Wildland Urban Interface Map – City of Groves



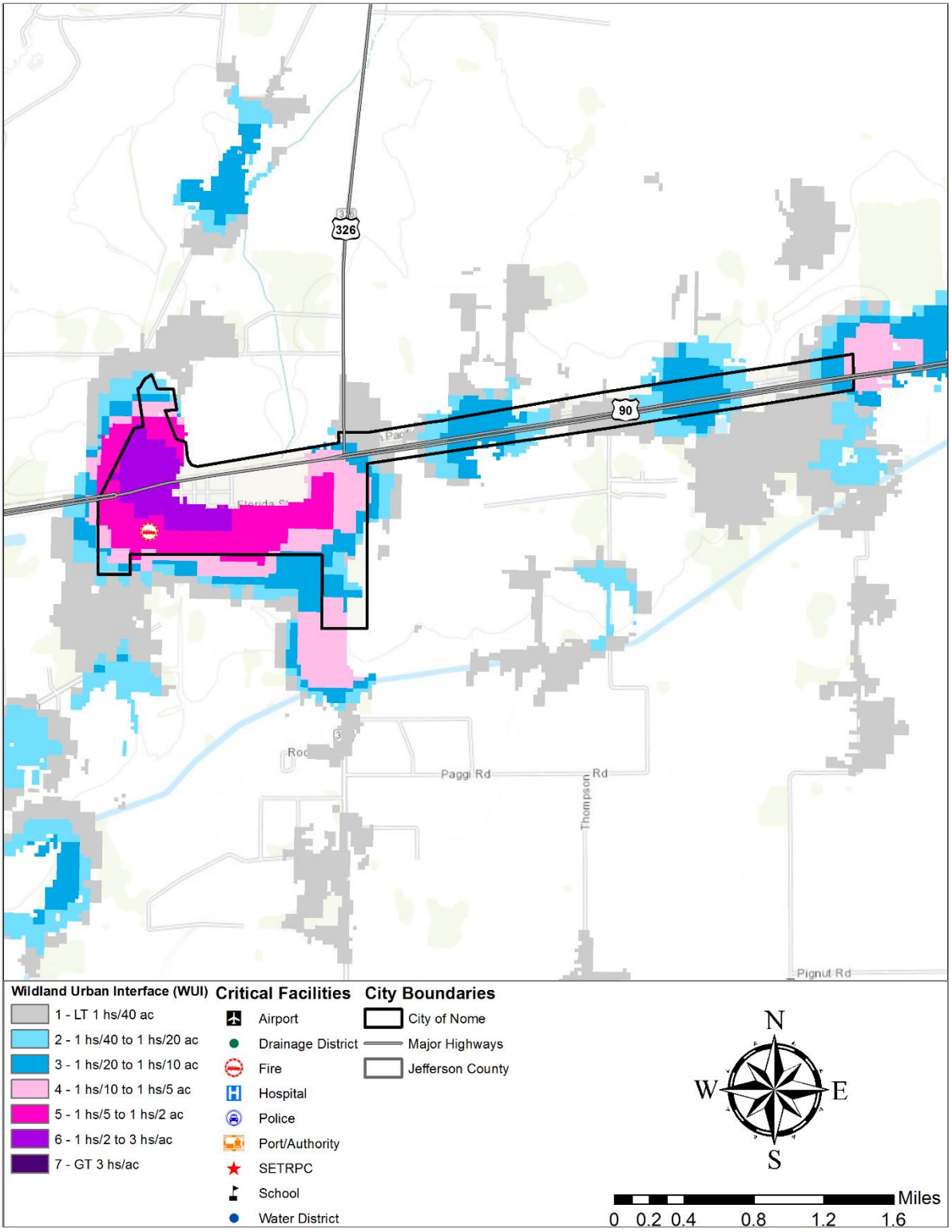
It is estimated that 7 percent of the total population in Groves live within the WUI. However, the entire City of Groves is at risk for wildfires.

Figure 13-6. Wildland Urban Interface Map – City of Nederland



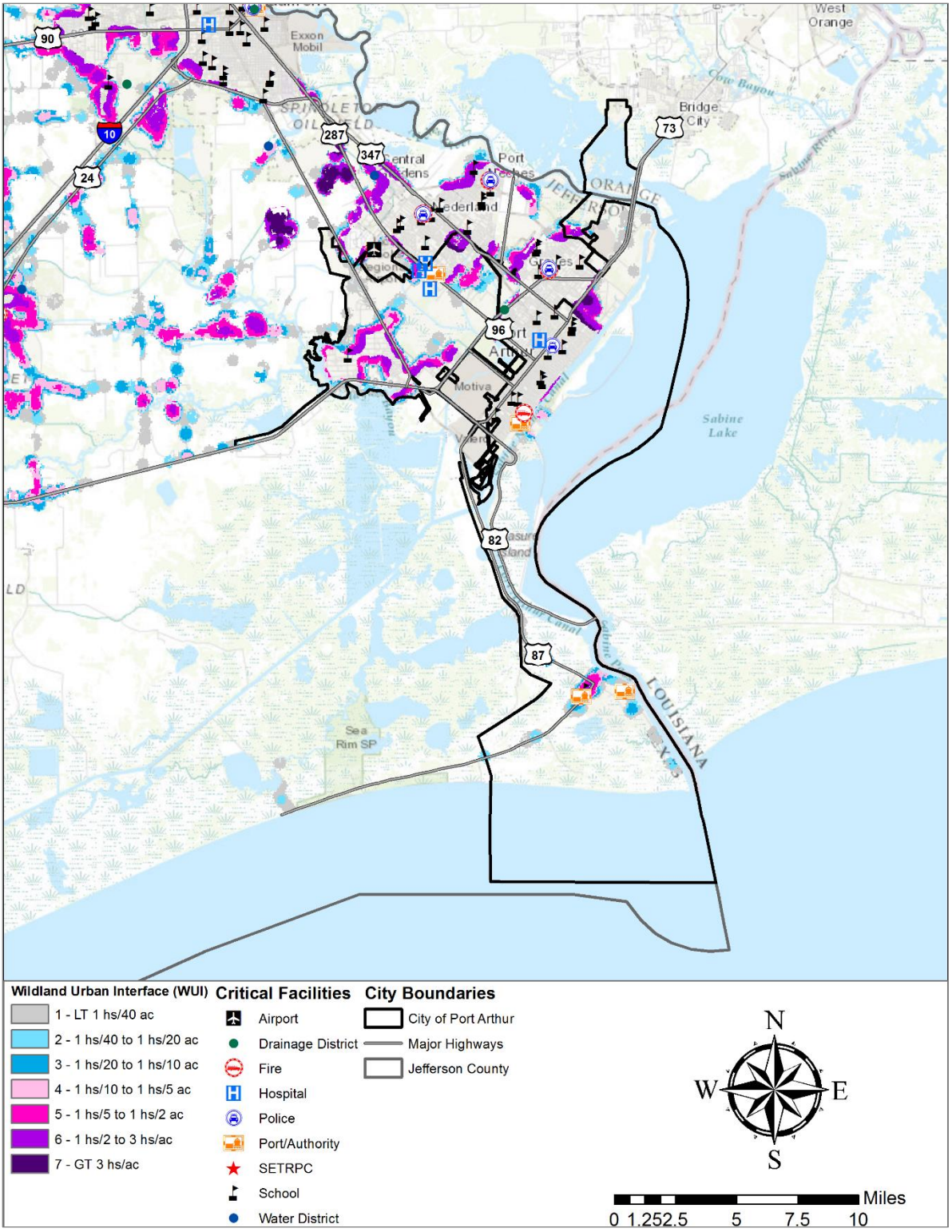
It is estimated that 4 percent of the total population in Nederland live within the WUI. However, the entire City of Nederland is at risk for wildfires.

Figure 13-7. Wildland Urban Interface Map – City of Nome



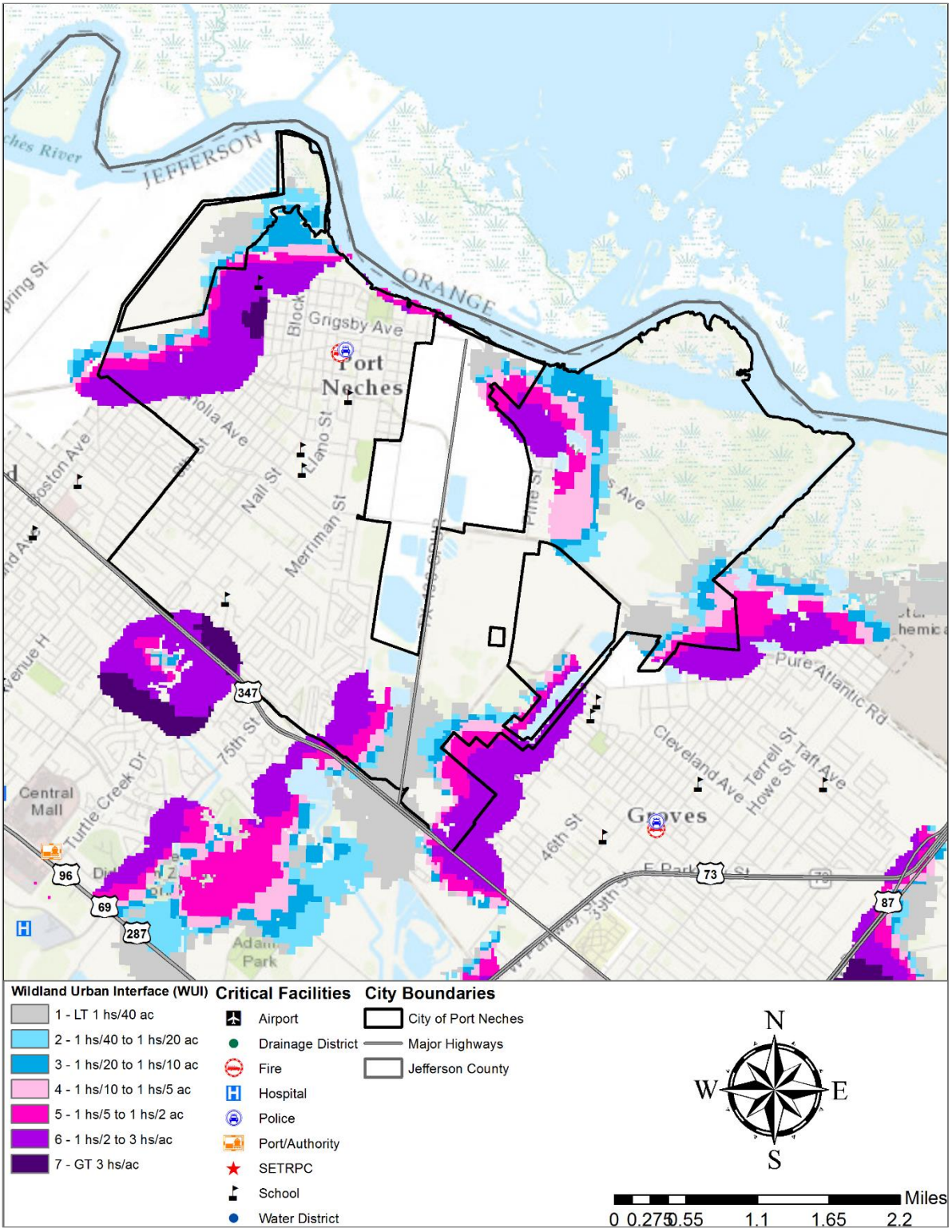
It is estimated that 86 percent of the total population in Nome live within the WUI. However, the entire City of Nome is at risk for wildfires.

Figure 13-8. Wildland Urban Interface Map – City of Port Arthur



It is estimated that 16 percent of the total population in Port Arthur live within the WUI. However, the entire City of Port Arthur is at risk for wildfires.

Figure 13-9. Wildland Urban Interface Map – City of Port Neches



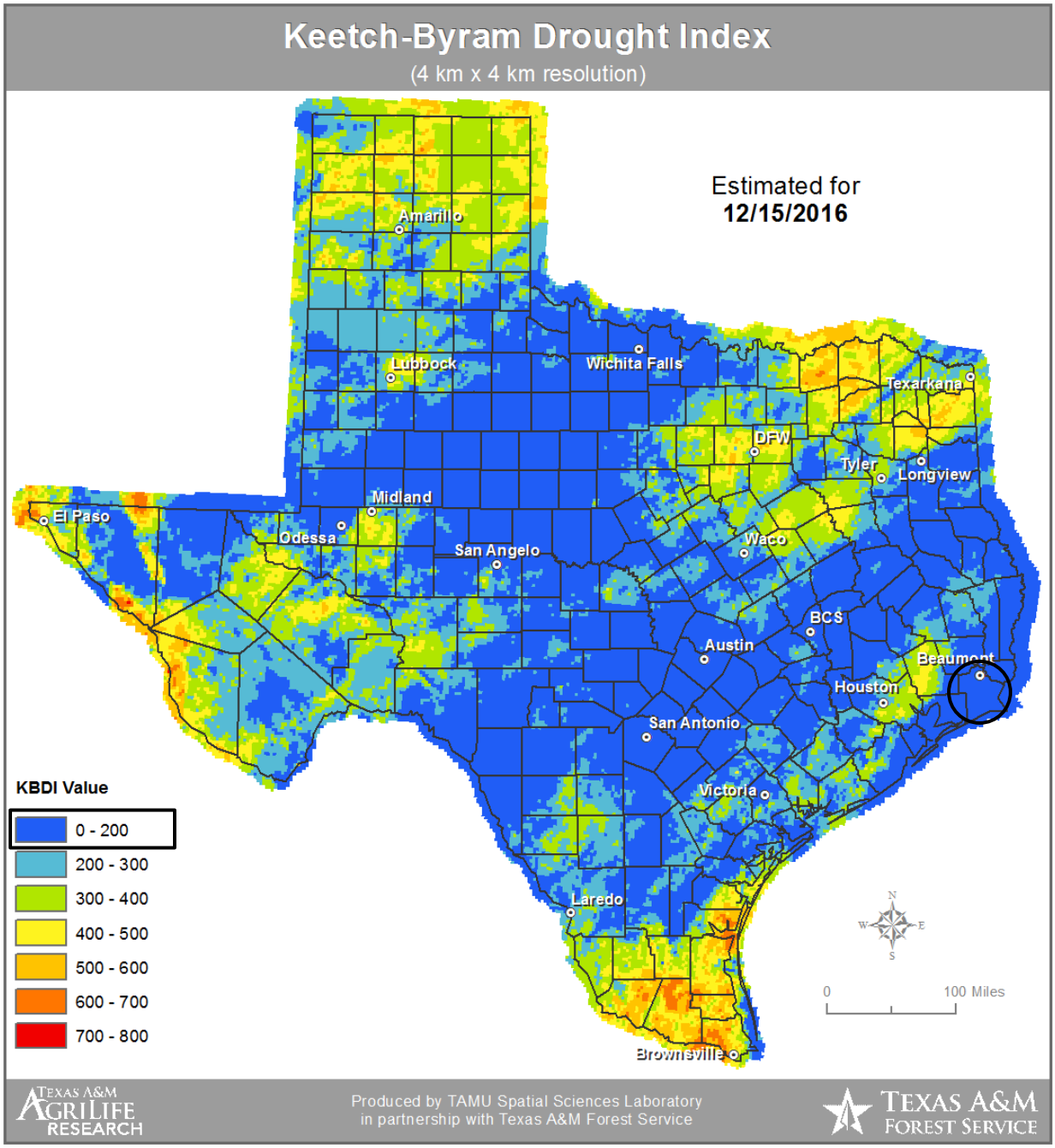
It is estimated that 19 percent of the total population in Port Neches live within the WUI. However, the entire City of Port Neches is at risk for wildfires.

Extent

Risk for a wildfire event is measured in terms of magnitude and intensity using the Keetch Byram Drought Index (KBDI), a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI determines forest fire potential based on a daily water balance, derived by balancing a drought factor with precipitation and soil moisture (assumed to have a maximum storage capacity of 8 inches), and is expressed in hundredths of an inch of soil moisture depletion.

Each color in Figure 13-10 represents the drought index at that location. The drought index ranges from 0 to 800. A drought index of 0 represents no moisture depletion, and a drought index of 800 represents absolutely dry conditions.

Figure 13-10. Keetch-Byram Drought Index (KBDI) for the State of Texas, December 2016[1]



Fire behavior can be categorized at four distinct levels on the KBDI:

- **0 -200:** Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.

[1] The black circle indicates the Jefferson County planning area.

- **200 -400:** Fires more readily burn and will carry across an area with no gaps. Heavier fuels will not readily ignite and burn. Expect smoldering and the resulting smoke to carry into and possibly through the night.
- **400 -600:** Fires intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
- **600 -800:** Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The KBDI is a good measure of the readiness of fuels for a wildfire event. The KBDI should be referenced as the area experiences changes in precipitation and soil moisture, and caution exercised in dryer, hotter conditions.

The current range of intensity for Jefferson County in a wildfire event is within 0 to 200. The average extent to be mitigated for the Jefferson County planning area, including the SETRPC and all participating jurisdictions, is a KBDI of 566. At this level the intensity of fires begins to significantly increase and fires readily burn in all directions, exposing mineral soils in some locations.

The Texas Forest Service's Fire Intensity Scale identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on the weighted average of 4 percentile weather categories. Jefferson County, including the SETRPC and all participating jurisdictions, is between a potential low to moderate wildfire intensities. Figures 13-11 through 13-19 identify the wildfire intensity for the Jefferson County planning area.

Figure 13-11. Fire Intensity Scale Map – Jefferson County

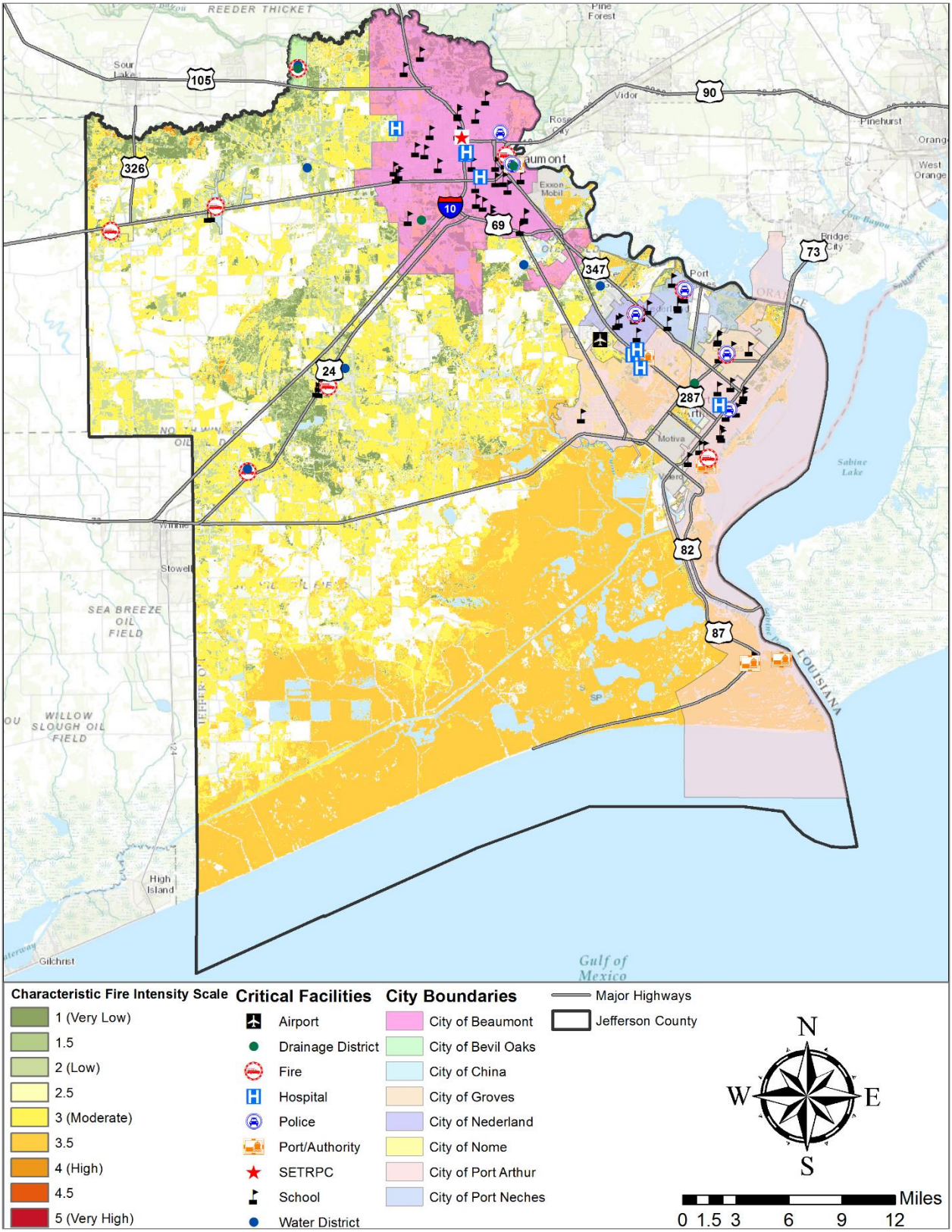


Figure 13-12. Fire Intensity Scale Map – Beaumont, SETRPC

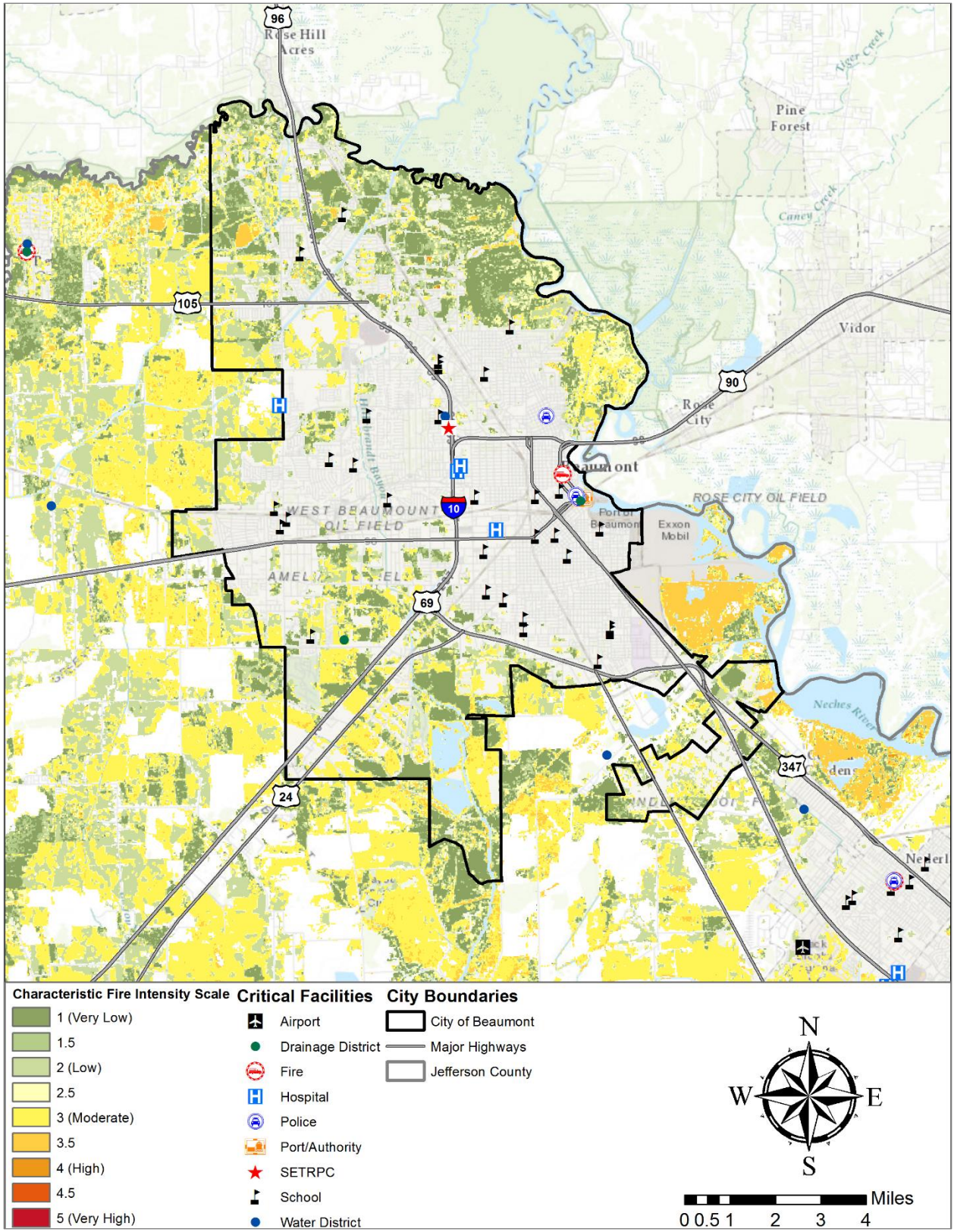


Figure 13-13. Fire Intensity Scale Map – Bevil Oaks

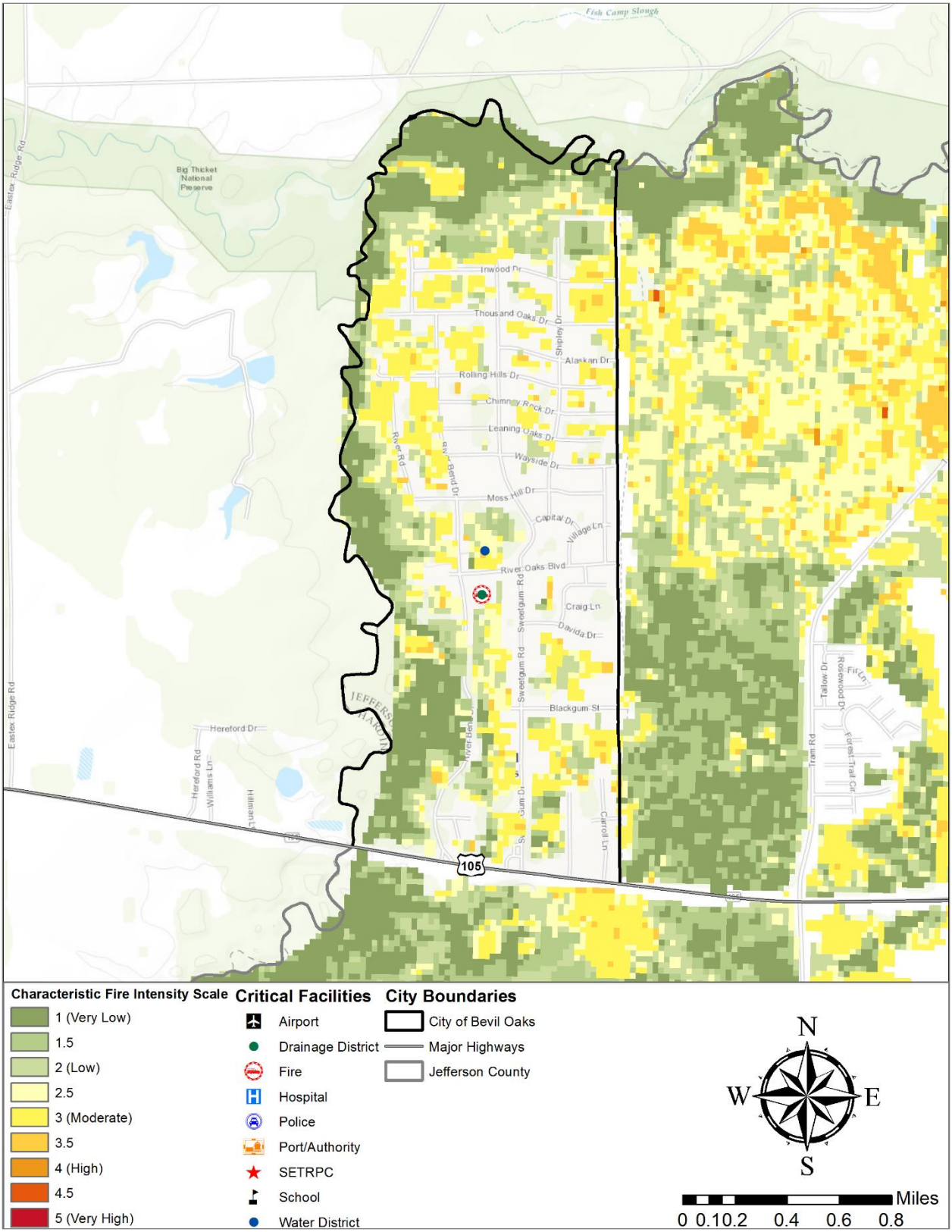


Figure 13-14. Fire Intensity Scale Map – China

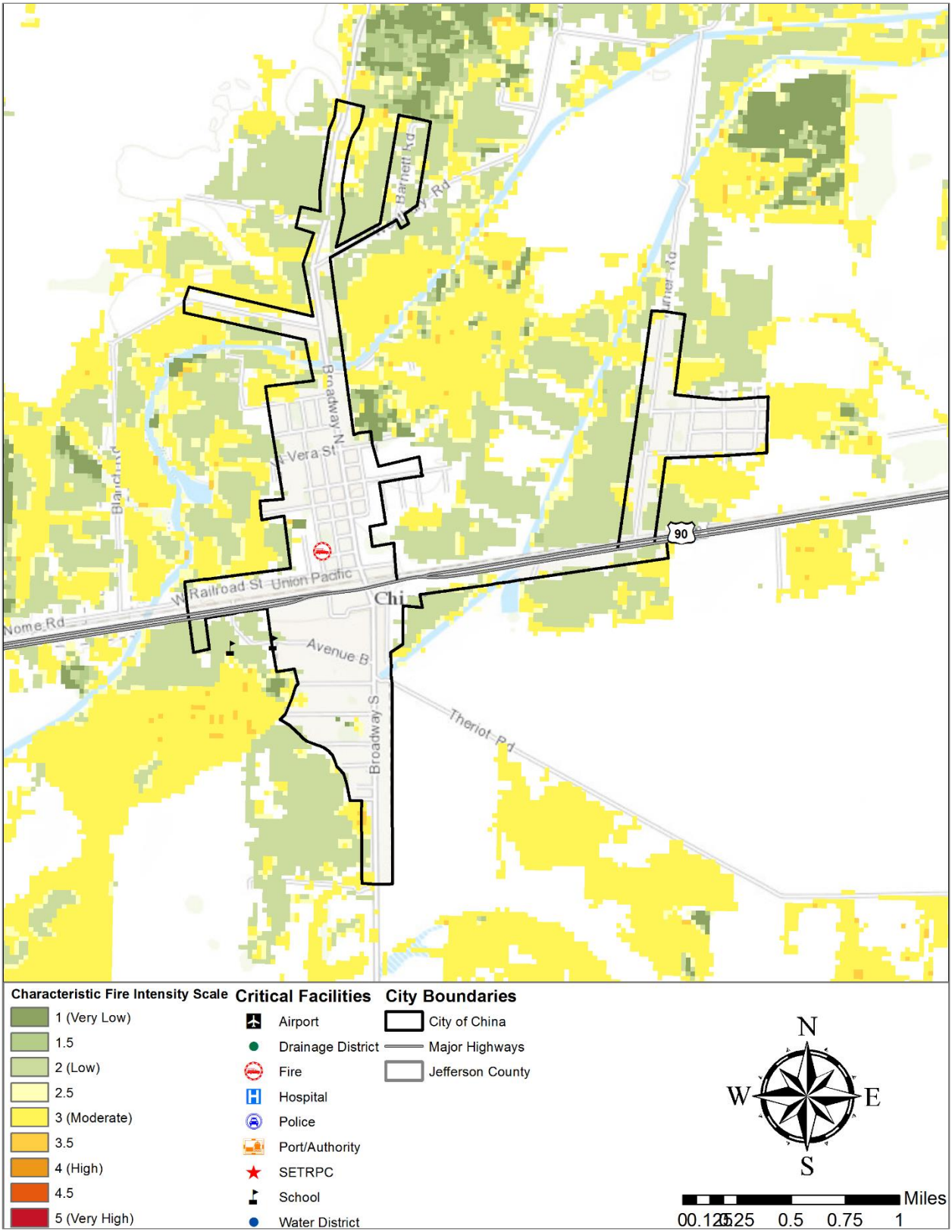


Figure 13-15. Fire Intensity Scale Map – Groves

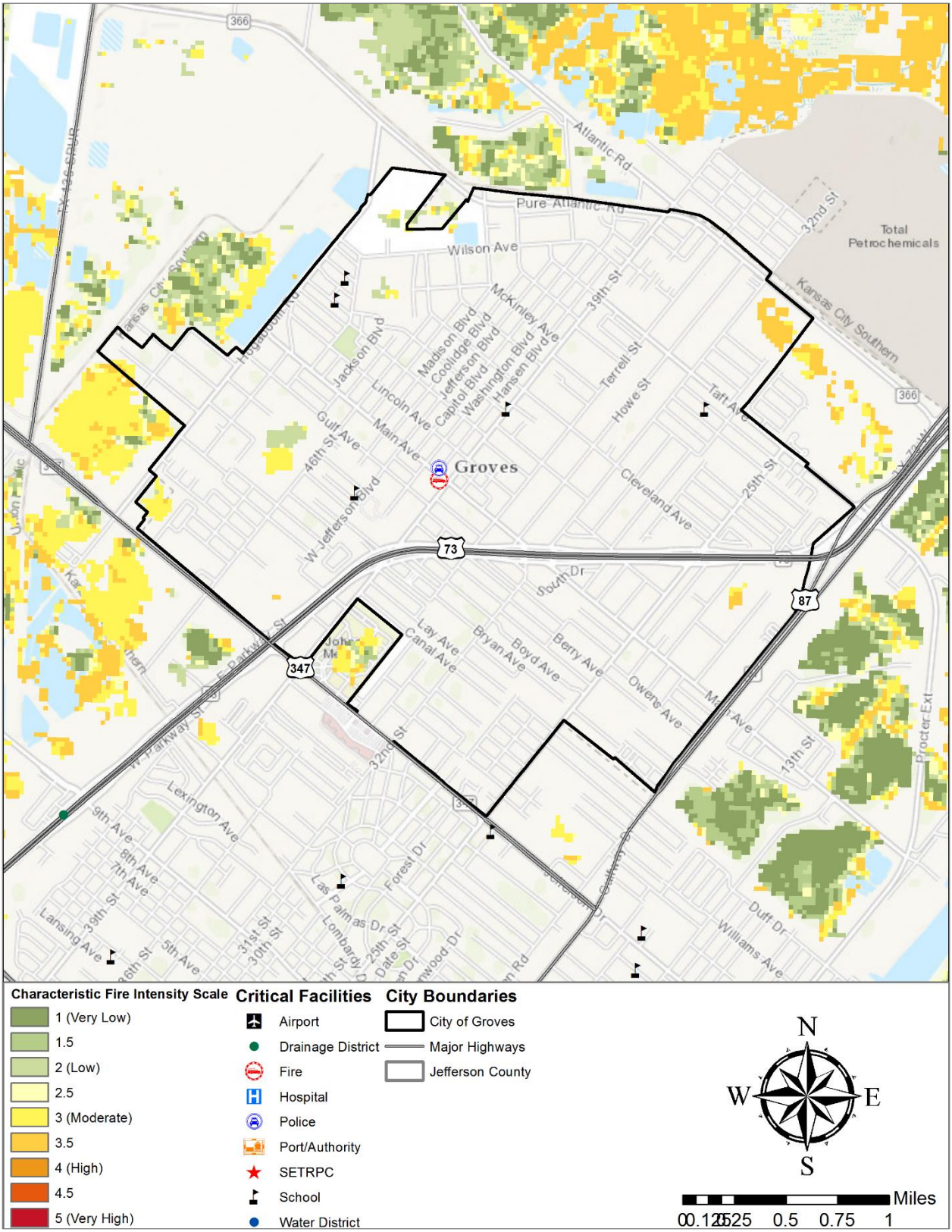


Figure 13-16. Fire Intensity Scale Map – Nederland

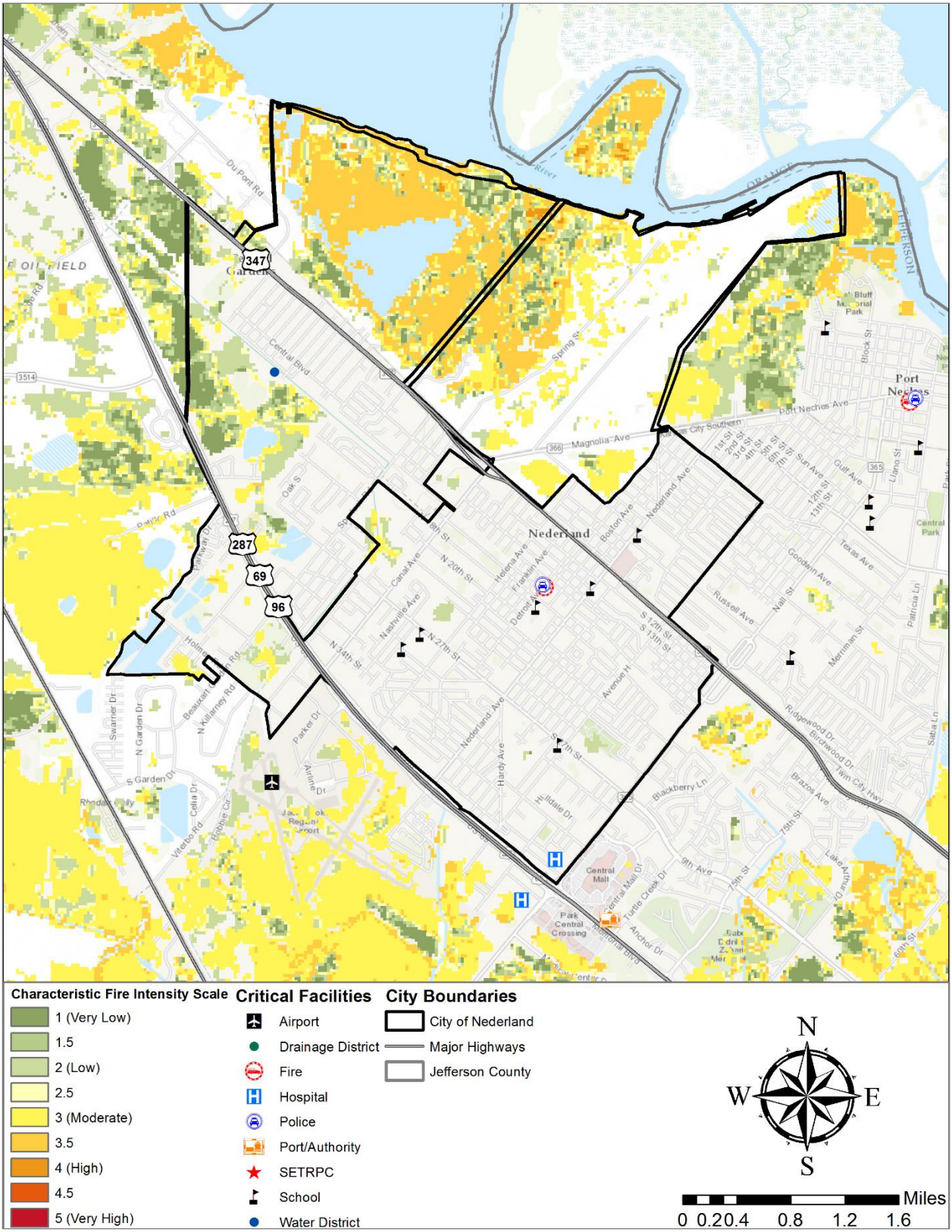


Figure 13-17. Fire Intensity Scale Map – Nome

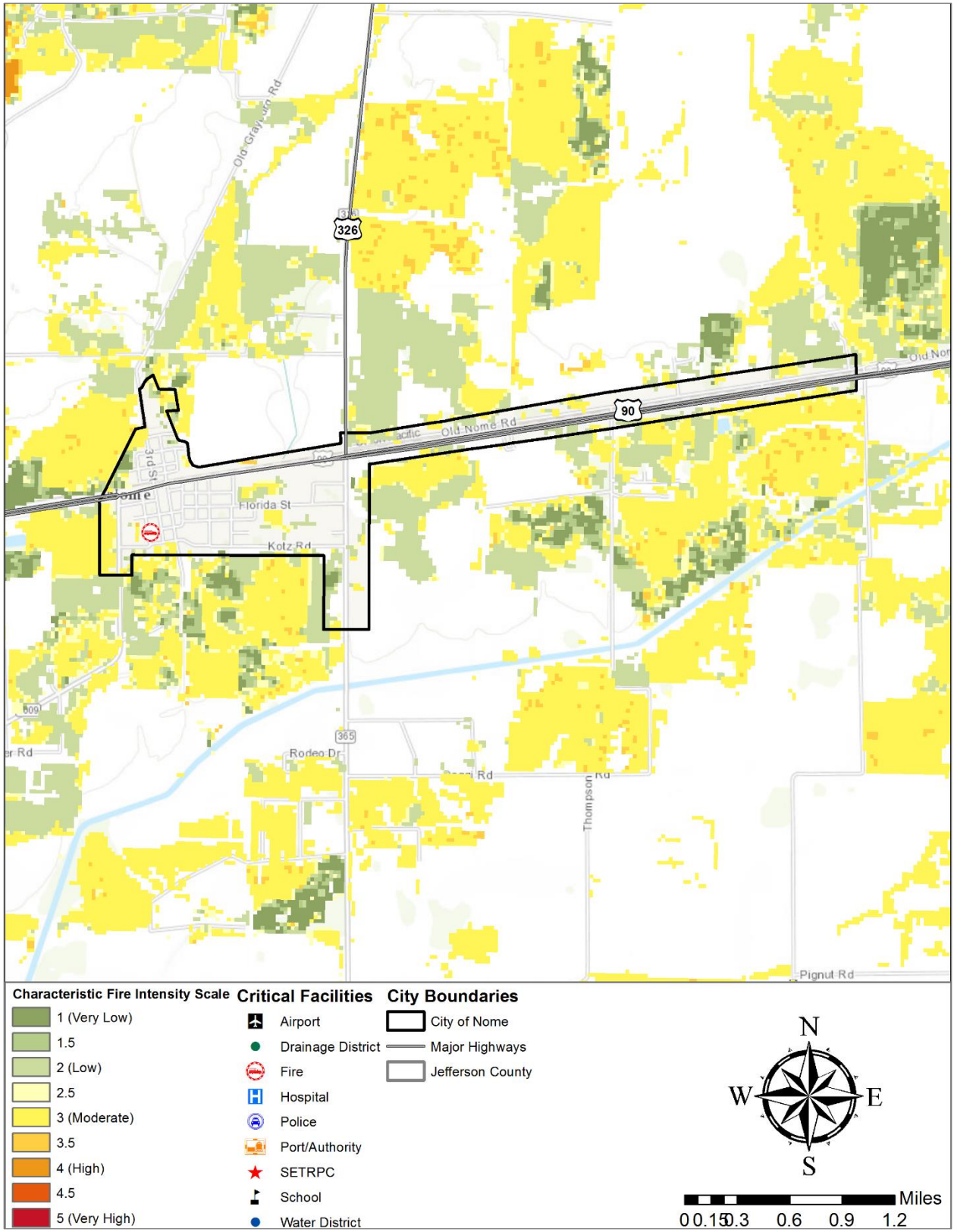


Figure 13-18. Fire Intensity Scale Map – Port Arthur

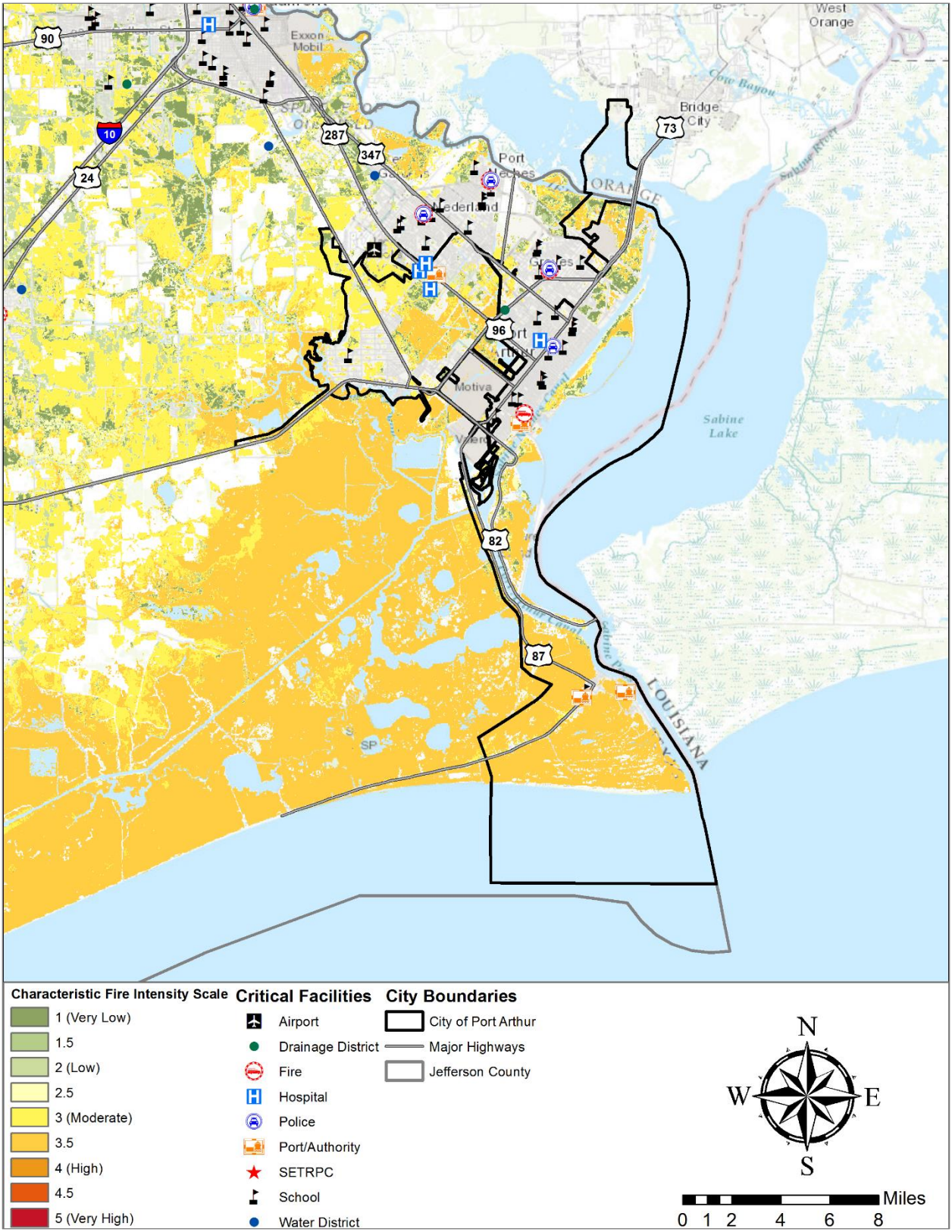
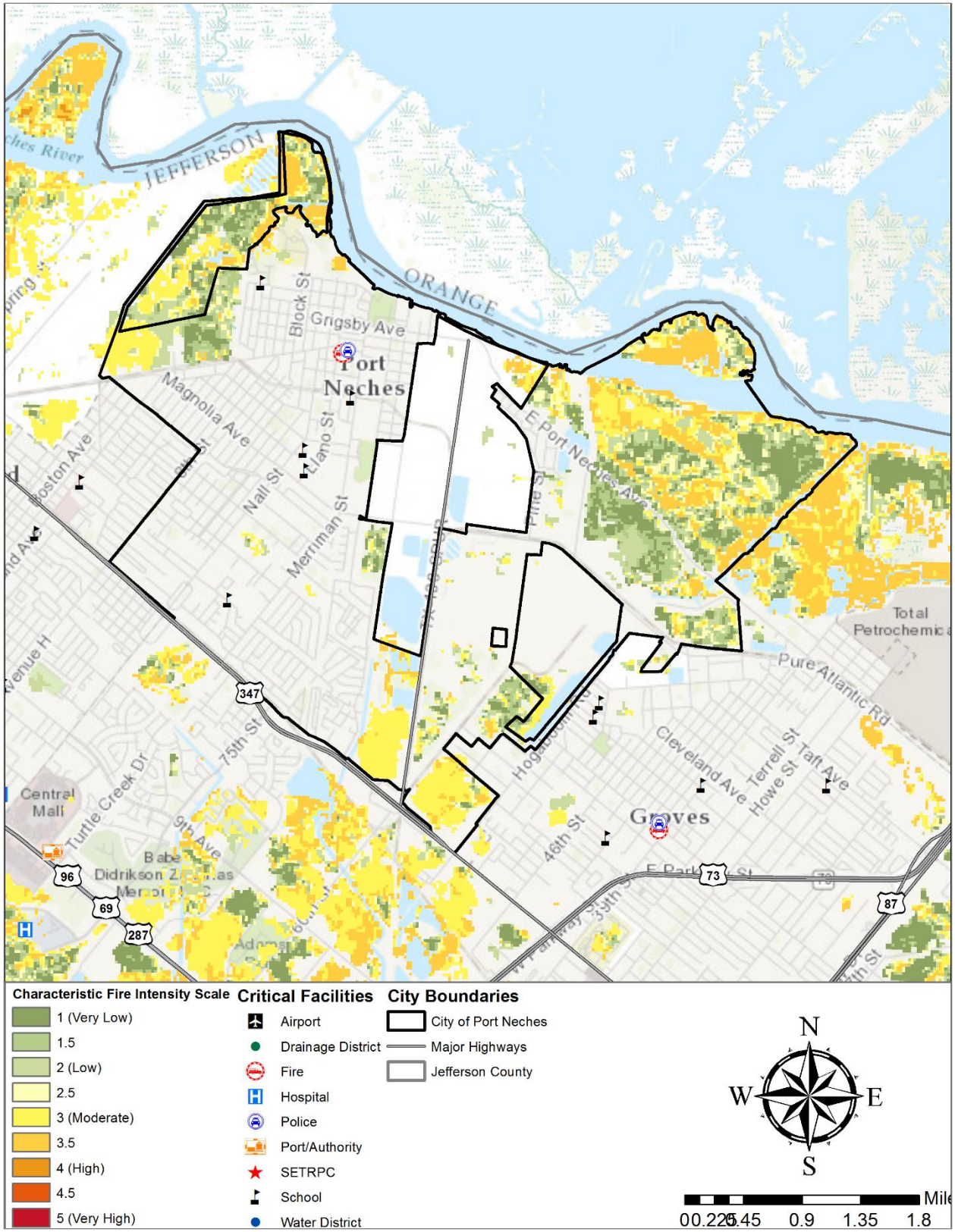


Figure 13-19. Fire Intensity Scale Map – Port Neches



Historical Occurrences

The Texas Forest Service reported 227 wildfire events between 2005 and 2015. The National Center for Environmental Center (NCEI) reported 1 event from 1996 through June 2016. The Texas Forest Service (TFS) started collecting wildfire data in 1985 and volunteer fire departments started reporting events after 2005. Due to a lack of recorded data for wildfire events prior to 2005, frequency calculations are based on a twelve-year period, using only data from recorded years. The map below shows approximate locations of wildfires, which can be grass or brushfires of any size (Figure 13-20). Table 13-1 identifies the number of wildfires by jurisdiction, and total acreage burned. It is important to note that the SETRPC is located within the City of Beaumont, however, none of the reported wildfire events have impacted the SETRPC.

Figure 13-20. Location and Historic Wildfire Events for Jefferson County

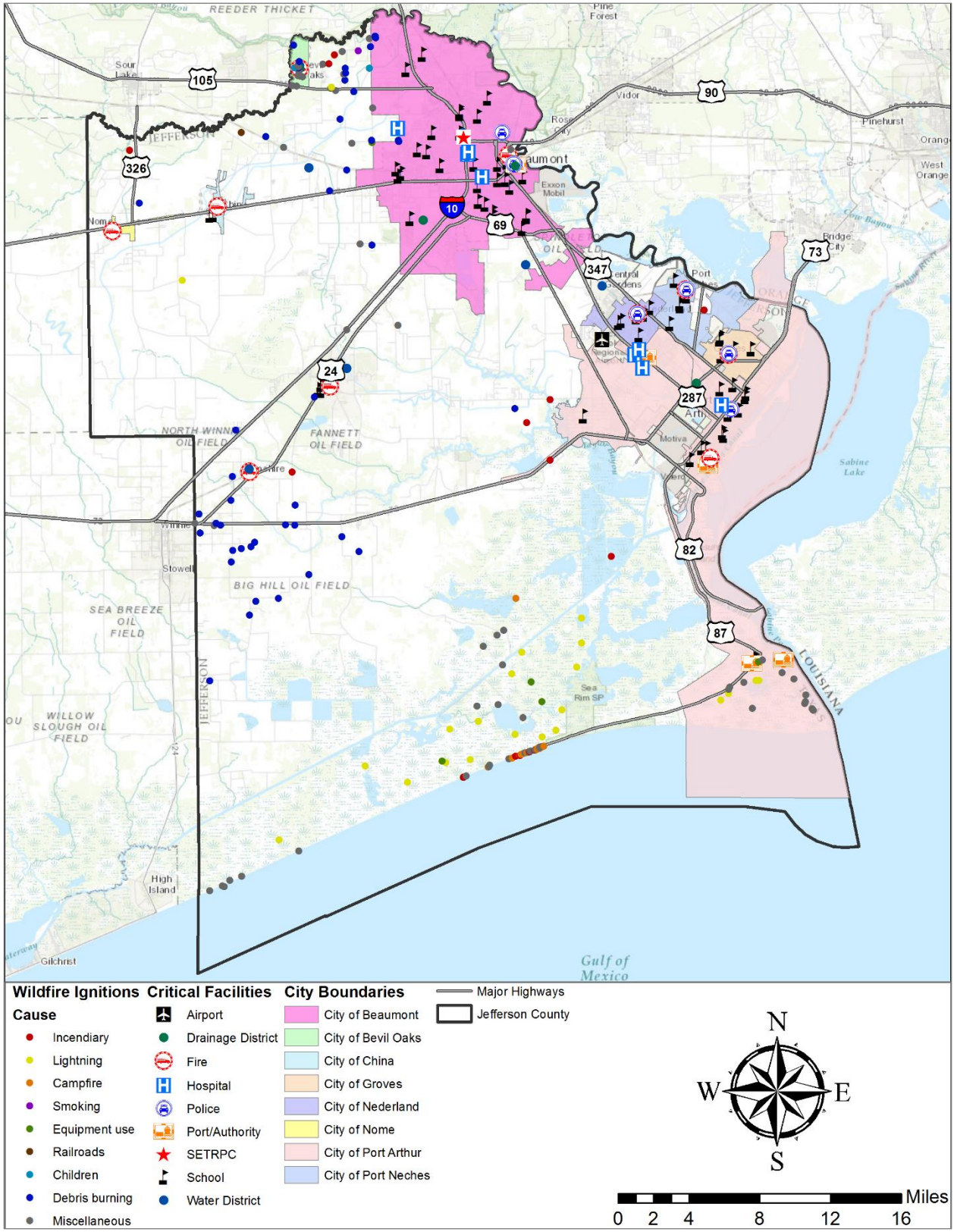


Table 13-1. Historical Wildfire Events Summary

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Jefferson County	228	4,207
Beaumont	13	345
Bevil Oaks	22	24
China	4	6
Groves	0	0
Nederland	4	4
Nome	0	0
Port Arthur	3	5
Port Neches	0	0

Table 13-2. Acreage of Suppressed Wildfire by Year

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jefferson County	157	235	0	929	766	339	1,308	331	139	2	1
Beaumont	0	0	0	4	6	18	317	0	0	0	0
Bevil Oaks	0	0	0	0	11	2	11	0	0	0	0
China	0	0	0	0	0	4	2	0	0	0	0
Groves	0	0	0	0	0	0	0	0	0	0	0
Nederland	0	0	0	0	0	0	2	1	1	0	0
Nome	0	0	0	0	0	0	0	0	0	0	0
Port Arthur	0	0	0	0	3	0	2	0	0	0	0
Port Neches	0	0	0	0	0	0	0	0	0	0	0

Probability of Future Events

Wildfires can occur at any time of the year. As the jurisdictions within the County move into wildland, the potential area of occurrence of wildfire increases. With 228 events in a 12 year period, an event within Jefferson County, including the SETRPC and all participating jurisdictions, is highly likely, meaning an event is probable within the next year.

Vulnerability and Impact

Periods of drought, dry conditions, high temperatures, and low humidity are factors that contribute to the occurrence of a wildfire event. Areas along railroads and people whose homes are in woodland settings have an increased risk of being affected by wildfire.

The heavily populated urban areas of Jefferson County are not likely to experience large and sweeping fires. Areas outside of city limits and in the unincorporated areas of Jefferson County are vulnerable. Unoccupied buildings and open spaces that have not been maintained have the greatest vulnerability to wildfire. The overall level of concern for wildfires is located mostly along the perimeter of the study area where wildland and urban areas interface. Figures 13-1 through 13-9 (above) illustrate the areas that are the most vulnerable to wildfire throughout the County.

The sparsely populated unincorporated areas of Dowling and Viterbo are capable of experiencing large sweeping fires, especially where areas of vegetation are not maintained. Areas along major highways in Cheek and China, as well as Jefferson County, have an increased vulnerability where empty lots and unoccupied areas are located.

The following critical facilities (Table 13-3) are located in the WUI and are more susceptible to wildfire in each participating jurisdiction:

Table 13-3. Critical Facilities Located in WUI by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	1 Fire Station, 7 Schools, 3 Water District Facilities, 1 Drainage District Facility, 1 Hospital
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	None
Nederland	Water District Facility
Nome	Fire Station
Port Arthur	None
Port Neches	1 School
SETRPC	None

Within Jefferson County, a total of 228 fire events were reported from 2005 to 2016. All of these events were suspected wildfires. Historic loss and annualized estimates due to wildfires are presented in Table 13-4 below. The frequency is approximately 19 events every year.

Table 13-4. Historic Loss Estimates Due to Wildfire[2]

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED	ANNUAL ACRE LOSSES
Jefferson County	228	4,207	350.58
Beaumont	13	345	28.75
Bevil Oaks	22	24	2
China	4	6	0.5
Groves	0	0	0
Nederland	4	4	0.33
Nome	0	0	0
Port Arthur	3	5	0.42
Port Neches	0	0	0
SETRPC	0	0	0

Figures 13-21 through 13-29 show Jefferson County and the threat of wildfire to the County and participating jurisdictions.

[2] Events divided by 12 years of data.

Figure 13-21. Wildfire Ignition Density – Jefferson County

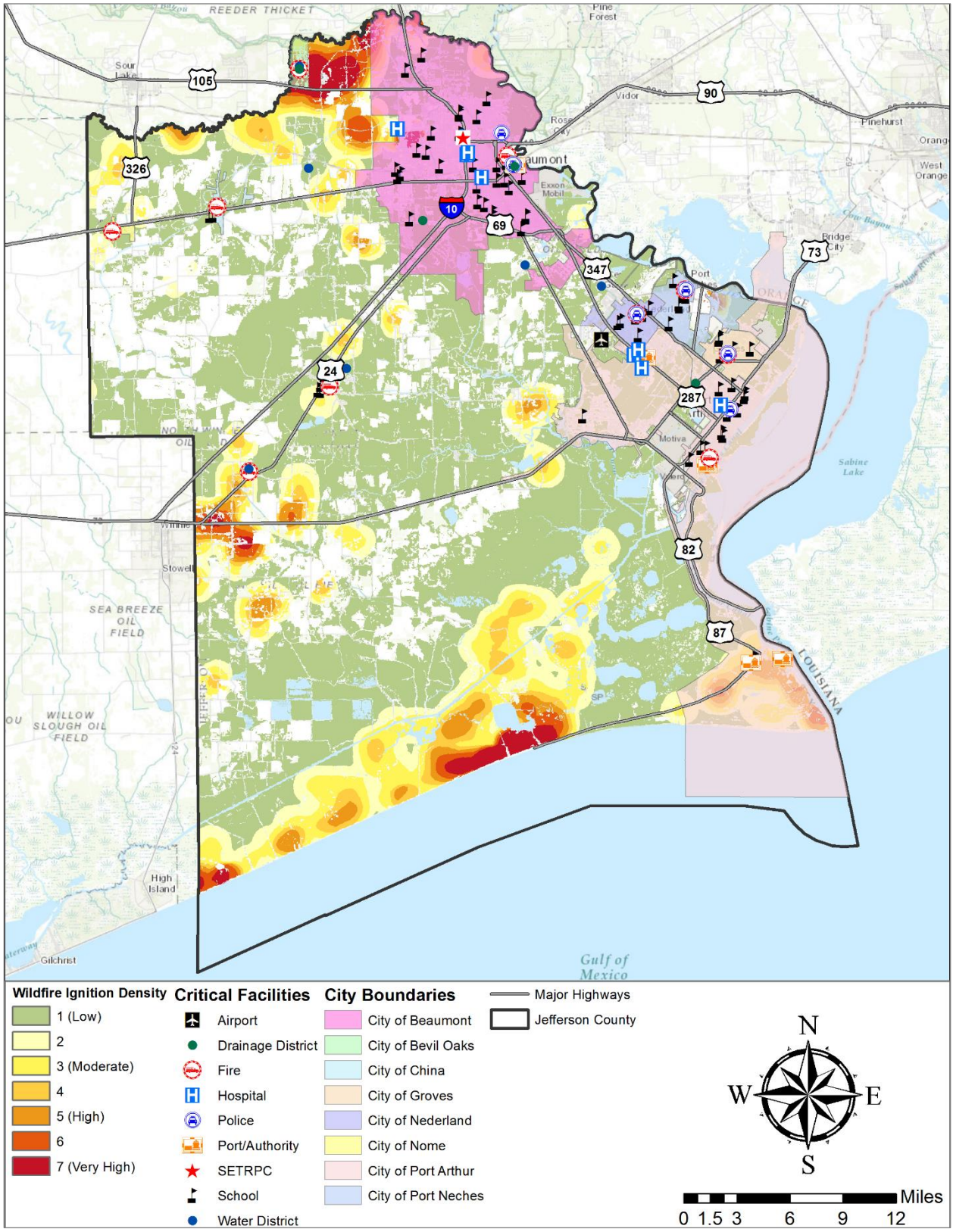


Figure 13-22. Wildfire Ignition Density – Beaumont, SETRPC

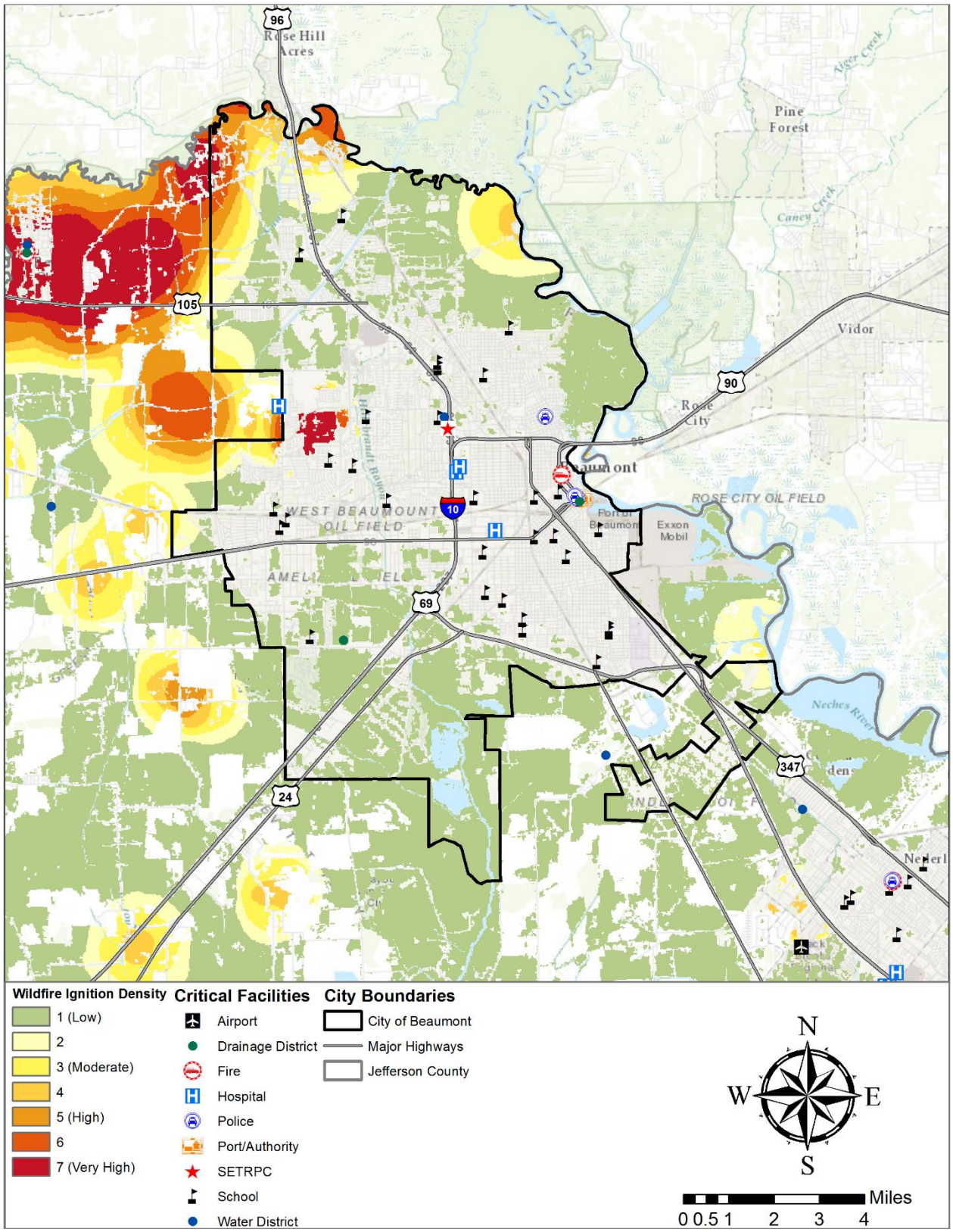


Figure 13-23. Wildfire Ignition Density – Bevil Oaks

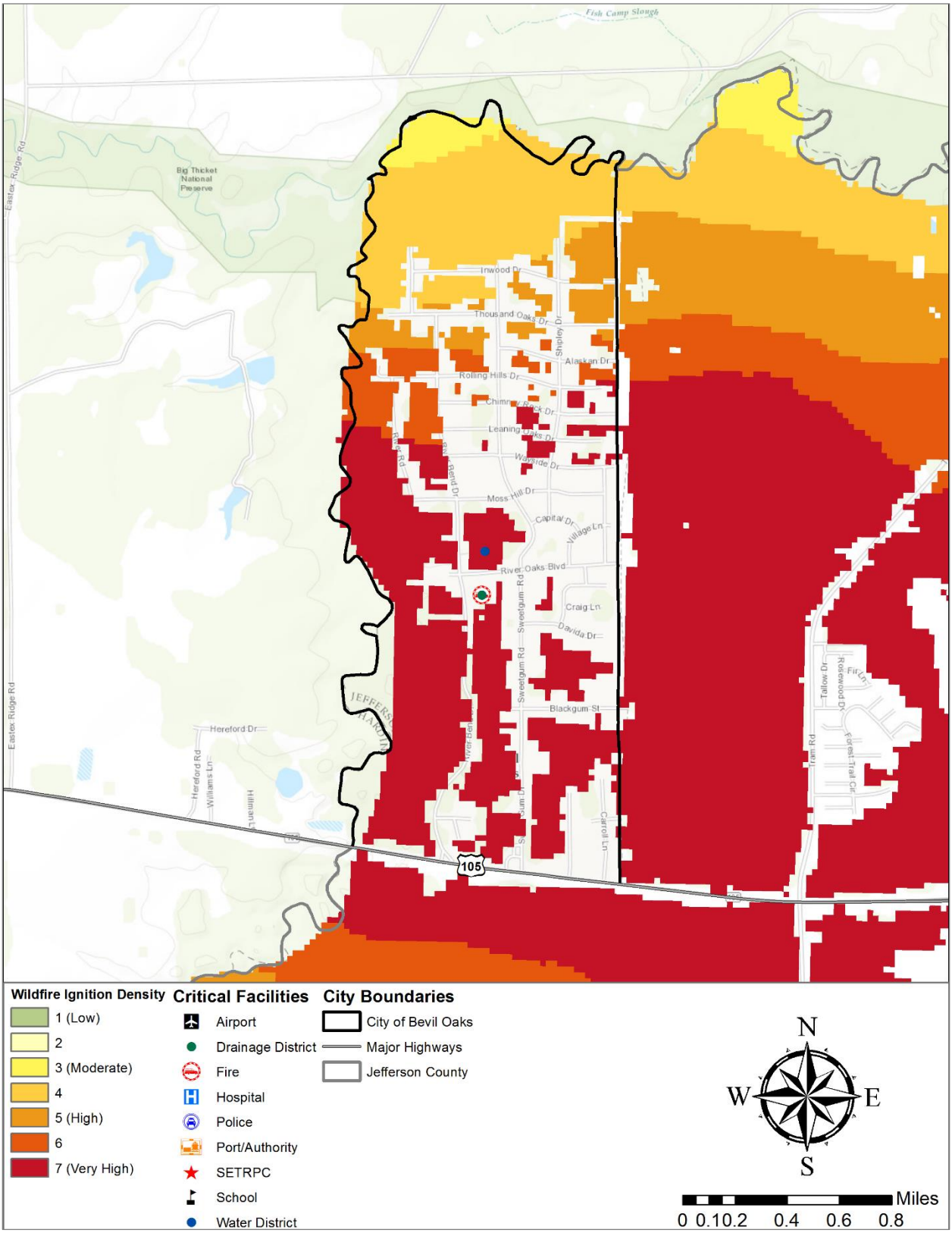


Figure 13-24. Wildfire Ignition Density – China

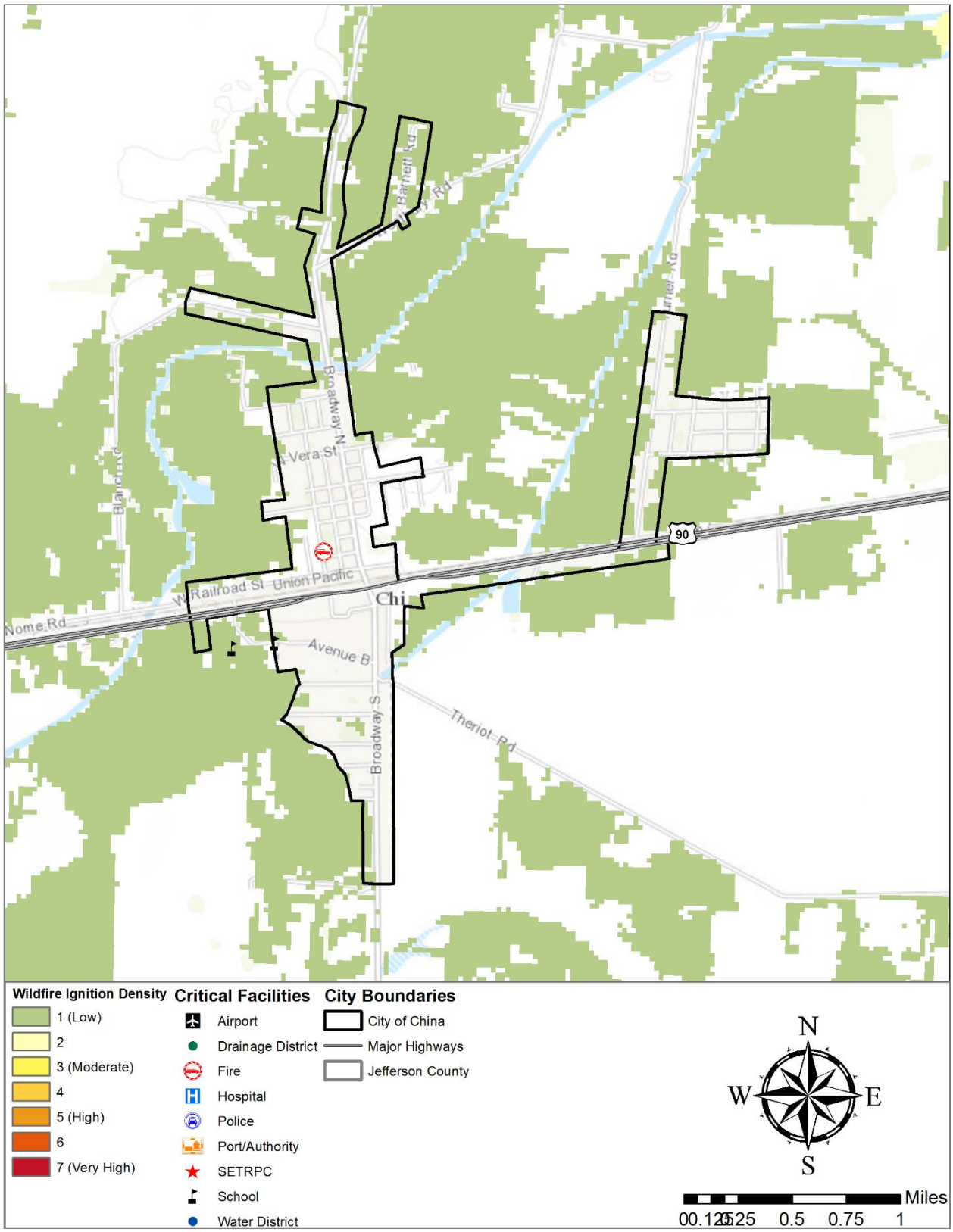


Figure 13-25. Wildfire Ignition Density – Groves

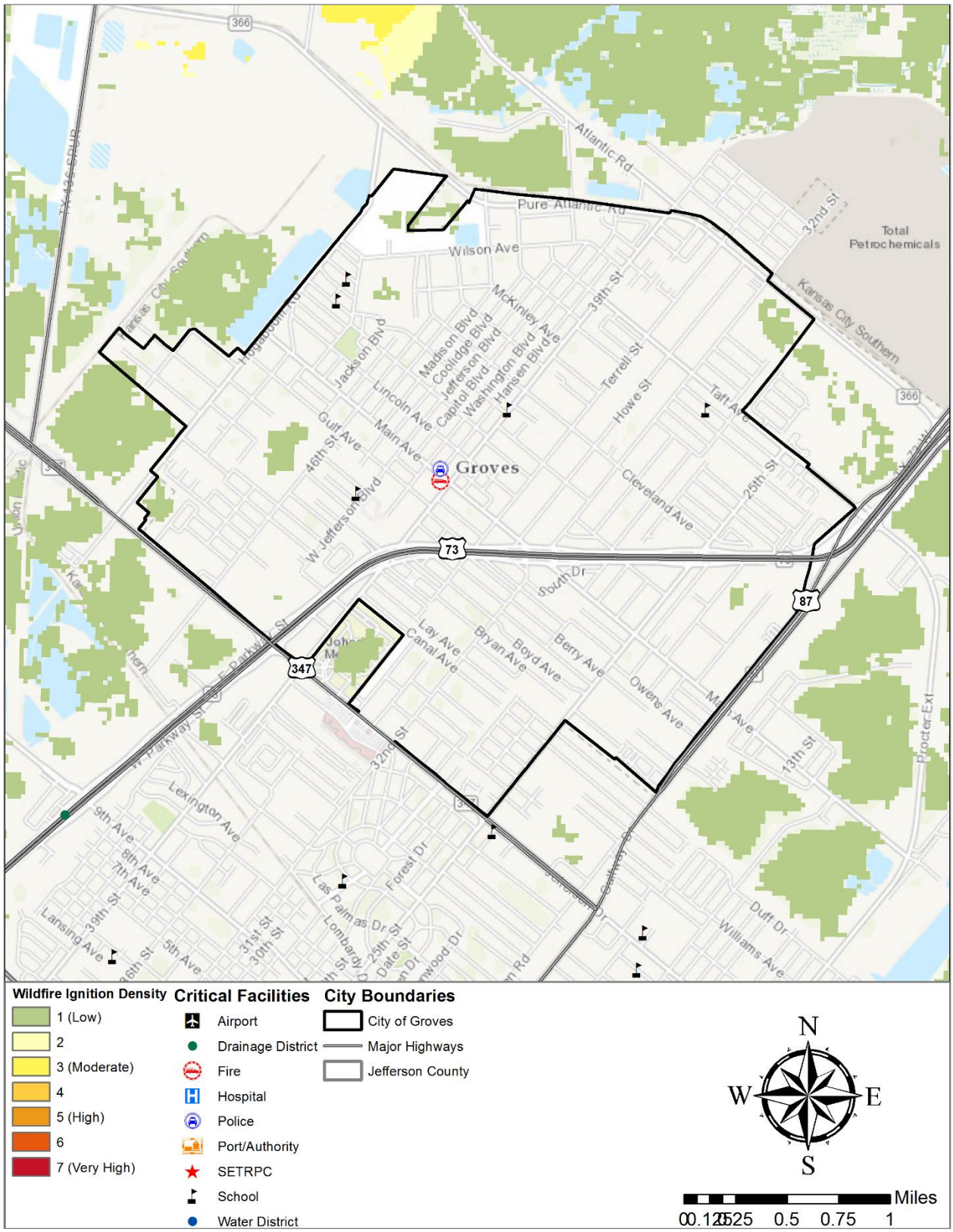


Figure 13-26. Wildfire Ignition Density – Nederland

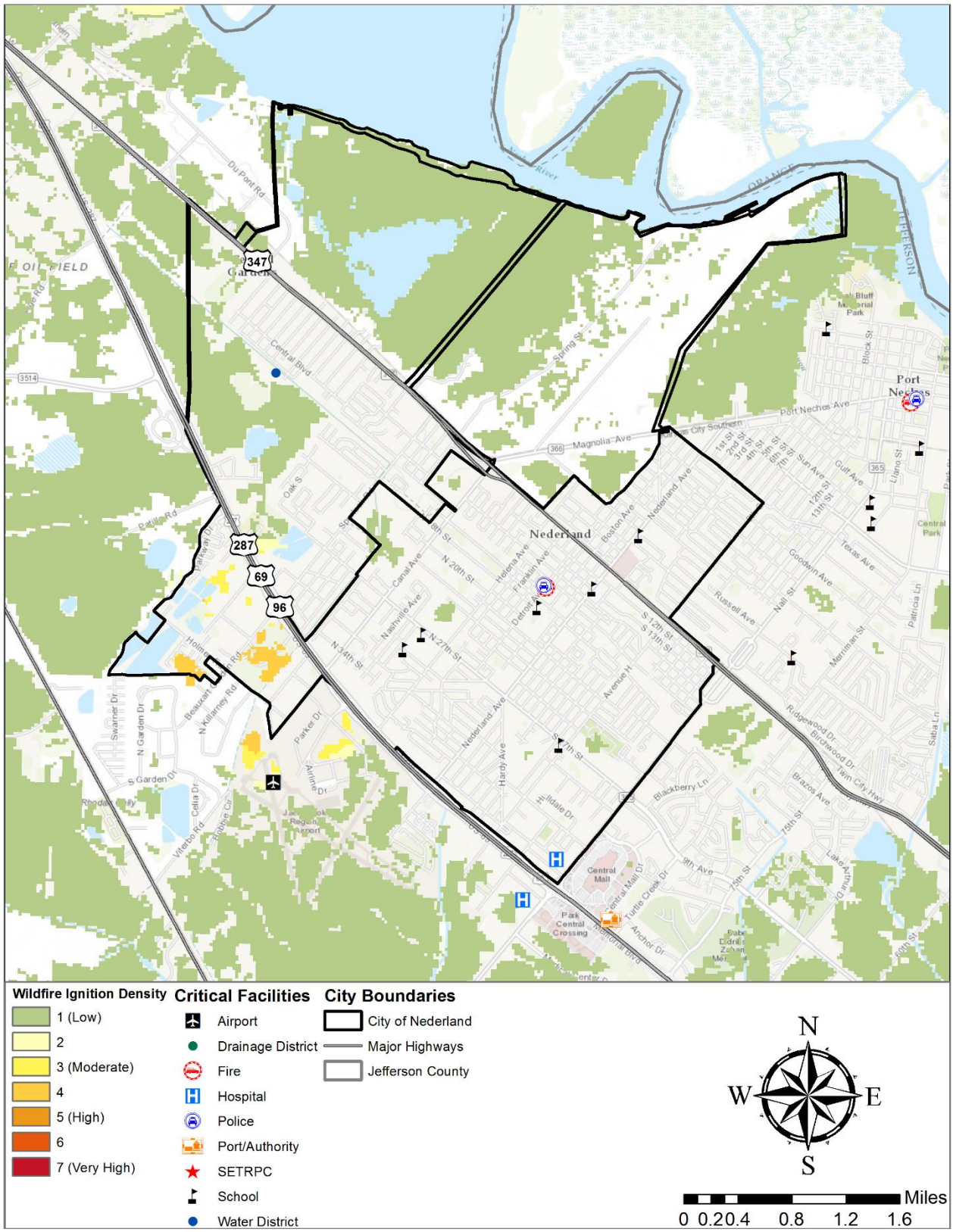


Figure 13-27. Wildfire Ignition Density – Nome

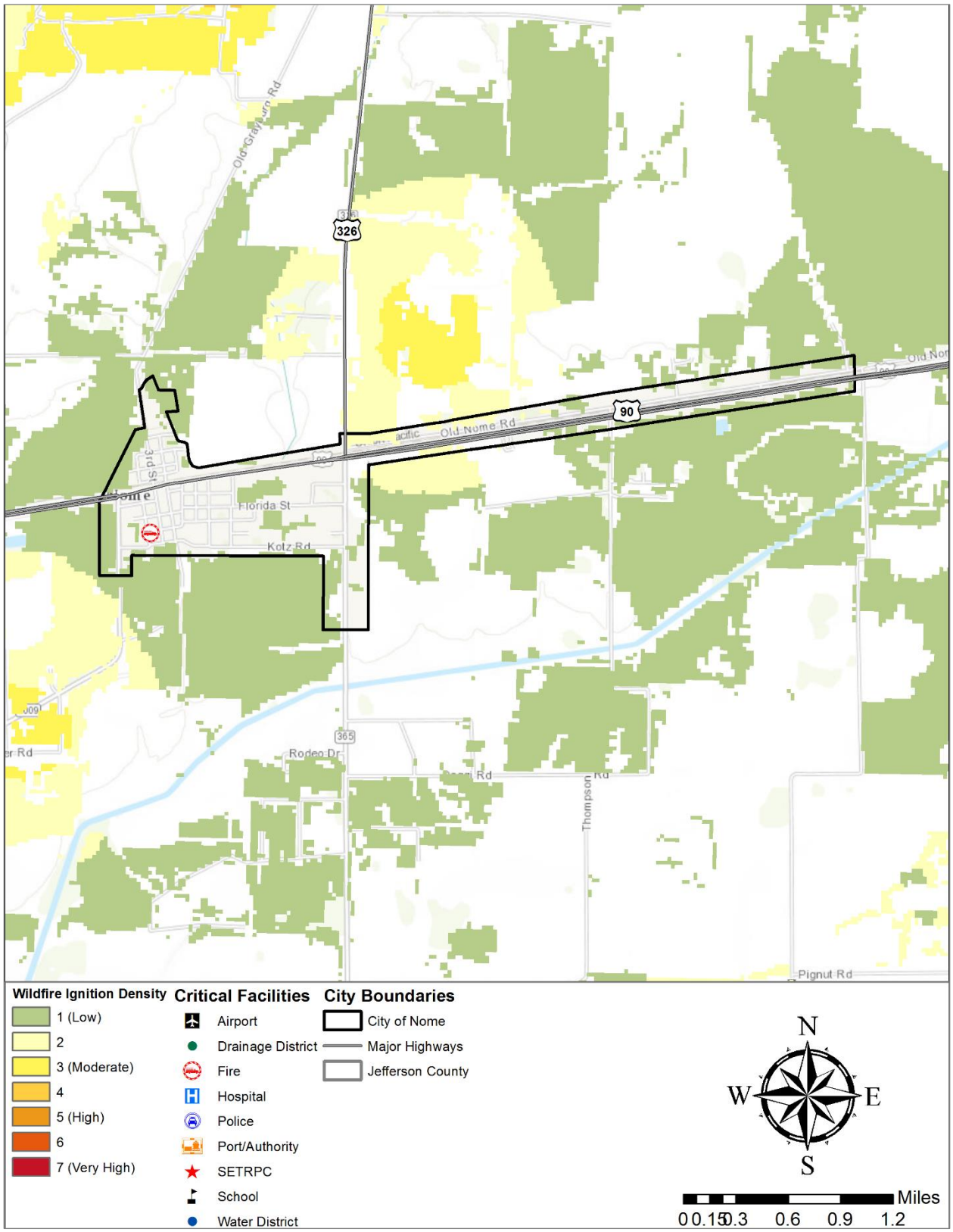


Figure 13-28. Wildfire Ignition Density – Port Arthur

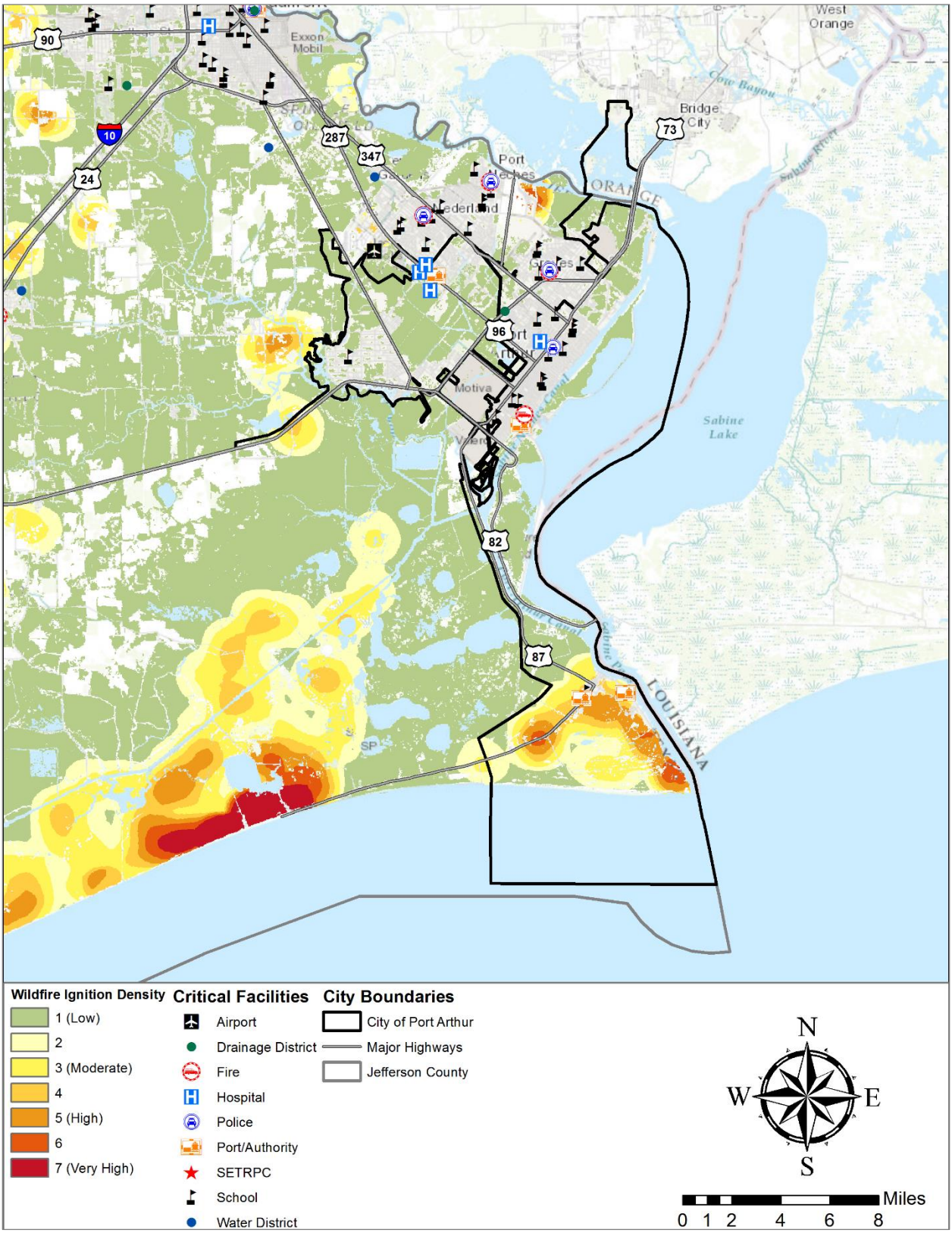
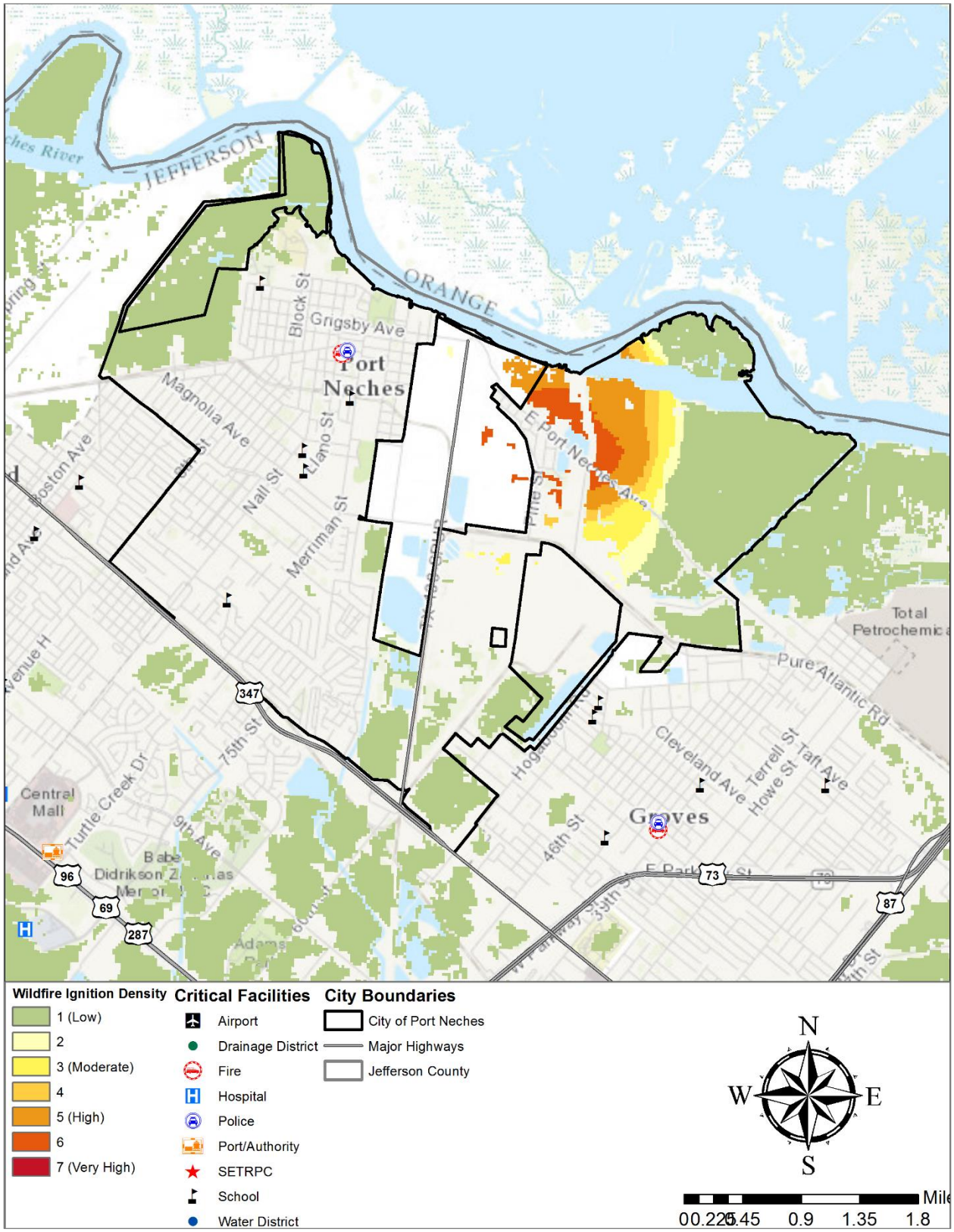


Figure 13-29. Wildfire Ignition Density – Port Neches



Diminished air quality is an environmental impact that can result from a wildfire event and pose a potential health risk. The smoke plumes from wildfires can contain potentially inhalable carcinogenic matter. Fine particles of invisible soot and ash that are too microscopic for the respiratory system to filter can cause immediate and possibly long term health effects. The elderly or those individuals with compromised respiratory systems may be more vulnerable to the effects of diminished air quality after a wildfire event.

Climatic conditions such as severe freezes and drought can significantly increase the intensity of wildfires since these conditions kill vegetation, creating a prime fuel source for wildfires. The intensity and rate at which wildfires spread are directly related to wind speed, temperature, and relative humidity.

The severity of impact from major wildfire events can be substantial. Such events can cause multiple deaths, shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. Severity of impact is gauged by acreage burned, homes and structures lost, and the number of resulting injuries and fatalities. For the Jefferson County planning area, the impact from a wildfire event can be considered “Minor", meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property is destroyed or sustains major damage.

Assessment of Impacts

A wildfire event poses a potentially significant risk to public health and safety, particularly if the wildfire is initially unnoticed and spreads quickly. The impacts associated with a wildfire are not limited to the direct damages. Potential impacts for the planning area include:

- Persons in the area at the time of the fire are at risk for injury or death from burns and/or smoke inhalation.
- First responders are at greater risk of physical injury since they are in close proximity to the hazard while extinguishing flames, protecting property, or evacuating residents in the area.
- First responders can experience heart disease, respiratory problems, and other long term related illnesses from prolonged exposure to smoke, chemicals, and heat.
- Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty.
- Critical City and/or County departments may not be able to function and provide necessary services depending on the location of the fire, and the structures or personnel impacted.
- Non-critical businesses may be directly damaged, suffer loss of utility services, or be otherwise inaccessible, delaying normal operations and slowing the recovery process.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility.
- Older homes are generally exempt from modern building code requirements, which may require fire suppression equipment in the structure.
- Some high density neighborhoods feature small lots with structures close together, increasing the potential for fire to spread rapidly.
- Air pollution from smoke may exacerbate respiratory problems of vulnerable residents.

- Charred ground after a wildfire cannot easily absorb rainwater, increasing the risk of flooding and potential mudflows.
- Wildfires can cause erosion, degrading stream water quality.
- Wildlife may be displaced or destroyed.
- Historical or cultural resources may be damaged or destroyed.
- Tourism can be significantly disrupted, further delaying economic recovery for the area.
- Vegetated dunes can be stripped, significantly damaging the function of the dunes to protect inland areas from the destructive forces of wind and waves.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Fire suppression costs can be substantial, exhausting the financial resources of the community.
- Residential structures lost in a wildfire may not be rebuilt for years, reducing the tax base for the community.
- Sabine Lake recreation and tourism can be unappealing for years following a large wildfire, devastating directly related businesses.
- Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground delivery lines, and soil erosion or debris deposits into waterways after the fire.

The economic and financial impacts of a wildfire event on local government will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a wildfire event.

SECTION 14: WINTER STORM

Hazard Description

A severe winter storm event is identified as a storm with snow, ice, or freezing rain. This type of storm can cause significant problems for area residents. Winter storms are associated with freezing or frozen precipitation such as freezing rain, sleet, snow and the combined effects of winter precipitation and strong winds. Wind chill is a function of temperature and wind. Low wind chill is a product of high winds and freezing temperatures.

Winter storms that threaten Jefferson County usually begin as powerful cold fronts that push south from central Canada. The County is at risk to ice hazards, extremely cold temperatures, and snow. However, the effects and frequencies of winter storm events are generally mild and short-lived. As indicated in Figure 14-1, on average, the area experiences 1-10 cold days a year, meaning 1-10 days per year are at or around freezing temperatures. During these times of ice and snow accumulation, response times will increase until public works road crews are able to assist in making the major roads passable. Table 14-1 describes the types of winter storms possible to occur in Jefferson County.

Figure 14-1. Extreme Cold Days 1960-2003[1]

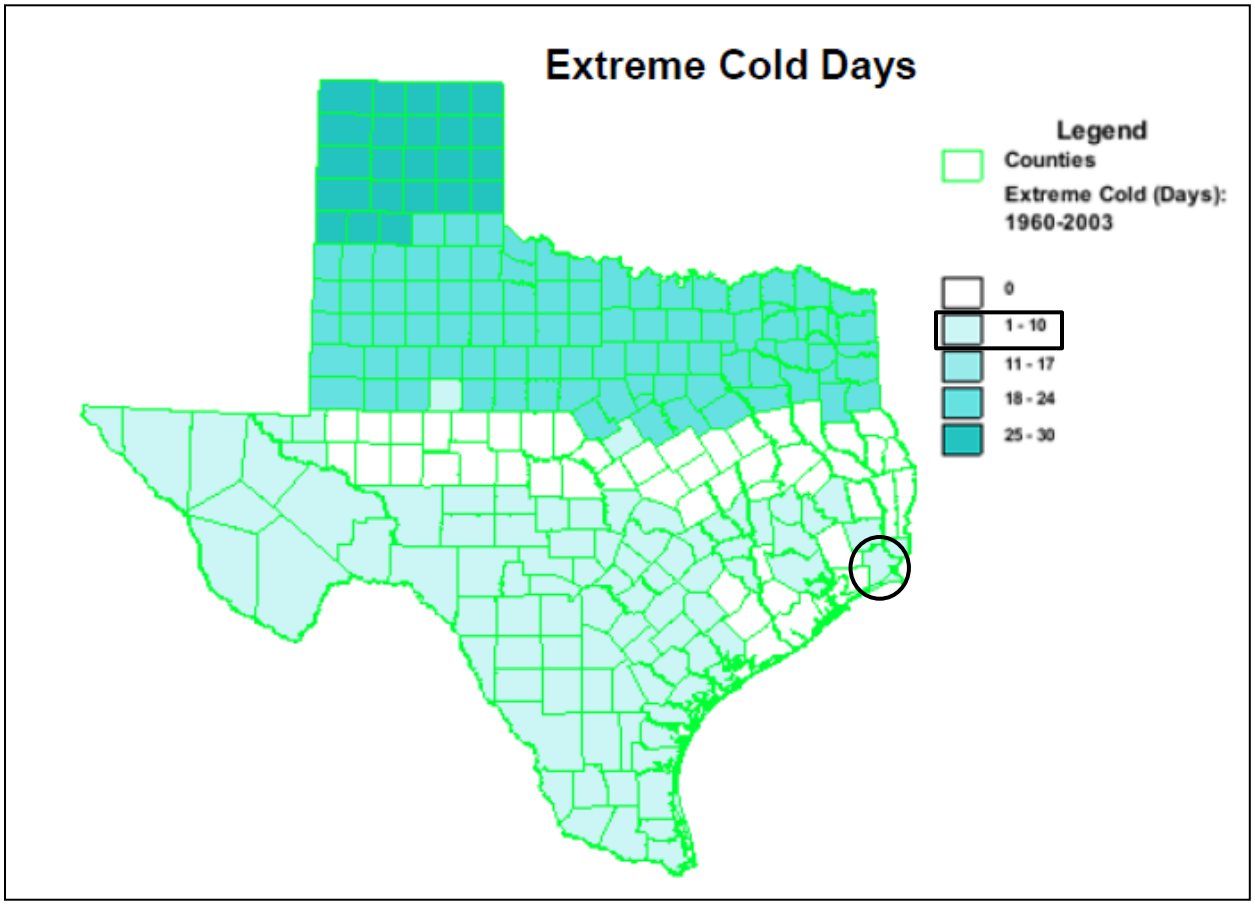


Table 14-1. Types of Winter Storms

TYPE OF WINTER STORM	DESCRIPTION
Winter Weather Advisory	This alert may be issued for a variety of severe conditions. Weather advisories may be announced for snow, blowing or drifting snow, freezing drizzle, freezing rain, or a combination of weather events.
Winter Storm Watch	Severe winter weather conditions may affect your area (freezing rain, sleet, or heavy snow may occur separately or in combination).
Winter Storm Warning	Severe winter weather conditions are imminent.
Freezing Rain or Freezing Drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.

[1] Source: National Weather Service. The black circle indicates the Jefferson County planning area.

TYPE OF WINTER STORM	DESCRIPTION
Blizzard Warning	Sustained wind speeds of at least 35 miles per hour (mph) are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm, with visibility dangerously restricted.
Frost/Freeze Warning	Below freezing temperatures are expected and may cause significant damage to plants, crops, and fruit trees.
Wind Chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind chill factor.

Location

Winter storm events are not confined to specific geographic boundaries. Therefore, all existing and future buildings, facilities, and populations in the Jefferson County planning area, including the SETRPC and all participating jurisdictions, are considered to be exposed to a winter storm hazard and could potentially be impacted.

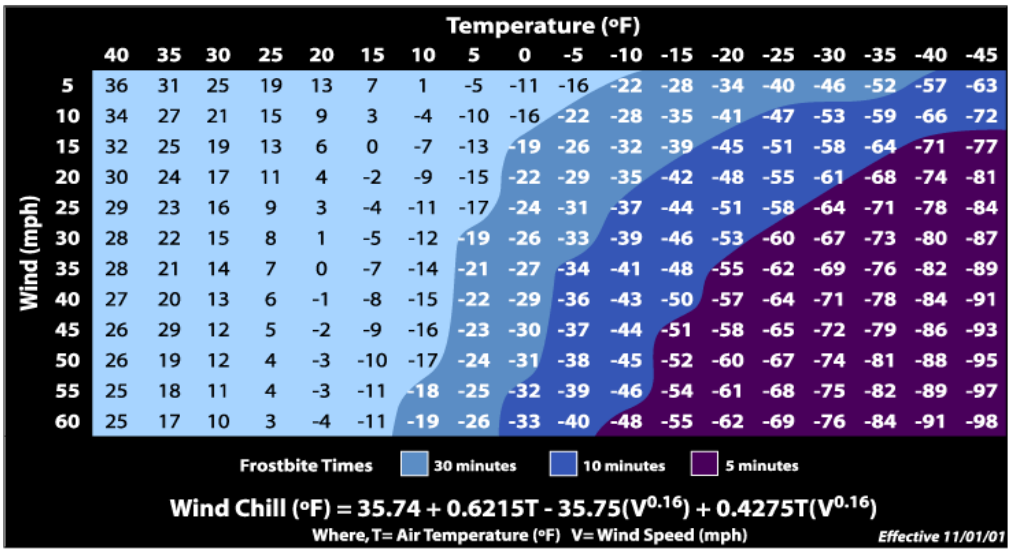
Extent

The extent or magnitude of a severe winter storm is measured in intensity based on the temperature and level of accumulations as shown in Table 14-2. To determine the intensity of a winter storm, Table 14-2 should be read in conjunction with the wind-chill factor chart described in Figure 14-2. The chart is an index developed by the National Weather Service (NWS) and is not applicable when temperatures are over 50°F or winds are calm.

Table 14-2. Magnitude of Severe Winter Storms

INTENSITY	TEMPERATURE RANGE (Fahrenheit)	EXTENT DESCRIPTION
Mild	40° – 50°	Winds less than 10 mph and freezing rain or light snow falling for short durations with little or no accumulations.
Moderate	30° – 40°	Winds 10 to 15 mph and sleet and/or snow up to 4 inches.
Significant	25° – 30°	Intense snow showers accompanied with strong gusty winds between 15 to 20 mph, with significant accumulation.
Extreme	20° – 25°	Wind driven snow that reduces visibility, heavy winds (between 20 to 30 mph), and sleet or ice up to 5 millimeters in diameter.
Severe	Below 20°	Winds of 35 mph or more and snow and sleet greater than 4 inches.

Figure 14-2. Wind Chill Chart



Wind chill temperature is a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30°F day would feel just as cold as a calm day with 0°F temperatures. Jefferson County has never experienced a blizzard, but based on 10 previous occurrences recorded from 1996 through August 2016, it has been subject to winter storm watches, warnings, freezing rain, sleet, snow, and wind chill.

The average number of cold days is similar for the entire County planning area including the SETRPC and all participating jurisdictions. Therefore, the intensity or extent of a winter storm event to be mitigated for the area ranges from mild to significant according to the definitions from Table 14-2. During a winter storm event, the Jefferson County planning area, including the SETRPC and all participating jurisdictions, can expect anywhere between 0.1 to 3.0 inches of ice and snow, temperatures between 25 and 50 degrees, with winds ranging from 0 to 20 mph.

Historical Occurrences

Table 14-3 shows historical occurrences for Jefferson County from 1996 through August 2016 provided by the National Center for Environmental Information (NCEI) database. There have been 10 recorded winter storm events in Jefferson County. Historical winter storm information, as provided by the NCEI, identifies winter storm activity across a multi-county forecast area for each event. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical winter storm data for the SETRPC and all participating jurisdictions are provided on a county-wide basis per the NCEI database. Table 14-3 shows historical incident information which resulted in property or crop damage for the Jefferson County planning area.

Table 14-3. Historical Winter Storm Events, 1996-2016[2]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	2/4/1996	0	0	$76,557	$0
Jefferson County	1/12/1997	0	10	$14,967,975	$0
Jefferson County	12/11/2008	0	0	$0	$0
Jefferson County	12/4/2009	0	0	$0	$0
Jefferson County	1/8/2010	0	0	$550,859	$0
Jefferson County	2/23/2010	0	0	$0	$0
Jefferson County	2/3/2011	0	0	$10,680	$0
Jefferson County	1/23/2014	0	0	$0	$0
Jefferson County	1/28/2014	0	0	$0	$0
Jefferson County	3/4/2014	0	0	$0	$0
TOTALS		**0**	**10**	**$15,606,071**	

Based on the list of historical winter storm events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions, 4 events have occurred since the 2011 Plan.

Significant Past Events

January 12 – 14, 1997 – Jefferson County

A record ice storm paralyzed southeast Texas and southwest Louisiana. Around 90,000 electric customers across southeast Texas were without power for up to 6 days. Emergency shelters were opened for several nights due to the cold weather following the ice storm. Hundreds of homes received minor damage due to trees or tree limbs falling on roofs. Several house fires were directly or indirectly related to the ice storm. Numerous traffic accidents attributed to icy roads led to several minor injuries. 1 death was indirectly attributed to the ice storm. 2 men were electrocuted on Tuesday, January 21, 1997 while doing cleanup work for a local electric company. A 48 year old man died, and a 19 year old man was seriously injured in the accident.

January 8 – 11, 2010 – Jefferson County

A deep upper level trough moving eastward across the United States forced a bitterly cold Arctic air mass southward from Canada into the Gulf Coast states on Thursday, January 7, 2010. This air mass remained in place for several days across southeast Texas, leading to the coldest temperatures seen across this region since February 1996. A few record low temperatures and record low maximum temperatures were set. Many locations in the Lakes Region of southeast Texas remained below freezing for over 36 hours

[2] Values are in 2016 dollars.

from around midnight early on Friday, January 8, 2010 through the afternoon on Saturday, January 9, 2010.

The cold temperatures led to several school closures, numerous weather-related fires, and widespread plumbing ruptures throughout southeast Texas. The Insurance Council of Texas estimated losses across southeast Texas from the cold weather at around $1 million. KFDM-TV and the Beaumont Enterprise reported widespread damaged plumbing across Jefferson County due to the record cold temperatures. 10 petrochemical plants and refineries across the county experienced excessive emissions due to cracked pipes, instrument failures, and equipment malfunctions. Entergy reported sporadic power outages through the county. CenterPoint Energy used trucks to pump natural gas directly into a northwest Beaumont neighborhood of 100 homes after natural gas lines failed due to the cold weather.

Probability of Future Events

According to historical records, Jefferson County experiences approximately 1 winter storm event per year. Hence, the probability of a future winter storm event affecting the Jefferson County planning area is highly likely, with a winter storm likely to occur within the next year. All participating jurisdiction events including the SETRPC are included under the County.

Vulnerability and Impact

During periods of extreme cold and freezing temperatures, water pipes can freeze and crack and ice can build up on power lines, causing them to break under the weight or causing tree limbs to fall on the lines. These events can disrupt electric service for long periods.

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. House fires and resulting deaths tend to occur more frequently from increased and improper use of alternate heating sources. Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts.

All populations, buildings, critical facilities, and infrastructure in the entire Jefferson County planning area, including all participating jurisdictions, are vulnerable to severe winter events.

People and animals are subject to health risks from extended exposure to cold air. Elderly people are at greater risk of death from hypothermia during these events, especially in the rural areas of the county where populations are sparse, icy roads may impede travel, and there are fewer neighbors to check in on the elderly. According to the U.S. Center for Disease Control, every year hypothermia kills about 600 Americans, half of whom are 65 years of age or older.

Populations over 65 in the Jefferson County planning area are approximately 13% of the total population; there is an estimated total of 32,774[3] potentially vulnerable residents in the planning area based on age (Table 14-4).

[3] Source: U.S. Census Bureau 2014 data for Jefferson County.

Table 14-4. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER
Beaumont	15,539
Bevil Oaks	290
China	183
Groves	2,685
Nederland	2,371
Nome	56
Port Arthur	6,344
Port Neches	1,939
Jefferson County[4]	**32,774**

The following critical facilities would be vulnerable to winter storm events in each participating jurisdiction:

Table 14-5. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	Port Authority Facility, Fire Station, Water District Facility, 1 School
Beaumont	2 Fire Stations, 2 Police Stations, 32 Schools, Port Authority Facility, 5 Water District Facilities, 3 Drainage District Facilities, 4 Hospitals
Bevil Oaks	Fire Station
China	Fire Station, 2 Schools
Groves	Fire Station, Police Station, 4 Schools
Nederland	Fire Station, Police Station, Water District Facility, 3 Hospitals, Airport, 8 Schools
Nome	Fire Station
Port Arthur	Fire Station, Police Station, Drainage District Facility, 2 Port Authority Facilities, 2 Hospitals, 14 Schools
Port Neches	Fire Station, Police Station, 5 Schools
SETRPC	SETRPC Facility

[4] County totals includes all participating jurisdictions and unincorporated areas.

Historic loss, in 2016 dollars, is estimated at $15,606,071 in damages over the 21-year recording period, giving an approximate loss of $743,146 in damages annually (Table 14-6). The potential severity of impact for the planning area, including the SETRPC and all participating jurisdictions, is limited, meaning injuries are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property destroyed or sustains major damage.

Table 14-6. Potential Annualized Losses for Jefferson County, 1996-2016[5]

JURISDICTION	PROPERTY & CROP LOSS	ANNUALIZED LOSS ESTIMATES
Jefferson County	$15,606,071	$743,146

Assessment of Impacts

The greatest risk from a winter storm hazard is to public health and safety. Potential impacts for the planning area may include:

- Vulnerable populations, particularly the elderly and infants, can face serious or life-threatening health problems from exposure to extreme cold including hypothermia and frostbite.
- Loss of electric power or other heat sources can result in increased potential for fire injuries or hazardous gas inhalation because residents burn candles for light or use fires or generators to stay warm.
- Response personnel, including utility workers, public works personnel, debris removal staff, tow truck operators, and other first responders are subject to injury or illness resulting from exposure to extreme cold temperatures.
- Response personnel would be required to travel in potentially hazardous conditions, elevating the safety risk due to accidents and potential contact with downed power lines.
- Operations or service delivery may experience impacts from electricity blackouts due to winter storms.
- Power outages are possible throughout the planning area due to downed trees and power lines and/or rolling blackouts.
- Critical facilities without emergency backup power may not be operational during power outages.
- Emergency response and service operations may be impacted by limitations on access and mobility if roadways are closed, unsafe, or obstructed.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by ice and snow events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A winter storm event could lead to tree, shrub, and plant damage or death.
- Severe cold and ice could significantly damage agricultural crops.
- Schools may be forced to shut early due to treacherous driving conditions.

[5] Values are in 2016 dollars.

- Exposed water pipes may be damaged by severe or late season winter storms at both residential and commercial structures, causing significant damages.

The economic and financial impacts of winter weather on the community will depend on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by businesses and citizens will also contribute to the overall economic and financial conditions in the aftermath of a winter storm event.

SECTION 15: COASTAL EROSION

Hazard Description

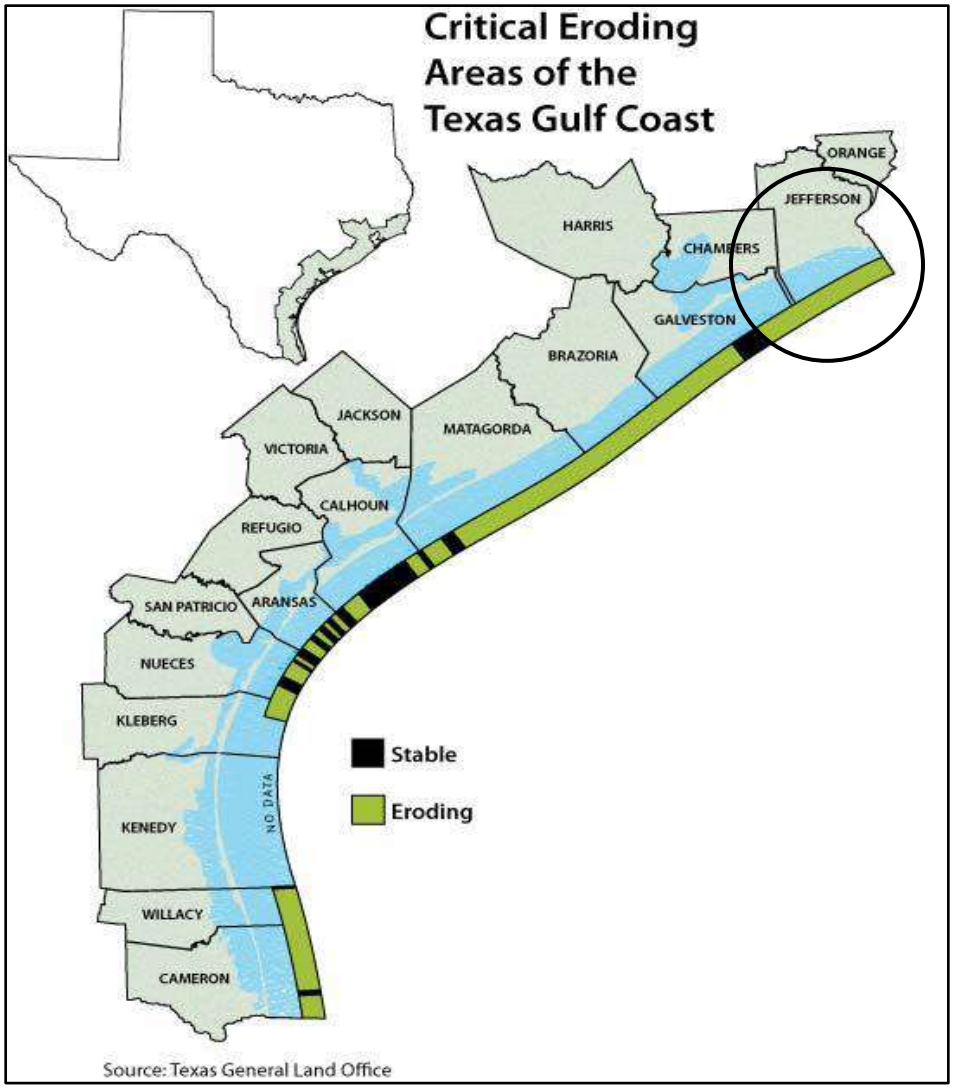
Coastal erosion is the wearing away of land and loss of beach, shoreline, or dune material because of natural coastal processes or manmade influences. Erosion is the process by which large storms, flooding, strong wave action, sea level rise, and human activities wear away beaches and bluffs along coastlines. All beaches are affected by storms and other natural events that cause erosion; however, the extent and severity of the problem differs in different parts of the country. The two major erosion mechanisms are wind and water. Wind that blows across sparsely vegetated or disturbed lands can cause erosion by picking up soil, carrying it through the air, and displacing it in another place. Water erosion occurs over land, and in streams and channels. Major storms can cause coastal erosion from the combination of high winds and heavy surf and storm surge. Human interactions, such as construction and development in coastal and riparian regions, can also exacerbate erosion.

While coastal erosion affects all regions of the United States, erosion rates and potential impacts are highly localized. Average coastline recession rates of 25 feet per year are not uncommon on some barrier islands in the Southeast. Texas has one of the longest coastlines in America coupled with some of the highest rates of coastal erosion in the nation. Sixty-four percent of the Texas coast is eroding at an average of 6 feet per year, with an overall average rate of 4.1 feet per year for the 367 miles of Texas coast, according to the Texas General Land Office. However, some locations are losing more than 30 feet per year. Coastal erosion can have long-term economic and social consequences.

Location

While the Jefferson County planning area is considered a coastal community, only one of the participation jurisdictions is located directly on the coast and is subject to coastal erosion. The McFaddin National Wildlife Refuge is located in unincorporated Jefferson County and expands the entire coast line of the county. The wildlife refuge is vulnerable to threats directly related to coastal erosion resulting from extreme hazards such as hurricane and tropical storm events. The most common time for such extreme storm events to impact the planning area is from June to November, the official Atlantic U.S. hurricane season. The water front community of Port Arthur is located on the mainland and protected by the barrier island system along the gulf. As such, this community is not subject to coastal erosion.

Figure 15-1. Critical Eroding Areas of the Texas Gulf Shoreline

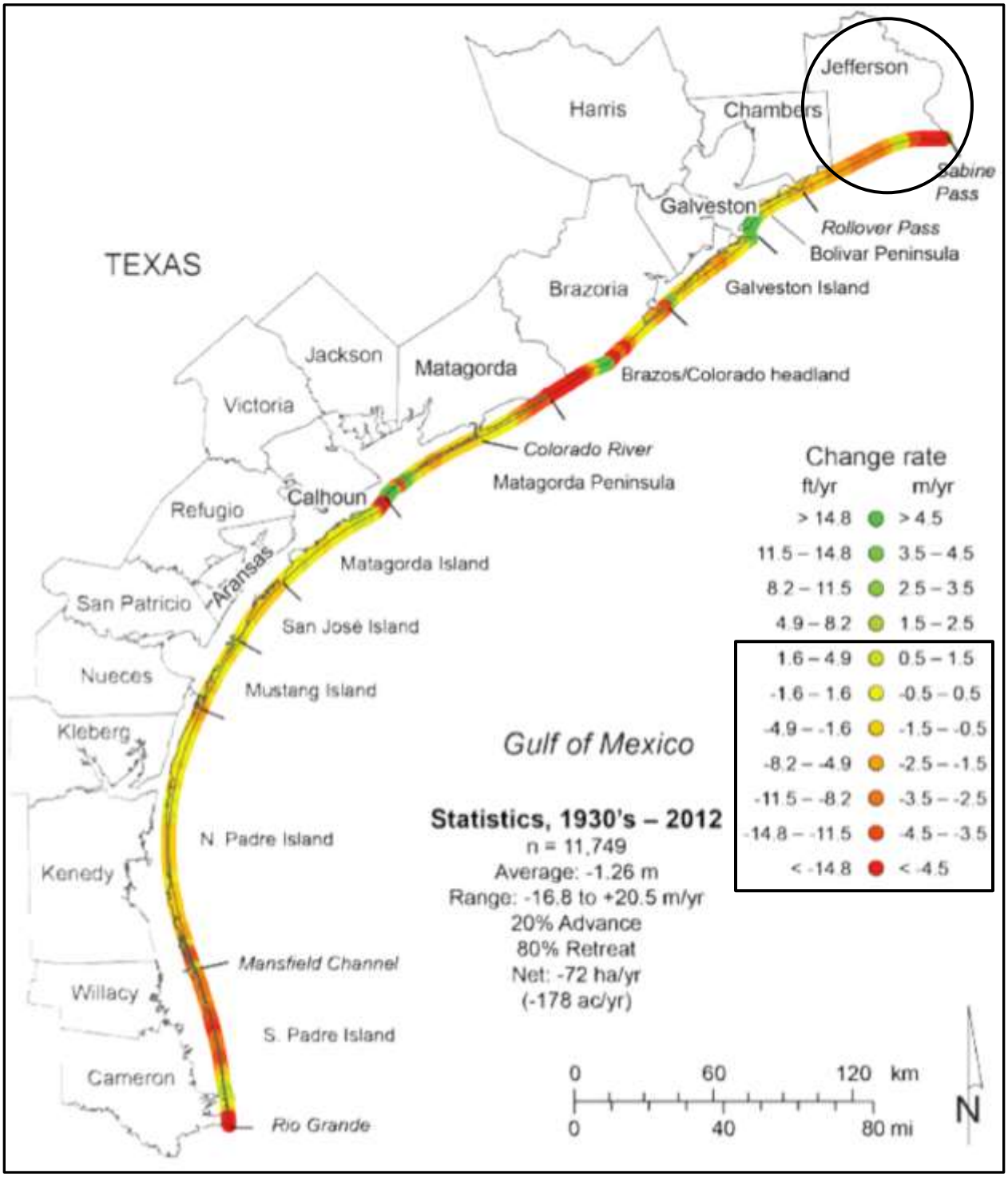


Extent

Some of the highest rates of Gulf shoreline erosion in Texas occur in Jefferson County.[1] The McFaddin National Wildlife Refuge is vulnerable to the effects of coastal erosion from the Gulf of Mexico. The island has no stable (vegetated) dunes in the area located as close to the mean low water (MLW) line. Through experience it has proven that barrier island development imposes risks on private property owners, investors, and to taxpayers statewide. The average rate of retreat or extent of coastal erosion is estimated between 4.9 and more than 14.8 feet per year for Jefferson County. The highest erosion rate occurs at the eastern most portion of the wildlife refuge near the Sabine Pass.

[1] *Texas Coastal Resiliency Master Plan*, March 2017, Texas General Land Office

Figure 15-2. Critical Eroding Areas, Unincorporated Jefferson County[2]



[2] *Coastal Erosion Planning and Response Act, A Report to the 84th Texas Legislature*, Texas General Land Office, 2015

Historical Occurrences

Previous occurrences for coastal erosion are not reported by the NCEI. In addition, local governments do not typically have the capabilities to monitor or report statistical data for coastal erosion for a specific event. Coastal erosion is typically measured as an average annual shoreline change rate in linear feet. While the Jefferson County Planning area does not record historical coastal erosion rates per event, the 2013 Texas Hazard Mitigation Plan depicts coastal erosion occurrences for the Jefferson County Planning Area, including unincorporated areas along the coast (Table 15-1).

Table 15-1. Historical Coastal Erosion Rates, Jefferson County[3]

JURISDICTION	GULF SHORELINE	BAY SHORELINE	CRITICAL EROSION	EROSION RATES
Jefferson County	168,960 ft.	327,360 ft.	142,560 ft.	-2 to -50 ft./yr.

Probability of Future Events

Due to data limitations, the planning team relied on available studies and research as well as the Texas State Hazard Mitigation Plan to determine coastal erosion probability. According to Texas General Land Office (GLO) the average coastal erosion rate for unincorporated Jefferson County is from 4 to more than 15 feet per year with an average of approximately 13 feet per year. This rate supports a highly likely probability of future events, with an event probable in the next year.

Vulnerability and Impact

The unincorporated area of Jefferson County along the coast is continuously subject to coastal erosion, as all barrier islands are. While usually a slow-evolving hazard, coastal erosion presents a serious threat to the McFaddin National Wildlife Refuge. Any loss of land equates to an increase in the planning areas vulnerability to hurricanes, coastal storms and above-average tidal events. When the land lost is beach that provides valuable protections from these coastal storm events, that loss results in greater vulnerability.

The wildlife refuge has a total area of 58,861 acres and is primarily tidally influenced, creating estuarine environments important to a variety of fish, shrimp and crabs, as well as other life forms higher on the food chain that feed on such organisms. These estuaries are productive communities and are vital to the life cycle of many marine species. Land in the refuge is vulnerable to coastal erosion, particularly on the eastern portions near Sabine Pass) which in turn threatens fish and wildlife in the area due to loss of habitat. There are no critical structures or infrastructure vulnerable to coastal erosion in the planning area.

The potential severity of impact from coastal erosion for the Jefferson County planning area is classified as limited, meaning minor quality of life is lost and shutdown of critical facilities; services are loss less than 24 hours; and less than 10 percent of property would be destroyed or have major damage.

[3] State of Texas Mitigation Plan Update 2013 Page 126 as reported by the Texas General Land Office

Assessment of Impacts

Coastal erosion events have the potential to pose a significant risk to structures, infrastructure and the local economy. Impacts to the planning area can include:

- Fish and wildlife habitat can be damaged or destroyed. Extreme erosion, typically resulting from a significant storm event, may result in significant marine and wildlife losses.
- Damaged bridges in and out of the wildlife refuge areas could prevent or delay emergency response, strand or prevent entry of tourists, commuters, supply delivery, or goods and services for extended periods.
- Coastal erosion may dramatically reduce tourism negatively impacting the economy.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by the coastal erosion may be negatively impacted while access roads or camping areas are repaired.

The economic and financial impacts of coastal erosion on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses and citizens will also contribute to the overall reduction of coastal erosion impacts.

SECTION 16: MITIGATION STRATEGY

Mitigation Goals

Based on the results of the risk and capability assessments, the Planning Team developed and prioritized the mitigation strategy. This involved utilizing the results of both assessments and reviewing the goals and objectives that were included in the previous 2011 Plan.

At the Mitigation Workshop in August 2016, Planning Team members reviewed the mitigation strategy from the previous 2011 Plan. The consensus among all members present was that the strategy developed for the 2011 Plan did not require changes, as it identified overall improvements to be sought in the Plan Update. However, the order and priority of the goals and objectives were reorganized.

Goal 1

Protect public health and safety.

Objective 1.1

Advise the public about health and safety precautions to guard against injury and loss of life from hazards.

Objective 1.2

Maximize utilization of the latest technology to provide adequate warning, communication, and mitigation of hazard events.

Objective 1.3

Reduce the danger to, and enhance protection of, high risk areas during hazard events.

Objective 1.4

Protect critical facilities and services.

Goal 2

Build and support local capacity and commitment to continuously become less vulnerable to hazards.

Objective 2.1

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

Objective 2.2

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

Objective 2.3

Build hazard mitigation concerns into county planning and budgeting processes.

Goal 3

Increase public understanding, support, and demand for hazard mitigation.

Objective 3.1

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

Objective 3.2

Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards and increase individual efforts to respond to potential hazards.

Objective 3.3

Publicize and encourage the adoption of appropriate hazard mitigation measures.

Goal 4

Protect new and existing properties.

Objective 4.1

Reduce repetitive losses to the National Flood Insurance Program (NFIP).

Objective 4.2

Use the most cost-effective approach to protect existing buildings and public infrastructure from hazards.

Objective 4.3

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

Goal 5

Maximize the resources for investment in hazard mitigation.

Objective 5.1

Maximize the use of outside sources of funding.

Objective 5.2

Maximize participation of property owners in protecting their properties.

Objective 5.3

Maximize insurance coverage to provide financial protection against hazard events.

Objective 5.4

Prioritize mitigation projects, based on cost-effectiveness and sites facing the greatest threat to life, health and property.

Goal 6

Promote growth in a sustainable manner.

Objective 6.1

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

Objective 6.2

Promote beneficial uses of hazardous areas while expanding open space and recreational opportunities.

Objective 6.3

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

SECTION 17: PREVIOUS ACTIONS

Summary

Planning Team members were given copies of the previous mitigation actions submitted in the 2011 Plan at the mitigation workshop. Jefferson County reviewed the previous actions and provided an analysis as to whether the action had been completed, should be deferred as an ongoing activity, or be deleted from the Plan. The actions from the 2011 Plan are included in this section as they were written in 2011, with the exception of the "2017 Analysis" section.

Jefferson County

Jefferson County (Past Action) – 1	
Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Jefferson County (Past Action) – 2	
Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Jefferson County. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations, Ford Park).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	Jefferson County, municipalities
Potential Funding Sources:	HGMP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 4
	Proposed Action:	Public structure strengthening for Jefferson County Courthouse/ S.O./Jail.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$1,000 - $300,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $200,000 - $1 Million.

		Jefferson County (Past Action) – 5
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $500,000 - $1 Million; revise Implementation Schedule to 2 years.

		Jefferson County (Past Action) – 6
	Proposed Action:	Storm harden/retrofit regional communication sites and infrastructure throughout the County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$300,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County Emergency Management
Potential Funding Sources:	HMGP, PDM, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 7
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Jefferson County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $200,000 - $1 Million

		Jefferson County (Past Action) – 8
	Proposed Action:	Replace and/or upgrade bridges, culverts, and other crossings throughout Jefferson County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Geologic Hazards, Hurricane/Tropical Storm, Terrorism, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $2 -$5 Million.

		Jefferson County (Past Action) – 9
	Proposed Action:	Pursue drainage improvements through Jefferson County. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $1 - $5 Million.

		Jefferson County (Past Action) – 10
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders, including but not limited to HAZMAT, terrorism, all hazard and other training.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$5,000 - $10,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Jefferson County Emergency Management
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 11
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	Jefferson County, local municipalities, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise action to include Water/Sewer.

		Jefferson County (Past Action) – 12
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout the Jefferson County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Earthquake, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Progress has been made, but not fully completed. Revise Estimated Cost to $1 - $2 Million.

		Jefferson County (Past Action) – 13
	Proposed Action:	Pursue flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Baffles at Keith Lake ($2.5 Million) completed in June 2015. Will pursue additional locations. Revise Estimated Cost to $50,000 - $60 Million.

		Jefferson County (Past Action) – 14
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	Jefferson County, USACE, SETRPC, FEMA, local municipalities
Potential Funding Sources:	HGMP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 15
	Proposed Action:	Restore sand dunes to protect inland resources during storm surge events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storms
STAPLE-E Summary:	Technical, Administrative, Legal, Environmental, Economic
Priority:	High
Estimated Cost:	$60,000,000
Implementation Schedule:	1-2 years
Coordinating Agency:	Jefferson County
Potential Funding Sources:	PDM, HMGP, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $60,000,000 - $100,000,000.

		Jefferson County (Past Action) – 16
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storm, Thunderstorms, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $50,000 - $1 Million.

		Jefferson County (Past Action) – 17
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $50,000 - $1 Million.

		Jefferson County (Past Action) – 18
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout the Jefferson County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 19
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Jefferson County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low.

		Jefferson County (Past Action) – 20
	Proposed Action:	Coordinate and work with the Lower Neches Valley Authority in order to use an LNVA sand pit as a potential freshwater reservoir for all areas south of I-10.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities, Lower Neches Valley Authority
Potential Funding Sources:	HMGP, PDM, FMA, LNVA, local operating budget

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low.

		Jefferson County (Past Action) – 21
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from tree lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Jefferson County, local municipalities, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 22
	Proposed Action:	Joint, multi-jurisdictional EOC.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Extreme Heat, Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Medium
Estimated Cost:	$1-2 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, EMGP, Homeland Security Grants

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 23
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Jefferson County, local municipalities, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 24
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budget

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 25
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County Emergency Management, local fire departments
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low.

		Jefferson County (Past Action) – 26
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 27
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low.

		Jefferson County (Past Action) – 28
	Proposed Action:	Work with State Fire Marshall and County and local fire departments to enforce burn ban ordinances during times of drought to prevent wildfire.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical
Priority:	Low
Estimated Cost:	$1,000 - $10,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Jefferson County, State Fire Marshall, local fire districts
Potential Funding Sources:	HMGP, local operating budgets

2017 Analysis:
Completed.

		Jefferson County (Past Action) – 29
	Proposed Action:	Flood proof the Jefferson County courthouse elevators by installing pump system.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 30
	Proposed Action:	Retrofit the LNVA pumping system, which includes a number of pump stations, in order to increase capacity and allow stand-alone service when the Neches River is contaminated or a failure of the primary system.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricanes/Tropical Storm, Terrorism, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$3,680,000
Implementation Schedule:	1-3 years
Coordinating Agency:	LNVA, Jefferson County, TDEM, local municipalities
Potential Funding Sources:	LNVA operating budget, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 31
	Proposed Action:	Retrofit the primary diversion point and pumping system in order for the LNVA to fully control isolation and selection of the source of the water which flows into the pumping station and isolate either the Neches River or Pine Island Bayou should contamination occur.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Terrorism, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$562,000
Implementation Schedule:	1-3 years
Coordinating Agency:	LNVA, Jefferson County, TDEM, local municipalities
Potential Funding Sources:	LNVA operating budget, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 32
	Proposed Action:	Convert an existing 56 acre excavated dirt pit into a localized freshwater storage impoundment which would be used to supply water to municipal water plants and industrial users in the Nederland, Port Neches, and Groves area of Jefferson County in the event of an interruption of canal service to the region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricanes/Tropical Storm, Terrorism, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$5,468,000
Implementation Schedule:	1-3 years
Coordinating Agency:	LNVA, Jefferson County, TDEM, local municipalities
Potential Funding Sources:	LNVA operating budget, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Jefferson County (Past Action) – 33
	Proposed Action:	Enhance existing structures and construct additional water control features to allow the LNVA to isolate segments of canals in the event of contamination or localized bank failures in order to conserve and protect unaffected waters and continue deliveries to as many customers as possible while a clean-up or repair is addressed rather than having a single event affect all customers of the entire system.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricanes/Tropical Storm, Terrorism, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$375,000
Implementation Schedule:	1-3 years
Coordinating Agency:	LNVA, Jefferson County, TDEM, local municipalities
Potential Funding Sources:	LNVA operating budget, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Beaumont

		Beaumont (Past Action) – 1
	Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, TDEM, local funding sources

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $2,000,000.

		Beaumont (Past Action) – 2
	Proposed Action:	Retrofit existing or construct new structures to act as shelters during hurricanes and tropical storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM, local funding sources

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This action was completed on some City structures, but still needs to be done on existing Fire Stations 3, 5, 6, 7, 8, and 10.

		Beaumont (Past Action) – 3
	Proposed Action:	Retrofit existing or construct new structures to act as safe rooms during tornados.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action. This action should be combined with Beaumont (Past Action) – 2.

		Beaumont (Past Action) – 4
	Proposed Action:	Storm harden/retrofit critical facilities throughout the City of Beaumont. Actions can include but are not limited to window shutters, roof, flood proofing, roll-up door reinforcement (i.e. fire stations, police headquarters, Health Department, EMS stations, and other critical infrastructure facilities).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$7.4 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. A new health department building was built to standards; include EMS stations 1 and 2 in proposed action.

		Beaumont (Past Action) – 5
	Proposed Action:	Harden the City of Beaumont Emergency Operations Center at 700 Orleans and Police headquarters at 255 College. Actions include but are not limited to installing a generator and storm shutters.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$1 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. The EOC facility was hardened, but a generator still needs to be installed there. The Police headquarters received a generator, but still needs to be hardened.

		Beaumont (Past Action) – 6
	Proposed Action:	Wind harden the Radio SHOP at 620 Marina Dr., the South Radio Tower at 1550 Pine, Fire Headquarters at 400 Walnut, and EMS Headquarters at 2870 Laurel. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators, and hardening of bay doors (specifically fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$3,750,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. The radio shop on Marina Drive was rebuilt to include wind hardening measures, and EMS headquarter was merged into the new Public Health facility. Other listed locations still need to be completed.

		Beaumont (Past Action) – 7
	Proposed Action:	Wind harden Baptist Hospital, at 3080 College, and Christus St. Elizabeth Hospital at 2830 Calder. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators, and hardening of bay doors (specifically maintenance and facility areas).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$8 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 8
	Proposed Action:	Retrofit main facility at Baptist Hospital with Built-in Decontamination System to enable decontamination of patients from a hazardous material incident.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hazardous Materials
STAPLE-E Summary:	Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$150,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, Baptist Hospital
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 9
	Proposed Action:	At Christus St. Elizabeth Hospital install backup generators and elevate key electrical equipment (such as Switchgear and ATS).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$3.1 Million
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, St. Elizabeth Hospital
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 10
	Proposed Action:	Upgrade Christus St. Elizabeth Hospitals and Port of Beaumont emergency communication systems to ensure continued communication with outside sources and first responders.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Earthquake, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$62,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, St. Elizabeth Hospital, Port of Beaumont
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 11
	Proposed Action:	Install generators for the Beaumont Independent School District at sites including but not limited to Westbrook, Police Building, Administrative Building, and the Thomas Education Support Center which are used for sheltering and emergency operation coordination centers.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Earthquake, Hurricane/Tropical Storm, Severe Winter Weather, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$650,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Beaumont Independent School District
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 12
	Proposed Action:	Procure mobile backup generators for the Port of Beaumont.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Earthquake, Hurricane/Tropical Storm, Severe Winter Weather, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$60,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Port of Beaumont
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 13
	Proposed Action:	Install backup generators for the 88 lift stations throughout the City of Beaumont.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Earthquake, Hurricane/Tropical Storm, Severe Winter Weather, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$3,400,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 14
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from tree lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Severe Winter Weather, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$100,000 - $300,000 per line
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $5.5 Million. Modifications have been made to the Proposed Action.

		Beaumont (Past Action) – 15
	Proposed Action:	Hardening Electric Grid and Communications to prevent damage to electric, phone and cable infrastructure for major roadways/ thoroughfares or access routes to critical infrastructure.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Severe Winter Weather, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$100,000 - $300,000 per line
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $1 Million.

		Beaumont (Past Action) – 16
	Proposed Action:	Pursue drainage improvements in the City of Beaumont. Projects include but are not limited to the South Park Relief Project (which includes Moore Street project, Avenue A Project, Washington Boulevard Phase I and II Projects), Madison Street Project, Tyrell Park Project, Caldwood Outfall, Phelan Boulevard Drainage Project, and the Cartwright/Corley Project.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$60,302,900
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. There were several drainage projects completed that were associated with this action, however, not all projects were completed, thus this action will be included in the Plan Update with modifications to the Proposed Action.

		Beaumont (Past Action) – 17
	Proposed Action:	Maintain, pursue, and complete drainage improvements in the City of Beaumont. Projects include, but are not limited to join Drainage District 6 and Beaumont projects and Beaumont individual projects such as the Calder Street Mitigation Project, Steve's Drive project, Concord Street project, High School Ditch Project (which include Seventh Street, North Street, Broadway Box projects).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$62,255,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. The Concord project is expected to be completed by the completion of this plan. The Calder Street project was completed. Revise Estimated Cost to $50 Million.

		Beaumont (Past Action) – 18
	Proposed Action:	Pursue drainage improvements throughout the City of Beaumont. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$10,000,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 19
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source for agricultural resources throughout the City of Beaumont.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$1,000,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Modify Proposed Action to read “storm control” rather than “agricultural resources”.

		Beaumont (Past Action) – 20
	Proposed Action:	Complete bank stabilization project at Riverfront Park.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazard
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$3,000,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County, SETRPC
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Completed. Along COB Property Line. **Defer Action –** Will include in the 2017 Plan Update. A second phase that extends beyond City Hall area up to the train tracks will be included.

		Beaumont (Past Action) – 21
	Proposed Action:	Pursue building a 50 million gallon holding lagoon to store wastewater in case of power outages and plant failures, and removal of sludge build-up in the two lagoons to increase the storage capacity at the Wastewater Treatment Plan in case of power outages and plant failure.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Geologic Hazard, Hazardous Material, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$3,500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 22
	Proposed Action:	Pursue and construct alternate fresh water sources throughout the City of Beaumont. This includes but is not limited to increased capacity to maintain water pressure in case of system failures at the water treatment plant; installation of a 36” water transmission line to provide an alternate water transport method; installation of a raw water pipeline to replace the existing canal to prevent intention or natural pollution of the City’s water supply; installation of new chemical feed facilities and building to safely store and use chlorine, etc.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $5 Million.

		Beaumont (Past Action) – 23
	Proposed Action:	At Hermann Memorial Hospital, install 1) an on-site filtering system for water well and new pressurized water supply system, and 2) install a Built-in Decontamination System (includes shower, curtain system, hazardous water tank, and drain) in the main facility.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hazardous Materials
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$210,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Beaumont, Hermann Memorial Baptist Hospital
Potential Funding Sources:	PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 24
	Proposed Action:	Retrofit the LNVA pumping system at Highway 105 to upgrade pumping capacity. This will allow the system to operate at full stand-alone service in times of contamination of water in the Neches River due to a hazard event.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Water Contamination, Terrorism
STAPLE-E Summary:	Social, Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$3,680,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, LNVA, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 25
	Proposed Action:	Retrofit the primary LNVA diversion point and pumping system at 10550 Helbig Rd. To allow the LNVA to fully control, isolate, and section off the source of the water that flows into the pumping station. This would allow the LNVA to isolate either the Neches River or Pine Island Bayou should one suffer any form of contamination.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Water Contamination, Terrorism
STAPLE-E Summary:	Social, Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$562,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, LNVA, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 26
	Proposed Action:	Develop a database of contact information for first responders, volunteers, and vulnerable populations. This also includes a database of assisted living/nursing homes throughout the City of Beaumont.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$15,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont
Potential Funding Sources:	EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 27
	Proposed Action:	Facilitate use of all mass notifications systems including but not limited to the Southeast Texas Alerting Network (STAN), to notify and educate the public of impending hazardous events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Material, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Terrorism, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$25,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, Jefferson County Emergency Management, SETRPC
Potential Funding Sources:	EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 28
	Proposed Action:	Identify special needs populations in the city by coordinating with home health agencies, medical equipment companies, local churches, and neighborhood associations. Organize strategies for evacuating special needs populations during a coastal storm, hurricane, or other such hazard.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$5,000 - $10,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, local health care agencies/facilities, Jefferson County
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 29
	Proposed Action:	Coordinate public/private partnerships to ensure special needs populations are protected from health risks due to extreme weather conditions. Actions will be targeted toward citizens with physical limitations and may be unable to reach safety in times of severe weather. Volunteer groups may be available to assist by visiting special needs groups to ensure their safety and comfort during severe temperature extremes.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, local health and special needs agencies, Jefferson County Emergency Management
Potential Funding Sources:	EMPG, local funding sources

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 30
	Proposed Action:	Coordinate a natural hazards public awareness campaign among agencies and the community. Efforts may include tropical storm/hurricane awareness presentations, shelter-in-place presentations, evacuation maps, floodplain maps, flood control projects, storm tracking maps, safety tips flyers, preparedness articles in local newspapers, and other such information as it relates to natural hazards. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publication will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries, and on the SETRPC and jurisdictional websites.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, PDM, EMPG, local funding sources

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 31
	Proposed Action:	Coordinate Emergency Management Plans for coastal storms/ hurricane events. Specific efforts will include encouraging agencies to install and maintain back-up power at identified facilities, construct and designate emergency operations centers for disaster/emergency operations, and solicit participation in Community Emergency Response Training.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Tsunami
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont, Jefferson County, SETRPC
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 32
	Proposed Action:	Maintain the floodplain mapping, planning, and databases project to identify, map, and maintain systematic accountability for flood prone areas.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Planning, Jefferson County, TDEM, FEMA
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 33
	Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of the National Flood Insurance Program (NFIP) and the benefits to homeowners of securing flood insurance.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 34
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Material, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$15,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management
Potential Funding Sources:	EMPG, PDM, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 35
	Proposed Action:	Relocations of Fire Headquarters, Fire stations 1, 2, 7, and 11, and Health Department (950 Washington) to improve neighborhood coverage in accordance with the 2005 Pietsch (ISO) study.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Earthquake, Flood, Geologic Hazard, Hazardous Material, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$23,500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Beaumont Emergency Management, Local Fire Departments, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $21 Million.

		Beaumont (Past Action) – 36
	Proposed Action:	Install on-site well and new pressurized water supply system to support Christus St. Elizabeth Hospital during loss of potable water.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$162,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, St. Elizabeth Hospital, Jefferson County
Potential Funding Sources:	PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 37
	Proposed Action:	Develop a Hazard Mitigation Action specific to the City of Beaumont as well as maintain interaction with the Jefferson County and Southeast Texas Regional Planning Commission Hazard Mitigation Action Plans.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	Medium
Estimated Cost:	$50,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Beaumont Emergency Management, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, EMPG, local funding sources

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 38
	Proposed Action:	Acquire flood prone structures throughout the City of Beaumont. This includes the 481 properties on the current Repetitive Loss and Severe Repetitive Loss lists.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	Medium
Estimated Cost:	$55,800,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Some citizens were not willing to sell their property. Modify Proposed Action to include “elevate” flood prone structures.

		Beaumont (Past Action) – 39
	Proposed Action:	Coordinate a consolidated security checkpoint on entry to Plant Road to access industrial and chemical production and storage complexes.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Terrorism
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$175,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, Port of Beaumont, Jefferson County Emergency Management
Potential Funding Sources:	EMPG, Homeland Security Grants, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 40
	Proposed Action:	Upgrade security system at the Port of Beaumont for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance capabilities.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Terrorism
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$175,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, Port of Beaumont, Jefferson County Emergency Management
Potential Funding Sources:	EMPG, Homeland Security Grants, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 41
	Proposed Action:	Install security systems at the City of Beaumont water utility sites, to include but not limited to, security walls around chemical tanks, water treatment plant and a river pump station; monitoring stations for purity testing at various sites throughout the city; surveillance at six elevated storage tanks and wastewater plant, etc. for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance capabilities.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Terrorism
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$4,500,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, Jefferson County Emergency Management
Potential Funding Sources:	EMPG, Homeland Security Grants, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 42
	Proposed Action:	Upgrade surveillance capabilities at critical infrastructure sites around the City of Beaumont, to include, fire stations, police, fire and EMS headquarters, lift stations, communication towers and headquarters, etc.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Terrorism
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$200,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont Emergency Management, Jefferson County Emergency Management
Potential Funding Sources:	EMPG, Homeland Security Grants, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 43
	Proposed Action:	Install generators and harden roofs at sites at Lamar University. Sites include but are not limited to the University Police Station and Soccer Field House which serves as an emergency operations center.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$1,000,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Lamar University, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 44
	Proposed Action:	At Lamar University, replace/upgrade radio repeater/tower, replace/upgrade emergency notification siren tower equipment and tower, cleaning and restoration of tunnel network, and upgrade safety and security lighting throughout campus.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Earthquake, Flood, Hazardous Materials, Hurricanes/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative
Priority:	Medium
Estimated Cost:	$2,357,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Lamar University, Jefferson County
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 45
	Proposed Action:	Elevate flood prone properties/structures and key infrastructure and electrical equipment throughout the City of Beaumont.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$500,000 - $1,000,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 46
	Proposed Action:	Minimize damage to structures and infrastructures due to falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate to remove and/or trim trees that endanger structures, infrastructure, and vital roadways. • Removal of dangerous trees and limbs (dead, leaners, and hangers). Prevent blockage or damage to infrastructure and/or major roadways/thoroughfares.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	Medium
Estimated Cost:	$1 Million
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont (Public Works), Jefferson County
Potential Funding Sources:	PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 47
	Proposed Action:	Secure and maintain backup information systems to store critical information at off-site locations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Medium
Estimated Cost:	$50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, Jefferson County, TDEM
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 48
	Proposed Action:	Improve quality of local information on vulnerable items (assets and populations) for the purpose of more accurate risk and damage assessments. Work with other agencies in city to get data as up to date and complete as possible.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Medium
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, Jefferson County, TDEM
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 49
	Proposed Action:	Elevate and/or upgrade Marina Drive in the City of Beaumont.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Geologic Hazard, Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	Low
Estimated Cost:	$6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Beaumont (Past Action) – 50
	Proposed Action:	Provide educational seminars and brochures regarding the voluntary Community Rating System (CRS).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$15,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Beaumont, Jefferson County, TDEM
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This is an ongoing mitigation item.

		Beaumont (Past Action) – 51
	Proposed Action:	Expand and upgrade security systems at St. Elizabeth Hospital for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance and safety capabilities.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Terrorism
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Low
Estimated Cost:	$350,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Beaumont, St. Elizabeth Hospital
Potential Funding Sources:	EMPG, Homeland Security Grants, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Bevil Oaks

Bevil Oaks (Past Action) – 1		
	Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storms, Thunderstorms, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	Low
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County, TDEM, SETRPC
Potential Funding Sources:	Texas Safe Shelter funding, HMGP, PDM

2017 Analysis:
Delete Action.

Bevil Oaks (Past Action) – 2		
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storms, Thunderstorms, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	Low
Estimated Cost:	$1 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County, TDEM, SETRPC
Potential Funding Sources:	HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Bevil Oaks. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low.

		Bevil Oaks (Past Action) – 4
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Note: Progress has been made on this action – HMGP funding submitted to purchase 4 Repetitive Loss Properties: 2-100%, 1-90%, 1-75%.

		Bevil Oaks (Past Action) – 5
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Bevil Oaks.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Note: Progress Made – City ordinance now requires new and substantially improved structures to use 2 foot free board.

		Bevil Oaks (Past Action) – 6
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout Bevil Oaks.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Note: Progress made – Culvert on River Road 100% complete. Major ditch project underway, which should be completed in 2017.

		Bevil Oaks (Past Action) – 7
	Proposed Action:	Pursue drainage improvements throughout Bevil Oaks. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 8
	Proposed Action:	Bury underground, secure, or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 9
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout Bevil Oaks.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	Medium
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low; revise Implementation Schedule to 3-5 years.

		Bevil Oaks (Past Action) – 10
	Proposed Action:	Pursue flood protection measures to protect from surges from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Note: Progress made – permanent generator fir Fire Station, EMS, water/sewer/City Hall and Civic Center. 3 lift stations have portable generators with plans to install permanent ones with city funds.

		Bevil Oaks (Past Action) – 11
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damages and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM< USACE, Jefferson County, SETRPC

2017 Analysis:
Delete Action.

		Bevil Oaks (Past Action) – 12
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Delete Action.

		Bevil Oaks (Past Action) – 13
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornado or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 14
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout Bevil Oaks.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 15
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Bevil Oaks.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	Low
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 16
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from tree lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Bevil Oaks, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 17
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Bevil Oaks, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 18
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 19
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County Emergency Management, Texas Forest Service
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 20
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Bevil Oaks (Past Action) – 21
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Note: this is ongoing.

		Bevil Oaks (Past Action) – 22
	Proposed Action:	Public structure strengthening for City Hall and Fire Department.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-2 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Completed.

		Bevil Oaks (Past Action) – 23
	Proposed Action:	Harden and provide generators/alternate power sources for the following lift stations: • Lift Station #1 at the end of Shipley at the Sewer Plant • Lift Station #2 located at the end of Rolling Hills • Lift Station #3 located on Riverbend Road • Lift Station #4 located on River Oaks Blvd. at the east end

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

		Bevil Oaks (Past Action) – 24
	Proposed Action:	Harden and install generators/alternate power sources at Bevil Oaks Emergency Operations Center located at 7390 Sweetgum, Beaumont, Texas.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

		Bevil Oaks (Past Action) – 25
	Proposed Action:	Provide generators/alternate power sources for the Bevil Oaks Fire Station.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Bevil Oaks, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

China

China (Past Action) – 1		
	Proposed Action:	To build a structure or structures (including a done or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

China (Past Action) – 2		
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

China (Past Action) – 3	
Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

China (Past Action) – 4	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 5
	Proposed Action:	Public structure strengthening for City Hall.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 6
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout China.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 7
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 8
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout China.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 9
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout China.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 10
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of China, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 11
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of China, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 12
	Proposed Action:	Storm harden/retrofit critical facilities throughout China. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 13
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout China.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of China, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 14
	Proposed Action:	Pursue drainage improvements throughout China. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 15
	Proposed Action:	Pursue flood protection measures to protect from surges from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Medium
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of China, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 16
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 17
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 18
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	Low
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 19
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout China.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 20
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	City of China, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 21
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of China, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		China (Past Action) – 22
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of China, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Groves

Groves (Past Action) – 1		
	Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Completed.

Groves (Past Action) – 2		
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Groves. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 4
	Proposed Action:	Installation of a generator at the South Lift Station.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

		Groves (Past Action) – 5
	Proposed Action:	Installation of a generator at the North Lift Station.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

		Groves (Past Action) – 6
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout Groves.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

		Groves (Past Action) – 7
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout Groves.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 8
	Proposed Action:	Public structure strengthening for City Hall, Police Station and Activity Center Complex.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 9
	Proposed Action:	Public structure strengthening for Groves Fire Station.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 10
	Proposed Action:	Public structure strengthening for Public Works Complex.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 11
	Proposed Action:	Public structure strengthening for Wastewater Treatment Plan.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 12
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Groves, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 13
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout Groves.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	Medium
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Groves, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 14
	Proposed Action:	Pursue drainage improvements throughout Groves. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches, drains and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 15
	Proposed Action:	Pursue flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Medium
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Groves, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 16
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, seal level rise and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Groves, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 17
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances, or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 18
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Groves.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	Medium
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 19
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from tree lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	Low
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Groves, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 20
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Low
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 21
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 22
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 23
	Proposed Action:	Reduce flooding on Van Buren from Wilson to Grant.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	Low
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 24
	Proposed Action:	Address flooding issues on 34th Street and the south end of Franklin Street.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	Low
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 25
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	Low
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 26
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Groves.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Groves (Past Action) – 27
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipeline.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	City of Groves, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise action to include water, sewer, liquid petroleum, and natural gas.

		Groves (Past Action) – 28
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Delete Action.

		Groves (Past Action) – 29
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Groves, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

Nederland

		Nederland (Past Action) – 1
	Proposed Action:	To build a structure or structures (including a done or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Nederland. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 4
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	High
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise action to include relocation of flood-prone properties.

		Nederland (Past Action) – 5
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Nederland.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 6
	Proposed Action:	Replace and/or upgrade bridges, culverts, and other crossings throughout Nederland.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Nederland, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 7
	Proposed Action:	Pursue drainage improvements throughout Nederland. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 8
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	City of Nederland, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise action to include water, sewer, liquid petroleum, and natural gas.

		Nederland (Past Action) – 9
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout Nederland.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. This will be combined with the action to storm harden/ retrofit critical facilities.

		Nederland (Past Action) – 10
	Proposed Action:	Pursue flood protection measure to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms, and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nederland, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 11
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Nederland, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 12
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL< local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 13
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 14
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout Nederland.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 15
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Nederland.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 16
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/breakaway connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nederland, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 17
	Proposed Action:	Public structure strengthening for City Hall and Police and Fire Complex.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Completed.

		Nederland (Past Action) – 18
	Proposed Action:	Public structure strengthening for Water Treatment Plant.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/ Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 19
	Proposed Action:	Public structure strengthening for Service Center.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 20
	Proposed Action:	Public structure strengthening for Wastewater Treatment Plant located at 515 Hardy Avenue.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 21
	Proposed Action:	Public structure strengthening for Hughes Library.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 22
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Nederland, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 23
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 24
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nederland, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 25
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 26
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from danger. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 27
	Proposed Action:	Public structure strengthening by replacing drainage tile main and feeders.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 28
	Proposed Action:	Public structure strengthening by installing transfer switches at named lift stations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Completed.

		Nederland (Past Action) – 29
	Proposed Action:	Public structure strengthening for D. Bob Henson Building.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nederland, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nederland (Past Action) – 30
	Proposed Action:	Improve underground storm sewer culvert size on Detroit Avenue.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Low
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nederland, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Nome

Nome (Past Action) – 1	
Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Nome (Past Action) – 2	
Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1- $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Nome. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 4
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	High
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 5
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Nome.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 6
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout Nome.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Nome, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 7
	Proposed Action:	Pursue drainage improvements throughout Nome. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 8
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	City of Nome, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise action to include water and sewer.

		Nome (Past Action) – 9
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout Nome.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $1-$2 Million.

		Nome (Past Action) – 10
	Proposed Action:	Pursue flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nome, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 11
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, seal level rise and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$1- $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Nome, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 12
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 13
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 14
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout Nome.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 15
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Nome.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nome, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 16
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Nome, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 17
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Nome, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 18
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 19
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Nome, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Priority to Low.

		Nome (Past Action) – 20
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Medium
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Nome (Past Action) – 21
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Nome, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Port Arthur

		Port Arthur (Past Action) – 1
	Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Port Arthur. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 4
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	High
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 5
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Port Arthur.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 6
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout Port Arthur.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 7
	Proposed Action:	Pursue drainage improvements throughout Port Arthur. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 8
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 9
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout the Jefferson County.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Completed.

		Port Arthur (Past Action) – 10
	Proposed Action:	Pursue flood protection measures to protect from sure from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 11
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, seal level rise, and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 12
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 13
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 14
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout Port Arthur.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 15
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Port Arthur where possible.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Water Contamination
STAPLE-E Summary:	Social, Technical, Administrative, Environmental
Priority:	High
Estimated Cost:	$75,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 16
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Arthur, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 17
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Arthur, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 18
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 19
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 20
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinance or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 21
	Proposed Action:	Minimize damage to structures and infrastructures from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vial roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 22
	Proposed Action:	Increase channel capacity and improve multiple culvert crossings of Drainage Channel Main B.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 23
	Proposed Action:	In Drainage Channel Main C, improve culvert crossing at Hwy. 69.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Completed.

		Port Arthur (Past Action) – 24
	Proposed Action:	Improve channel capacity and crossings in Lateral 3 of the Drainage Channel Main A system.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 25
	Proposed Action:	Improve culvert crossings in the Lakeview Drainage system.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 26
	Proposed Action:	Increase drainage capacity to reduce flooding on Westside.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 27
	Proposed Action:	Improve concrete lining of the El Vista Pump Station.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 28
	Proposed Action:	Upgrade existing storm sewer in the Port Acres area and along Procter Street.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 29
	Proposed Action:	Develop/implement shelter-in-place presentations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storms
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 30
	Proposed Action:	Develop/implement emergency first responder teams with Sabine Neches Chief's Association.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	High
Estimated Cost:	$1,000 - $10,000
Implementation Schedule:	1-5 years
Coordinating Agency:	Port Arthur Emergency Management, Jefferson County
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 31
	Proposed Action:	Develop/implement coastal storm presentations to groups, schools, etc.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storms
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 32
	Proposed Action:	Require all new construction to meet/exceed minimum established flood elevations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$1,000 - $30,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Port Arthur Floodplain Management
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 33
	Proposed Action:	Receive maximum credit for the NFIP CRS.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$1,000 - $30,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Port Arthur Floodplain Management
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 34
	Proposed Action:	Develop/implement bus transportation for hurricane evacuation.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storms
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$100,000 - $300,000
Implementation Schedule:	6-12 months
Coordinating Agency:	Port Arthur Emergency Management, Jefferson County Emergency Management
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 35
	Proposed Action:	Develop/implement transportation plan for special needs populations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$100,000 - $300,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Arthur, Jefferson County Emergency Management
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 36
	Proposed Action:	Assist in implementation of 211 TX Linkage Access Service.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 37
	Proposed Action:	Add 8-foot by 7-foot concrete box in Tiger Bayou.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms, Tsunami
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 38
	Proposed Action:	Improve Hwy. 365 from Hwy. 69 to Rhodair Gully.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms, Tsunami
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Arthur, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Arthur (Past Action) – 39
	Proposed Action:	Decrease floodplain width in North Port Acres Ditch.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$100,000 - $300,000
Implementation Schedule:	1-3 years
Coordinating Agency:	Port Arthur Floodplain Management
Potential Funding Sources:	Local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

Port Neches

		Port Neches (Past Action) – 1
	Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1.6 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County Emergency Management, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	Jefferson County, SETRPC, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 3
	Proposed Action:	Storm harden/retrofit critical and non-critical facilities throughout Port Neches. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-2 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMPG, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 4
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout Port Neches.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$20,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 5
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout Port Neches.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Geologic Hazards
STAPLE-E Summary:	Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$200,000 - $1 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Port Neches, Jefferson County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 6
	Proposed Action:	Pursue drainage improvements throughout Port Neches. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storms, Thunderstorms
STAPLE-E Summary:	Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 7
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Material, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	3-5 years
Coordinating Agency:	City of Port Neches, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 8
	Proposed Action:	Provide generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout Port Neches.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$50,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 9
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$100,000 - $200,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Neches, Jefferson County, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 10
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 11
	Proposed Action:	Coordinate public-private partnerships to ensure special needs population protected from winter weather.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Severe Winter Weather
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$50,000
Implementation Schedule:	1-2 years
Coordinating Agency:	Port Neches EMC
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 12
	Proposed Action:	Conduct coastal storm presentations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storms
STAPLE-E Summary:	Social, Technical, Administrative, Political, Economic
Priority:	High
Estimated Cost:	$100 - $5,000
Implementation Schedule:	Every 12 months
Coordinating Agency:	Port Neches EMC
Potential Funding Sources:	Local operating budgets, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 13
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2011 Plan Update.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Earthquake, Extreme Heat, Flood, Geologic Hazard, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Weather, Terrorism, Thunderstorm, Tornado, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	High
Estimated Cost:	$5,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Neches, Jefferson County, TDEM, FEMA
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 14
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	2-5 years
Coordinating Agency:	City of Port Neches, Jefferson County, USACE, SETRPC, FEMA
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 15
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricanes/Tropical Storm, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic, Environmental
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 16
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Tornados, Thunderstorms
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$5,000 - $100,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 17
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout the Port Neches.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hazardous Materials, Hurricane/Tropical Storm, Thunderstorm, Tornado, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal, Economic
Priority:	Medium
Estimated Cost:	$10,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 18
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Technical, Administrative, Economic, Environmental
Priority:	Low
Estimated Cost:	$50,000 - $140,000
Implementation Schedule:	12 months
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 19
	Proposed Action:	Pursue flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flood, Hurricane/Tropical Storm, Thunderstorm, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Political
Priority:	Low
Estimated Cost:	$50,000 - $3 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	City of Port Neches, Jefferson County, USACE, TDEM
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 20
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Extreme Heat
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Low
Estimated Cost:	$100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 21
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Wildfire
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	Low
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	City of Port Neches, Jefferson County Emergency Management
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		Port Neches (Past Action) – 22
	Proposed Action:	Develop and enact water conservation or drought management plan, ordinance or strategies to be used during times of drought.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	Low
Estimated Cost:	$25,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	City of Port Neches, Jefferson County
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

South East Texas Regional Planning Commission (SETRPC)

SETRPC (Past Action) – 1	
Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters. This is in conjunction with the Texas Safe Shelter Initiative.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Delete Action.

SETRPC (Past Action) – 2	
Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1 - $2 Million
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, TDEM
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimate Cost to $1.5 - $5 Million.

		SETRPC (Past Action) – 3
	Proposed Action:	Develop a database of contact information for 1st responders, volunteers, and vulnerable populations. This also includes a database of assisted living/nursing homes throughout the region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Political, Legal
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Harding County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 4
	Proposed Action:	Facilitate use of all mass notification systems including but not limited to the Southeast Texas Alerting Network (STAN), to notify and educate the public of impending hazardous events.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Political, Legal
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Harding County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 5
	Proposed Action:	Coordinate public/private partnerships to ensure special need populations are protected from health risks due to extreme weather conditions. Actions will be targeted toward citizens with physical limitations and may be unable to reach safety in times of severe weather. Volunteer groups may be available to assist by visiting special needs groups to ensure their safety and comfort during severe temperature extremes.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, hospitals, Councils of Aging
Potential Funding Sources:	HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $50,000 - $100,000.

		SETRPC (Past Action) – 6
	Proposed Action:	Coordinate a natural hazard public awareness campaign among the jurisdictions. Efforts may include tropical storm/hurricane awareness presentations, shelter-in-place presentations, evacuation maps, floodplain maps, flood control projects, storm tracking maps, safety tips flyers, preparedness articles in local newspapers, and other such information as it relates to natural hazards. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries, and on the SETRPC and jurisdictional websites.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$1,000 - $50,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities Emergency Management
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $25,000 to $75,000.

		SETRPC (Past Action) – 7
	Proposed Action:	Coordinate Emergency Management plans for coastal storms/hurricane events. Specific efforts will include encouraging jurisdictions to install and maintain back-up power at identified facilities, construct and designate emergency operations centers for disaster/emergency operations, and solicit participation in Community Emergency Response Training.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricanes/Tropical Storms
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$1,000 - $50,000
Implementation Schedule:	1-5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 8
	Proposed Action:	Identify special needs populations in the region by coordinating with home health agencies, medical equipment companies, local churches, and neighborhood associations. Organize strategies for evacuating special needs populations during a coastal storm, hurricane, or other such hazard.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, hospitals, Councils of Aging
Potential Funding Sources:	HMGP, PDM

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 9
	Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of the National Flood Insurance Program (NFIP) and the benefits to homeowners of securing flood insurance.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricanes/Tropical Storms, Thunderstorms, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, hospitals, Councils of Aging
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $20,000 - $50,000.

		SETRPC (Past Action) – 10
	Proposed Action:	Storm harden/retrofit existing and future critical facilities throughout the Southeast Texas Region. Actions can include but are not limited to window shutters, roof, flood proofing, and roll-up door reinforcement (i.e. fire stations).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tornado, Tsunami
STAPLE-E Summary:	Technical, Administrative, Political, Economic
Priority:	High
Estimated Cost:	$10,000 - $150,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $2 Million.

		SETRPC (Past Action) – 11
	Proposed Action:	Elevate and/or upgrade existing flood prone roadways throughout the Southeast Texas region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Political, Economic
Priority:	High
Estimated Cost:	$70,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Delete Action.

		SETRPC (Past Action) – 12
	Proposed Action:	Replace and/or upgrade existing bridges throughout the Southeast Texas region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Geologic Hazard, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$100,000 - $1 Million
Implementation Schedule:	1-5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

		SETRPC (Past Action) – 13
	Proposed Action:	Pursue drainage improvements throughout the region. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 14
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Legal, Economic
Priority:	High
Estimated Cost:	$1,000 - $50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, TDEM, DOJ, DHS
Potential Funding Sources:	HMGP, EMPG, Homeland Security grants, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 15
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Severe Winter Storm, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Political, Economic
Priority:	High
Estimated Cost:	$100,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, TXDOT, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $150,000 - $600,000.

		SETRPC (Past Action) – 16
	Proposed Action:	Identify and pursue any mitigation activities that would aid/ enhance evacuations throughout the region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hazardous Materials, Hurricane/Tropical Storm, Severe Winter Storm, Thunderstorm, Tornado, Tsunami, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative
Priority:	High
Estimated Cost:	$50,000 - $500,000
Implementation Schedule:	1-5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, TXDOT
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 17
	Proposed Action:	Coordinate local match/cost-share agreements between the SETRPC, county and municipal governments.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

		SETRPC (Past Action) – 18
	Proposed Action:	Coordinate project application/funding for cross-jurisdictional mitigation needs.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Social, Technical, Administrative, Political, Legal
Priority:	High
Estimated Cost:	$1,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

		SETRPC (Past Action) – 19
	Proposed Action:	Continually review, revise, update, and systematically maintain floodplain data and maps of flood prone areas throughout the Southeast Texas Region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Flooding, Hurricane/Tropical Storm, Thunderstorm
STAPLE-E Summary:	Social, Technical, Administrative, Legal
Priority:	High
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	1-5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 20
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage from storm surge and seal level rise and other sources of salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$10 Million
Implementation Schedule:	5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, TXDOT, USACE
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 21
	Proposed Action:	Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of protecting potable water sources and agricultural resources from water contamination and salt water intrusion.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Tsunami, Water Contamination
STAPLE-E Summary:	Technical, Administrative
Priority:	High
Estimated Cost:	$10 Million
Implementation Schedule:	5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, TXDOT, USACE
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 22
	Proposed Action:	Pursue the identification and construction of alternate fresh water sources.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Water Contamination
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$75,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $100,000 - $200,000.

		SETRPC (Past Action) – 23
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source for agricultural resources throughout the Southeast Texas Region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Drought, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative, Economic
Priority:	High
Estimated Cost:	$75,000 - $100,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $100,000 - $250,000.

		SETRPC (Past Action) – 24
	Proposed Action:	Minimize damage to existing and future structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Hurricane/Tropical Storm, Severe Winter Weather, Thunderstorm, Tornado
STAPLE-E Summary:	Social, Technical, Administrative, Economic
Priority:	Medium
Estimated Cost:	$50,000 - $100,000
Implementation Schedule:	6 months – 5 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, TXDOT, Entergy
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update.

		SETRPC (Past Action) – 25
	Proposed Action:	Secure and maintain backup information systems to store critical information at off-site locations.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative
Priority:	Medium
Estimated Cost:	$50,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $50,000 - $350,000.

		SETRPC (Past Action) – 26
	Proposed Action:	Coordinate with county and municipal governments to allow the SETRPC to maintain a copy of all local ordinances relevant to mitigation activities.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative
Priority:	Medium
Estimated Cost:	$1,000 - $5,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $1,000 - $15,000.

		SETRPC (Past Action) – 27
	Proposed Action:	Acquire flood prone properties throughout the region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	Medium
Estimated Cost:	$90,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $90,000 - $10 Million.

		SETRPC (Past Action) – 28
	Proposed Action:	Elevate existing flood prone properties throughout the region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Social, Technical, Administrative, Environmental, Economic
Priority:	Medium
Estimated Cost:	$90,000 - $200,000
Implementation Schedule:	1-3 years
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets

2017 Analysis:
Defer Action – Will include in the 2017 Plan Update. Revise Estimated Cost to $90,000 - $2 Million.

		SETRPC (Past Action) – 29
	Proposed Action:	Improve quality of local information on vulnerable items (assets and populations) for the purpose of more accurate risk and damage assessments. Work with other jurisdictions in region to get data as up to date and complete as possible.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Geologic Hazards, Hazardous Materials Incidents, Hurricanes/Tropical Storms, Severe Winter Weather, Terrorism, Thunderstorms, Tornados, Tsunami, Water Contamination, Wildfire
STAPLE-E Summary:	Technical, Administrative
Priority:	Medium
Estimated Cost:	$1,000 - $10,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

		SETRPC (Past Action) – 30
	Proposed Action:	Provide educational seminars and brochures regarding the voluntary Community Rating System (CRS).

MITIGATION ACTION DETAILS	
Hazard Addressed:	Dam Failure, Flooding, Hurricane/Tropical Storm, Thunderstorm, Tsunami
STAPLE-E Summary:	Technical, Administrative
Priority:	Low
Estimated Cost:	$1,000 - $10,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

		SETRPC (Past Action) – 31
	Proposed Action:	Work with local municipalities, county governments, local universities and other related entities to gather information on previous occurrences and the extent of Landslide and Riverine Erosion throughout the region.

MITIGATION ACTION DETAILS	
Hazard Addressed:	Geologic Hazard
STAPLE-E Summary:	Technical, Administrative
Priority:	Low
Estimated Cost:	$1,000 - $10,000
Implementation Schedule:	6-12 months
Coordinating Agency:	SETRPC, Hardin County, Jefferson County, Orange County, local municipalities, and local universities
Potential Funding Sources:	HMGP, PDM, local operating budgets

2017 Analysis:
Delete Action.

SECTION 18: MITIGATION ACTIONS

Summary

As discussed in Section 2, at the mitigation workshop the planning team and stakeholders met to develop mitigation actions for each of the natural and human-caused hazards included in the Plan. Each of the actions in this section were prioritized based on FEMA's Social, Technical, Administrative, Political, Legal, Economic and Environmental (STAPLEE) criteria necessary for the implementation of each action. As a result of this exercise, an overall priority was assigned to each mitigation action.

As part of the economic evaluation of the STAPLEE analysis, jurisdictions analyzed each action in terms of the overall costs, measuring whether the potential benefit to be gained from the action outweighed costs associated with it. As a result of this exercise, priority was assigned to each mitigation action by marking them as High (H), Moderate (M), or Low (L). An action that is ranked as "High" indicates that the action will be implemented as soon as funding is received. A "Moderate" action is one that may not be implemented right away depending on the cost and number of citizens served by the action. Actions ranked as "Low" indicate that they will not be implemented without first seeking grant funding and after "High" and "Moderate" actions have been completed.

Planning Team Members developed the actions below while also considering the risk reduction benefits and the effects the proposed action would have on new and existing buildings and infrastructure.

All mitigation actions created by Planning Team members are presented in this section in the form of Mitigation Action Worksheets. More than one hazard is sometimes listed for an action, if appropriate. Actions presented in this section represent a comprehensive range of mitigation actions per current State and FEMA Guidelines, including two actions, per hazard, and of two different types.

Table 18-1. Jefferson County and Participating Jurisdictions Mitigation Action Matrix

MITIGATION ACTION MATRIX				
Actions presented in this matrix represent a comprehensive range and minimum number of required mitigation actions per current State and FEMA Guidelines, including two actions per hazard, and of two different types.				
JEFFERSON COUNTY: MITIGATION ACTION MATRIX				
HAZARDS	**Types of Action:**			
	LOCAL PLANS/ REGULATIONS	**STRUCTURAL/ INFRASTRUCTURE**	**NATURAL SYSTEM PROTECTION**	**EDUCATION & AWARENESS**
Flood		XXXXXXXXXXXXXXXXX		XX
Lightning	X	XXXXX		X
Hurricane	X	XXXXXXXXXXXXXXXX	X	XX
Extreme Heat		XXXXX		X
Hail	X	XXXX		X
Thunderstorm Wind	X	XXXXXXXXXX		XX
Tornado	X	XXXXXXX		XX
Drought	X	XXXX		X
Wildfire		XXXXX		XX
Winter Storm	X	XXXXX		XX
Coastal Erosion	X	XX	X	
BEAUMONT: MITIGATION ACTION MATRIX				
HAZARDS	**Types of Action:**			
	LOCAL PLANS/ REGULATIONS	**STRUCTURAL/ INFRASTRUCTURE**	**NATURAL SYSTEM PROTECTION**	**EDUCATION & AWARENESS**
Flood	XXX	xxxxxxxxxxxxxxxxxxxxx		XXXXXXX
Lightning	X	XXXXXXXXXX		XXXX
Hurricane	XXXX	XXXXXXXXXXXXXXXX		XXXXXX
Extreme Heat		XXXXXXX		XXXX
Hail	X	XXXXXXXXXX		XXX
Thunderstorm Wind	XX	XXXXXXXXXXXXX		XXXX
Tornado	XXX	XXXXXXXXXXXXXX		XXXX
Drought		XX		X
Wildfire	XX	XXXXXXX		XXXX
Winter Storm	X	XXXXXXXXXXXX		XXXX

BEVIL OAKS: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood	X	XXXXXXX		X
Lightning	XX	XX		X
Hurricane	XX	XXXXXXXX		X
Extreme Heat		XXX		XX
Hail	XX	XX		X
Thunderstorm Wind	XX	XXX		X
Tornado	XX	XXX		X
Drought	X			X
Wildfire		XXXX		X
Winter Storm	XX	XX		X

CHINA: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood		XXXXXXXXXXXX		XX
Lightning		XXX		X
Hurricane		XXXXXXXXXX		XX
Extreme Heat		XX		X
Hail		XX		X
Thunderstorm Wind		XXXXX		X
Tornado		XXXXXX		XX
Drought	X	XX		X
Wildfire		XX		XX
Winter Storm		XXX		X

GROVES: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood		XXXXXXXXXXXXXXX		X
Lightning	X	XXXXXXX		X
Hurricane	X	XXXXXXXXXXXXX		X
Extreme Heat		XXXXXXX		X
Hail	X	XXXXXXX		X
Thunderstorm Wind	X	XXXXXXXX		X
Tornado	X	XXXXXXXX		X
Drought	X	X		X
Wildfire		XXXXXXXX		X
Winter Storm	X	XXXXXXX		X

NEDERLAND: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood		XXXXXXXXXXXXXXXXX		X
Lightning	X	XXXXXXXX		X
Hurricane	X	XXXXXXXXXXXXXXXXX		X
Extreme Heat		XXXXXXXX		X
Hail	X	XXXXXXXX		X
Thunderstorm Wind	X	XXXXXXXXXXXX		X
Tornado	X	XXXXXXXXXXX		X
Drought	X	X		X
Wildfire		XXXXXXXXX		X
Winter Storm	X	XXXXXXXX		X

NOME: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood		XXXXXXXXXX		XX
Lightning	X	XXXX		X
Hurricane	X	XXXXXXXXXXXXXX		XX
Extreme Heat		XXXX		X
Hail	X	XXXX		X
Thunderstorm Wind	X	XXXXXXXXX		XX
Tornado	X	XXXXXXX		XX
Drought	X	X		X
Wildfire		XXXX		XX
Winter Storm	X	XXXX		XX

PORT ARTHUR: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood	XX	XXXXXXXXXXXXXXXXXXX		XX
Lightning	X	XXXX		XX
Hurricane	XXX	XXXXXXXXXXXXXXXXXXX		XXX
Extreme Heat		XXX		X
Hail	X	XXXX		XX
Thunderstorm Wind	X	XXXXXXXXXXXXXXXXX		XX
Tornado	X	XXXXXXX		X
Drought	X	X		X
Wildfire		XXXXX		X
Winter Storm	X	XXXX		X

PORT NECHES: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood		XXXXXXXXXX		X
Lightning	X	XXXX		X
Hurricane	X	XXXXXXXXXXXX		XX
Extreme Heat		XXXX		XX
Hail	X	XXXX		X
Thunderstorm Wind	X	XXXXXXX		X
Tornado	X	XXXXXXX		X
Drought	X			X
Wildfire		XXXXX		X
Winter Storm	X	XXXX		XX

SETRPC: MITIGATION ACTION MATRIX				
HAZARDS	Types of Action:			
	LOCAL PLANS/ REGULATIONS	STRUCTURAL/ INFRASTRUCTURE	NATURAL SYSTEM PROTECTION	EDUCATION & AWARENESS
Flood	XXX	XXXXXXXXXX		XXXXXXX
Lightning	X	XXX		XXXXX
Hurricane	XXXX	XXXXXXXXXX		XXXXXXX
Extreme Heat	XX	X		XXXXX
Hail	X	XX		XXX
Thunderstorm Wind	XX	XXXXX		XXXXXX
Tornado	XXX	XXXX		XXXXXX
Drought	XXX	XX		XXX
Wildfire	XX	XXX		XXXXXX
Winter Storm	XXX	XXX		XXXXXX

Jefferson County

	Jefferson County – Action #1
Proposed Action:	**To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Jefferson County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in Port Arthur.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Jefferson County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County – Action #2
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in Jefferson County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Jefferson County.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Jefferson County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Jefferson County – Action #3
Proposed Action:	**Public structure strengthening for Jefferson County Courthouse/S.O./Jail. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Jefferson County Courthouse/S.O./Jail
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect structure from damages, protect lives of staff, inmates and occupants, and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Jefferson County – Action #4
Proposed Action:	**Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout Jefferson County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of storm surge damages to structures and infrastructure.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Coastal Erosion
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50-$60 Million
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County – Action #5
	Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Jefferson County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Coastal Erosion
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	Jefferson County, SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County – Action #6
	Proposed Action:	**Restore sand dunes to protect inland resources during storm surge events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Coastal locations throughout Jefferson County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through fortified/restored dune system.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Natural System Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Coastal Erosion
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$60-$100 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Dune Restoration and Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County – Action #7
	Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout the region.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Life safety benefits through preparedness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Tornado, Thunderstorm Wind, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	Jefferson County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Jefferson County – Action #8
	Proposed Action:	**Coordinate and work with the Lower Neches Valley Authority in order to use an LNVA sand pit as a potential freshwater reservoir for all areas south of I-10.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County south of I-10
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce damages to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$75,000 - $200,000
Potential Funding Sources:	HMGP, PDM, local operating budget, LNVA
Lead Agency/Department Responsible:	Jefferson County
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan, Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Jefferson County – Action #9
	Proposed Action:	**Flood proof the Jefferson County courthouse elevators by installing a pump system.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County Courthouse
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect elevator from flood damages.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Jefferson County – Action #10
Proposed Action:	**Retrofit the LNVA pumping system, which includes a number of pump stations, in order to increase capacity and allow stand-alone service when the Neches River is contaminated or a failure of the primary system occurs.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Jefferson County LNVA pumping system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Increase capacity and reduce risk of inundation and/ or contamination. Ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,680,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County – Action #11
	Proposed Action:	**Retrofit the primary diversion point and pumping system in order for the LNVA to fully control isolation and selection of the source of the water which flows into the pumping station and isolate either the Neches River or Pine Island Bayou should contamination occur.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County LNVA pumping system
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of inundation and/or contamination. Ensure continuity of services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$562,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County – Action #12
	Proposed Action:	**Convert an existing 56-acre excavated dirt pit into a localized freshwater storage impoundment which would be used to support water to municipal water plants and industrial users in the Nederland, Port Neches, and Groves area of Jefferson County in the event of an interruption of canal service to the region.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Redundant water source and improved storm water management.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,468,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Jefferson County – Action #13
Proposed Action:	**Enhance existing structures and construct additional water control features to allow the LNVA to isolate segments of canals in the event of contamination or localized bank failures in order to conserve and protect unaffected waters and continue deliveries to as many customers as possible while a clean-up or repair is addressed, rather than having a single event affect all customers of the entire system.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	LNVA System
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure continuity of critical services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Hazardous Materials, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$375,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works, LNVA
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Jefferson County – Action #14
Proposed Action:	**Adopt and implement land use restrictions in high risk coastal erosion areas**
BACKGROUND INFORMATION	
Site and Location:	Jefferson County coastal areas
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce erosion and impacts through building restrictions
Type of Action: (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion
Effect on new/existing buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	Jefferson County Administration
Implementation Schedule:	Within 36-48 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinance

COMMENTS:
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Jefferson County County-Wide – Action #15
Proposed Action:	**Storm harden/retrofit critical facilities throughout Jefferson County. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities in Jefferson County and all jurisdictions
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and Local Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #16
	Proposed Action:	**Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable =3 ; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #17
	Proposed Action:	**Storm harden/retrofit regional communication sites and infrastructure throughout Jefferson County.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Regional communication sites and infrastructure in Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical communication infrastructure from damages and ensure continuity of emergency services and communications.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Jefferson County County-Wide – Action #18
Proposed Action:	**Elevate new and existing flood-prone structures and infrastructure throughout Jefferson County**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Flood-prone structures in Jefferson County and all jurisdictions
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County County-Wide – Action #19
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Jefferson County to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized bridges and culverts in Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works, TXDOT
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County County-Wide – Action #20
	Proposed Action:	**Pursue funding and implement drainage improvements throughout Jefferson County. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works and Engineering, Drainage District
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County County-Wide – Action #21
	Proposed Action:	**Coordinate with federal, state, and local partners to provide training opportunities for first responders, including but not limited to HAXMAT, terrorism, Flood, Hurricane, Tornado, and other natural hazards as appropriate.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County-wide and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life through preparedness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind, Hazardous Material, Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures through improved response
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, TDEM
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #22
	Proposed Action:	**Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Jefferson County, including all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material, Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Jefferson County County-Wide – Action #23
Proposed Action:	**Purchase and install backup generator power systems with permanent hook-ups for critical facilities including lift stations, water plants, police stations, EMS, fire stations, and other first responder facilities throughout Jefferson County.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities as indicated above in Jefferson County and all jurisdictions
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from loss of power and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	County and Local Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #24
	Proposed Action:	**Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various Locations TBD throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works, Drainage District
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County County-Wide – Action #25
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Jefferson County.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2-$3 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #26
	Proposed Action:	**Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Jefferson County.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$750,000 - $2,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	County and City Public Works, Drainage District
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #27
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Utility lines throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Utility Fees, Federal Grants
Lead Agency/Department Responsible:	County and City Public Works, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #28
	Proposed Action:	**Develop/construct hardened, joint, multi-jurisdictional EOC.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Site TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improve coordinated emergency response and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Hazardous Materials, Terrorism
Effect on New/Existing Buildings:	Reduce risk to new structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2 Million
Potential Funding Sources:	HMGP, PDM, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Jefferson County County-Wide – Action #29
	Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reduce the risk of injury during events including: mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County – County-wide and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMGP
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #30
	Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations (TBD) in Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Administration
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #31
	Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Wildland Urban Interface of Jefferson County and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 5; and Environmentally Sound = 5

		Jefferson County County-Wide – Action #32
	Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Jefferson County – County-wide and all jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Administration
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal =5 ; Economically Sound = 5; and Environmentally Sound = 5

	Jefferson County County-Wide – Action #33
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Jefferson County and all jurisdictions
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS

Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Jefferson County County-Wide – Action #34
Proposed Action:	**Develop and implement a public education program to educate residents of the risk of dam failure, actions to reduce risk, and evacuation routes and procedures for residents downstream of the Sam Rayburn Dam and the Toleda Bend Dam in the event of a dam failure.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	County-wide, including all jurisdictions
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Prevent or minimize flood damage to structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000 - $5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County OEM
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
For purposes of the HMAP, upstream dam failure would affect part of the communities within Jefferson County boundaries. However, the impacts associated with these dams are flood related.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Beaumont

	Beaumont – Action #1
Proposed Action:	**Enhance GIS capabilities to develop and maintain a database and identify concentrations of at-risk structures to track community vulnerability to flooding.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to structures through understanding risk and vulnerability.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #2
	Proposed Action:	**Acquire GIS hazard mapping online software of flood prone areas for residents and design professionals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to structures and residents and developers through understanding risk and vulnerability.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #3
	Proposed Action:	**Enhance Damage Assessment capabilities to develop and maintain a database and identify concentrations of at-risk structures.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damage to structures through understanding risk and vulnerability.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Tornado, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #4
	Proposed Action:	**Enhance Damage Assessment trainings to improve public outreach, speed recovery, enhance damage assessments, and reduce risk to first responders and building inspectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury and speed recovery after an event.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Outreach - Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Lightning, Hurricane, Hail, Thunderstorm Wind, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Building Inspectors
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #5
	Proposed Action:	**Retrofit existing city structures or build new structure(s) (including a dome or domes) in this jurisdiction that can withstand 200 mile per hour winds and act as shelters of last resort. This may be in conjunction with the Texas Safe Shelter Initiative.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in Beaumont
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in Beaumont.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Beaumont – Action #6
Proposed Action:	**Storm harden/retrofit critical facilities throughout Beaumont. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations, police headquarters, EMS stations 1 and 2, and other critical infrastructure facilities), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities in Beaumont
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$7.4 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #7
	Proposed Action:	**Harden the City of Beaumont Police headquarters at 255 College. Actions include but are not limited to storm shutters, window film, surge protectors, roof straps, hail and fire resistant roofing material, etc. Install generator with permanent hook-ups at the Emergency Operations Center at 700 Orleans.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	EOC and Police Headquarters
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Beaumont – Action #8
Proposed Action:	**Wind harden the South Radio Tower at 1550 Pine and Fire Headquarters at 400 Walnut. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators with permanent hook-ups, and hardening of bay doors (specifically fire stations).**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations as noted above
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3.75 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #9
	Proposed Action:	**Wind harden Baptist Hospital, at 3080 College, and Christus St. Elizabeth Hospital at 2830 Calder. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators with permanent hook-ups, and hardening of bay doors (specifically maintenance and facility areas).**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations as noted above
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$8 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #10
	Proposed Action:	**At Christus St. Elizabeth Hospital install backup generators with permanent hook-ups and elevate key electrical equipment (such as Switchgear and ATS).**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	St. Elizabeth Hospital
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3.1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital
Implementation Schedule:	Within 12024 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #11
	Proposed Action:	**Upgrade Christus St. Elizabeth Hospitals and Port of Beaumont emergency communication systems to ensure continued communication with outside sources and first responders.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	St. Elizabeth Hospital and Port of Beaumont
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure communications and continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$62,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital, Port of Beaumont
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #12
	Proposed Action:	**Install generators and permanent hook-ups for the Beaumont Independent School District at sites including but not limited to Westbrook, Police Building, Administrative Building and the Thomas Educational Support Center which are used for sheltering and emergency operation coordination centers.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Beaumont ISD locations
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure continuity of emergency services and sheltering.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Flood, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$650,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration, ISD
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #13
	Proposed Action:	**Procure mobile backup generators for the Port of Beaumont. Install permanent quick connections at critical locations.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Port of Beaumont
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure continuity of services during and after events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Flood, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$60,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration, Port of Beaumont
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Port of Beaumont SOP

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Beaumont – Action #14
Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines** • **Relocate and/or update the data communications provided to the Wastewater treatment power supply station to prevent the interruption of operations** • **Relocate and/or update the data communications provided to the Water treatment plant to prevent the interruption of operations.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of power loss, associated damages, and line repairs, and reduce risk of loss of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Hail Lightning, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5.5 Million
Potential Funding Sources:	HMGP, PDM, Utility Fees, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works, Entergy
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS

Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #15
	Proposed Action:	**Hardening Electric Grid and Communications to prevent damage to electric, phone and cable infrastructure for major roadways/ thoroughfares or access routes to critical infrastructure.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of power loss, associated damages, reduce risk of loss of services, and ensure continuity of services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Hail, Lightning, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, Utility Fees, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works, Entergy
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	Beaumont – Action #16
Proposed Action:	**Pursue drainage improvements in the City of Beaumont. Projects include but are not limited to the Tyrell Park Project, Caldwood Outfall, Phelan Boulevard Drainage Project, the Cartwright/Corley Project, and the Brockman Drainage Project.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations as indicated above
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Beaumont – Action #17
Proposed Action:	**Implement drainage improvements in the City of Beaumont. Projects include, but are not limited to joint Drainage District 6 and Beaumont projects and Beaumont individual projects, such as Steve's Drive project, and High School Ditch Project (which includes Seventh Street, North Street, Broadway Box projects).**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations as indicated above
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #18
	Proposed Action:	**Purse drainage improvements throughout the City of Beaumont. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout the city.
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #19
	Proposed Action:	**Construct water retention ponds to collect storm water run-off and use as an alternate water source for storm control throughout the City of Beaumont.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	TBD sites in Beaumont
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Localized flood reduction.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #20
	Proposed Action:	**Complete bank stabilization project at Riverfront Park, Phase II.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Riverfront Park
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Localized flood reduction.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #21
	Proposed Action:	**Pursue building a 50 million gallon holding lagoon to store wastewater in case of power outages and plant failure, and removal of sludge build-up in the two lagoons to increase the storage capacity at the Wastewater Treatment Plant in case of power outages and plant failure.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Wastewater Treatment Plant
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Increase the storage capacity at the Wastewater Treatment Plant in case of power outages and plant failure; reduce risk of contamination.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Hail, Lightning, Winter Storm, Thunderstorm Wind, Tornado, Extreme Heat
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Wastewater management plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Beaumont – Action #22
Proposed Action:	**Pursue and construct alternate fresh water sources throughout the City of Beaumont. This include, but is not limited to increased capacity to maintain water pressure in case of system failures at the water treatment plant; installation of a 36" water transmission line to provide an alternate water transport method; installation of a raw water pipeline to replace the existing canal to prevent intention or natural pollution of the City's water supply; installation of new chemical feed facilities and building to safely store and use chlorine, etc.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout the City
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of potable water or inadequate water supply.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Long Term Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #23
	Proposed Action:	**At Baptist Hospital, install 1) an on-site filtering system for water well and new pressurized water supply system, and 2) install a Built-in Decontamination System (includes shower, curtain system, hazardous water tank, and drain) in the main facility.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Baptist Hospital
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury to residents and first responders.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Administration, Hermann Memorial Hospital
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Hospital Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #24
	Proposed Action:	**Retrofit the LNVA pumping system at Highway 105 to upgrade pumping capacity. This will allow the system to operate at full stand-alone service in times of contamination of water in the Neches River due to a hazard event.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Highway 105
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of contamination or loss of service.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials, Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,680,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works, LNVA
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Beaumont – Action #25
Proposed Action:	**Retrofit the primary LNVA diversion point and pumping system at 10550 Helbig Rd. to allow the LNVA to fully control, isolate, and section off the source of the water that flows into the pumping station. This would allow the LNVA to isolate either the Neches River or Pine Island Bayou should one suffer any form of contamination.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	LNVA diversion point
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of contamination or loss of service.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials, Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$562,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works, LNVA
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Beaumont – Action #26
Proposed Action:	**Develop a database of contact information for first responders, volunteers, and vulnerable populations. This also includes a database of assisted living/nursing homes throughout the City of Beaumont or populations critically dependent on electric service.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Extreme Heat, Winter Storm, Tornado, Hail, Lightning, Thunderstorm Wind, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,000
Potential Funding Sources:	EMPG, local operating budgets
Lead Agency/Department Responsible:	Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Beaumont – Action #27
Proposed Action:	**Public Awareness and Education of Vulnerable Population through creation of a database and special group in STAN (Southeast Texas Alerting Network regional emergency alerting system) to notify and educate the public of impending hazardous events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Expedient access to and ability to communicate with those individuals, nursing homes, assisted living centers, hospitals, and others who are most at risk during extreme hazard events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	EMPG, local operating budget
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #28
	Proposed Action:	**Plan for the Protection of Vulnerable Populations by identifying at-risk populations and coordinating with home health agencies, medical equipment companies, local churches and neighborhood associations to assist these populations during extreme weather events. Organize strategies for protecting vulnerable populations and develop a plan to expediently activate strategies when need be.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)*:	Protection of at-risk populations during extreme weather events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #29
	Proposed Action:	**Coordinate a natural hazards public awareness campaign among agencies and the community. Efforts may include tropical storm/hurricane awareness presentations, shelter-in-place presentations, evacuation maps, floodplain maps, flood control projects, storm tracking maps, safety tips flyers, mitigation articles in local newspapers, and other such information as it relates to natural hazards. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries, and on the SETRPC and jurisdictional websites.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk damages as well as life safety benefits to residents through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricanes, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	EMPG, local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #30
	Proposed Action:	**Coordinate Emergency Management Plans for coastal storms/hurricane events. Specific efforts will include encouraging agencies to install and maintain back-up power at identified facilities, construct and designate emergency operations centers for disaster/ emergency operations and solicit participation in Community Emergency Response Training.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #31
	Proposed Action:	**Conduct flood insurance educational seminars for area realtors to increase their knowledge of the National Flood Insurance Program (NFIP) and the benefits to homeowners of securing flood insurance.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce potential uninsured flood losses through education.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	Beaumont Floodplain Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #32
	Proposed Action:	**Coordinate with federal, state, and local partners to provide training opportunities for first responders.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life through education and preparedness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, EMPG
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #33
	Proposed Action:	**Relocations of Fire Headquarters, Fire stations 1, 2, 7 and 11 to improve neighborhood coverage in accordance with the 2005 Pietsch (ISO) study.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life due to improved neighborhood coverage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$21,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 3; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 3; and Environmentally Sound = 4

	Beaumont – Action #34
Proposed Action:	**Install on-site well and new pressurized water supply system to support Christus St. Elizabeth Hospital during loss of potable water.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Christus St. Elizabeth Hospital
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of water contamination and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Material
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$162,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, EMPG
Lead Agency/Department Responsible:	Beaumont Administration, St. Elizabeth Hospital
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Hospital operations plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #35
	Proposed Action:	**Acquire or elevate flood prone structures throughout the City of Beaumont with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout city
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce or eliminate flood damages to repetitive loss structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$55,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, RFC
Lead Agency/Department Responsible:	Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #36
	Proposed Action:	**Coordinate a consolidated security checkpoint on entry to Plant Road to access industrial and chemical production and storage complexes.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Entry to Plant Road
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$175,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #37
	Proposed Action:	**Upgrade security system at the Port of Beaumont for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance capabilities.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Port of Beaumont
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$175,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Beaumont – Action #38
Proposed Action:	**Install security systems at the City of Beaumont water utility sites, to include but not limited to, security walls around chemical tanks, water treatment plant and a river pump station, monitoring stations for purity testing at various sites throughout the city; surveillance at six elevated storage tanks and wastewater plant, etc. for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance capabilities.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beaumont Water Utility Sites
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of terror attack on vulnerable targets.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,500,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #39
	Proposed Action:	**Upgrade surveillance capabilities at critical infrastructure sites around the City of Beaumont, to include, fire stations, police, fire and EMS headquarters, lift stations, communication towers and headquarters, etc.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Beaumont Critical Infrastructure Sites
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #40
	Proposed Action:	**Install generators with permanent hook-ups and harden roofs at sites at Lamar University. Sites include but are not limited to the University Police Station and Soccer Field House which serves as an emergency operations center.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Lamar University
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	Beaumont Emergency Management, Lamar University
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #41
	Proposed Action:	**At Lamar University, replace/upgrade radio repeater/tower, replace/upgrade emergency notification siren tower equipment and tower, cleaning and restoration of tunnel network, and upgrade safety and security lightning throughout campus.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Lamar University
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure continuity of emergency services and reduce risk to students and faculty through early warning.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Thunderstorm Wind, Tornado, Hail, Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,357,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, EMPG
Lead Agency/Department Responsible:	Beaumont Emergency Management, Lamar University
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #42
	Proposed Action:	**Elevate flood prone properties/structures and key infrastructure and electrical equipment throughout the City of Beaumont.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout the city.
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to key structures and infrastructure.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Beaumont – Action #43
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contract to remove and/or trip trees that endanger structures, infrastructure, and vital roadways.** • **Removal of dangerous trees and limbs (dead, leaners, and hangers). Prevent blockage or damage to infrastructure and/or major roadways/thoroughfares.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Beaumont
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, Utility Fees
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS

Additional Considerations:
The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Beaumont – Action #44
Proposed Action:	**Secure and maintain backup information systems to store critical information at off-site locations.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of critical government data and files through redundant systems.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Wildfire, Thunderstorm Wind, Lightning, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets
Lead Agency/Department Responsible:	Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #45
	Proposed Action:	**Improve quality of local information on vulnerable items (assets and populations) for the purpose of more accurate risk and damage assessments. Work with other agencies in city to get data as up-to-date and complete as possible.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improve risk and vulnerability assessment.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets
Lead Agency/Department Responsible:	Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Beaumont – Action #46
	Proposed Action:	**Elevate and/or upgrade Marina Drive in the City of Beaumont.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Marina Drive
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to infrastructure and ensure emergency access.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$6,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Beaumont – Action #47
	Proposed Action:	**Provide educational seminars and brochures regarding the voluntary Community Rating System (CRS).**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood losses through CRS education and buy-in.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$15,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Beaumont Floodplain Management
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Beaumont – Action #48
	Proposed Action:	**Expand and upgrade security systems at St. Elizabeth Hospital for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance and safety capabilities.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	St. Elizabeth Hospital
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$350,000
Potential Funding Sources:	Local operating budgets, EMGP, Homeland Security Grants
Lead Agency/Department Responsible:	Beaumont Emergency Management, St. Elizabeth Hospital
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Hospital Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Bevil Oaks

	Bevil Oaks – Action #1
Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Bevil Oaks
Risk Reduction Benefit *(Current Cost/Losses Avoided)*:	Reduce risk of injury or death for residents in Bevil Oaks.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Bevil Oaks City Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Bevil Oaks – Action #2
	Proposed Action:	**Storm harden/retrofit critical facilities throughout Bevil Oaks. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcements (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Critical facilities in Bevil Oaks
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks, Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Bevil Oaks – Action #3
	Proposed Action:	**Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Bevil Oaks
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
The City of Bevil Oaks applied for HMGP funding to acquire 4 repetitive loss structures since the last planning cycle. This project will implement the first phase if/when the project is funded. This project is also an extension of the acquisition program to acquire additional structures as they are identified.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Bevil Oaks – Action #4
	Proposed Action:	**Elevate existing flood-prone structures and infrastructure throughout Bevil Oaks.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures and infrastructure in Bevil Oaks.
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

COMMENTS
Bevil Oaks updated floodplain ordinance requires new and substantially damaged structures to be elevated 2’ above base flood elevation. This project would proactively elevate existing flood-prone structures above the BFE.
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable =4 ; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Bevil Oaks – Action #5
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Bevil Oaks to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized and/or inadequate bridges and culverts in Bevil Oaks
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Bevil Oaks Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Bevil Oaks – Action #6
	Proposed Action:	**Pursue funding and implement drainage improvements throughout Bevil Oaks. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Bevil Oaks
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks Works in coordination with Jefferson County and Drainage District 6
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Bevil Oaks – Action #7
	Proposed Action:	**Provide generators/back-up power systems with permanent hook-ups for lift stations and other critical facilities lacking back-up power throughout Bevil Oaks.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Lift Stations/Critical Facilities in Bevil Oaks
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks, Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Bevil Oaks – Action #8
	Proposed Action:	**Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Bevil Oaks
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of storm surge flooding to structures and infrastructure.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Bevil Oaks in coordination with Jefferson County
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Bevil Oaks – Action #9
	Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout the Bevil Oaks.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Bevil Oaks in coordination with Jefferson County
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Evacuation Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Bevil Oaks – Action #10
Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to ordinance requirements to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Utility lines throughout Bevil Oaks
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Bevil Oaks – Action #11
	Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Bevil Oaks – Action #12
Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat. Educate public on the locations and availability of cooling centers during times of extreme heat.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations TBD
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 36-48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Bevil Oaks – Action #13
Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Wildland Urban Interface
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Bevil Oaks – Action #14	
Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Bevil Oaks – Action #15
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.** • **Update ordinance to require dead tree removal and tree trimming as appropriate to protect structures and infrastructure.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structure and infrastructure.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS

Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

China

	China – Action #1
Proposed Action:	**Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of China, Jefferson County Emergency Management
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan, Jefferson County Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		China – Action #2
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in China
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 - $2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of China, Jefferson County Emergency Management, SETRPC
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		China – Action #3
	Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in China
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	6-12 months
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #4
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Implement and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracting to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	6-12 months
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #5
Proposed Action:	**Public structure strengthening for City Hall.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $500,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-2 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #6
Proposed Action:	**Purchase and install generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout China.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #7
Proposed Action:	**Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #8
Proposed Action:	**Identify and implement any mitigation activities that would aid/ enhance evacuations throughout China.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #9
Proposed Action:	**Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout China.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Flood, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000 - $200,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #10
Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Burying utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increasing the easement area/clearance of utility lines/ poles from trees lines**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #11
Proposed Action:	**Provide the public with educational brochures for the hazards identified as part of the 2017 Plan Update.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	6-12 months
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #12
Proposed Action:	**Storm harden/retrofit critical facilities throughout China. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $500,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-2 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #13
Proposed Action:	**Replace and/or upgrade bridges, culverts and other crossings throughout China.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000 - $1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	2-5 years
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

China – Action #14	
Proposed Action:	**Implement drainage improvements throughout China. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

China – Action #15	
Proposed Action:	**Implement flood protection measures to protect from surges from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $3 Million
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #16
Proposed Action:	**Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #17
Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #18
Proposed Action:	**Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000 - $140,000
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	12 months
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #19
Proposed Action:	**Elevate new and existing flood prone structures and infrastructure throughout China.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$20,000 - $100,000
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #20
Proposed Action:	**Bury underground, secure or otherwise harden exposed or vulnerable pipelines.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000 - $500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	3-5 years
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #21
Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1 - $2 Million
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	2-5 years
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	China – Action #22
Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in China
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Groves

	Groves – Action #1
Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Groves
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Groves.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Groves Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Groves – Action #2
	Proposed Action:	**Storm harden/retrofit critical facilities throughout Groves. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Critical facilities in Groves
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Groves – Action #3
	Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Groves.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Groves – Action #4
	Proposed Action:	**Storm harden/retrofit City Hall, Police Station, and Activity Center Complex.** **Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City Hall, Police Station, and Activity Center Complex
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect public facilities from damages and ensure continuity of services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Groves – Action #5
	Proposed Action:	**Storm harden/retrofit Groves Fire Station.** **Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Groves Fire Station
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect facility and fire trucks from damages and ensure continuity of emergency services. Life Safety benefits for first responders.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Groves – Action #6
Proposed Action:	**Storm harden/retrofit Public Works Complex. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Groves Public Works Complex
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect public works facilities from damages and ensure continuity of emergency services. Life Safety benefits for first responders.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Groves – Action #7
Proposed Action:	**Storm harden/retrofit Wastewater Treatment Plant. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Groves Wastewater Treatment Plant
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Groves – Action #8
	Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	Groves Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Groves – Action #9
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Groves to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized bridges and culverts in Groves
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #10
	Proposed Action:	**Pursue funding and implement drainage improvements throughout Groves. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Groves
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Groves – Action #11
Proposed Action:	**Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout Groves
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of storm surge flooding to structures and infrastructure.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #12
	Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	Groves Public Works, SETRPC
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #13
	Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Groves – Action #14
	Proposed Action:	**Construct or upgrade existing detention/retention ponds where appropriate to collect storm water to reduce flooding and for use as an alternate water source throughout Groves.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various Locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures. Water resource for irrigation use during drought.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #15
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Utility lines throughout Groves
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	Groves Public Works, Entergy
Implementation Schedule:	Within 48-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Groves – Action #16
Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations TBD
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Groves – Action #17
Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Wildland Urban Interface
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Groves – Action #18
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Groves.
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Groves – Action #19
Proposed Action:	**Upgrade drainage system to reduce flooding on Van Buren from Wilson to Grant.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Van Buren from Wilson to Grant
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #20
	Proposed Action:	**Upgrade drainage system to reduce flooding issues on 34th Street and the south end of Franklin Street.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	34th Street and the south end of Franklin Street
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #21
	Proposed Action:	**Acquire and demolish or relocate flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss Properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Groves
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	Groves Emergency Management
Implementation Schedule:	Within 48-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

	Groves – Action #22
Proposed Action:	**Elevate new and existing flood-prone structures and infrastructure throughout Groves.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Flood-prone structures and infrastructure in Groves
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	Groves Emergency Management
Implementation Schedule:	Within 48-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Groves – Action #23
	Proposed Action:	**Secure, bury or otherwise harden exposed or vulnerable pipelines including water, sewer, liquid petroleum, and natural gas.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Groves
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Pipeline Failure, Hazardous Materials
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

Nederland

Nederland – Action #1	
Proposed Action:	**Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 miles per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Nederland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in Nederland.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #2
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in Nederland
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Nederland.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #3
Proposed Action:	**Storm harden/retrofit critical facilities throughout Nederland. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities in Nederland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Nederland – Action #4
	Proposed Action:	**Acquire and demolish or relocate flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Nederland
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #5
Proposed Action:	**Elevate new and existing flood-prone structures and infrastructure throughout Nederland.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Flood-prone structures and infrastructure in Nederland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #6
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Nederland to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized bridges and culverts in Nederland
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #7
	Proposed Action:	**Pursue funding and implement drainage improvements throughout Nederland. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Nederland
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #8
	Proposed Action:	**Secure, bury or otherwise harden exposed or vulnerable pipelines including water, sewer, liquid petroleum, and natural gas.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Nederland
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Nederland – Action #9
Proposed Action:	**Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout Nederland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of storm surge flooding to structures and infrastructure.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #10
	Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Nederland Public Works, SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #11
	Proposed Action:	**Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various Locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Nederland – Action #12
Proposed Action:	**Retrofit existing structures or construct new structures to act as residential safe rooms during tornados or other severe weather events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various Locations TBD
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 per site
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #13
Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Nederland.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Nederland – Action #14
Proposed Action:	**Construct water retention ponds to collect storm water run-off, reduce flooding and use as an alternate water source throughout Nederland.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	TBD site in Nederland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Lifesaving water alternate source and localized flood reduction.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, SETRPC
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #15
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Utility lines throughout Nederland
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Nederland Public Works, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Nederland – Action #16	
Proposed Action:	**Storm harden/retrofit Nederland Water Treatment Plant.** **Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Nederland Water Treatment Plant
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #17
Proposed Action:	**Storm harden/retrofit Nederland Service Center. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Nederland Service Center
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #18
Proposed Action:	**Storm harden/retrofit Wastewater Treatment Plant. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Wastewater Treatment Plant at 515 Hardy Avenue
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #19
Proposed Action:	**Storm harden/retrofit Hughes Library.** **Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Hughes Library
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #20
Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Nederland – Action #21
Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations TBD
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Nederland – Action #22
	Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Wildland Urban Interface
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Nederland Fire Department
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #23
Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,00 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Nederland – Action #24
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Nederland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nederland – Action #25
	Proposed Action:	**Public structure strengthening by replacing drainage tile main feeders.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Drainage main and feeders
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Nederland – Action #26
Proposed Action:	**Storm harden/retrofit D. Bob Henson Building. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	D. Bob Henson Building
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facility from damages and ensure continuity of services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nederland – Action #27
Proposed Action:	**Improve underground storm sewer culvert size on Detroit Avenue.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Detroit Avenue
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Nome

	Nome – Action #1
Proposed Action:	**Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Nome
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in Nome.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Jefferson County Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #2
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Nome.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nome – Action #3
Proposed Action:	**Storm harden/retrofit critical facilities throughout Nome. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities in Nome
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nome – Action #4
Proposed Action:	**Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Flood-prone structures in Nome
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable =3 ; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Nome – Action #5
	Proposed Action:	**Elevate new and existing flood-prone structures and infrastructure throughout Nome.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #6
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Nome to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized bridges and culverts in Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #7
	Proposed Action:	**Pursue funding and implement drainage improvements throughout Nome. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #8
	Proposed Action:	**Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material, Terrorism
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #9
	Proposed Action:	**Purchase and install backup generator power systems with permanent hook-ups for critical facilities including lift stations, water plants, police stations, EMS, fire stations, and other first responder facilities throughout Nome.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Critical facilities as indicated above in Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Nome – Action #10
	Proposed Action:	**Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of storm surge damages to structures and infrastructure.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3 Million
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #11
	Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Nome – Action #12
Proposed Action:	**Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various Locations TBD throughout Nome
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Nome – Action #13
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $100,000 per site
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Nome – Action #14
Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Nome.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Life safety benefits through preparedness.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Tornado, Thunderstorm Wind, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Nome in coordination with Jefferson County
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Nome – Action #15
Proposed Action:	**Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Nome.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	TBD site in Nome
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Lifesaving water alternate source and localized flood reduction.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Nome – Action #16
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Utility lines throughout Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000,000
Potential Funding Sources:	Utility Fees, Federal Grants
Lead Agency/Department Responsible:	City of Nome, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Nome – Action #17
	Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reduce the risk of injury during events including: mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMGP
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Nome – Action #18
	Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations (TBD) in Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Nome – Action #19
	Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Wildland Urban Interface of Nome
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 5; and Environmentally Sound = 5

		Nome – Action #20
	Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal =5 ; Economically Sound = 5; and Environmentally Sound = 5

	Nome – Action #21
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Nome
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Port Arthur

Port Arthur – Action #1	
Proposed Action:	**Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Port Arthur
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in Port Arthur.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Jefferson County Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #2
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Port Arthur.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Arthur – Action #3
	Proposed Action:	**Storm harden/retrofit critical facilities throughout Port Arthur. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Critical facilities in Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Arthur – Action #4
	Proposed Action:	**Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Port Arthur – Action #5
	Proposed Action:	**Elevate new and existing flood-prone structures and infrastructure throughout Port Arthur.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures and infrastructure in Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #6
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Port Arthur to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized bridges and culverts in Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #7
	Proposed Action:	**Pursue funding and implement drainage improvements throughout Port Arthur. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #8
	Proposed Action:	**Secure, bury or otherwise harden exposed or vulnerable pipelines.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of pipeline failure through mitigation of exposed lines.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Arthur – Action #9
Proposed Action:	**Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout Port Arthur
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of storm surge flooding to structures and infrastructure
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM,
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #10
	Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Port Arthur Public Works, SETRPC
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #11
	Proposed Action:	**Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Arthur – Action #12
Proposed Action:	**Retrofit existing structures or construct new structures to act as residential safe rooms during tornados or other severe weather events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various Locations TBD
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $100,000 per site
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Arthur – Action #13
	Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Port Arthur.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur in coordination with Jefferson County
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Port Arthur – Action #14
Proposed Action:	**Construct water retention ponds to collect storm water run-off, reduce flooding and use as an alternate water source throughout Port Arthur.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	TBD site in Port Arthur
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Lifesaving water alternate source and localized flood reduction.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, SETRPC
Lead Agency/Department Responsible:	Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #15
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Utility lines throughout Port Arthur
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Port Arthur Public Works, Entergy
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Port Arthur – Action #16
Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Arthur – Action #17
	Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Port Arthur – Action #18
Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Wildland Urban Interface
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Fire Department
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Port Arthur – Action #19	
Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Port Arthur – Action #20
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Port Arthur
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #21
	Proposed Action:	**Increase channel capacity and improve multiple culvert crossings of Drainage Channel Main B.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Drainage Channel Main B
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate channel capacity and undersized culverts.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing and new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #22
	Proposed Action:	**Improve channel capacity and crossings in Lateral 3 of the Drainage Channel Main A system.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Drainage Channel Main A
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate channel capacity and undersized crossings.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works, and Drainage District #7
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Arthur – Action #23
Proposed Action:	**Improve culvert crossings in the Lakeview Drainage system.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Culvert crossings in Lakeview Drainage system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate undersized culvert crossings.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Arthur – Action #24
Proposed Action:	**Increase drainage capacity to reduce flooding on Westside.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Port Arthur Westside
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage capacity.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #25
	Proposed Action:	**Upgrade concrete lining of the El Vista Pump Station.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	El Vista Pump Station
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to pump station and channel.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	Port Arthur – Action #26
Proposed Action:	**Upgrade existing storm sewer in the Port Acres area and along Procter Street.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Port Acres area and along Procter Street
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flood damages to structures and infrastructure due to inadequate storm sewer capacity.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Arthur – Action #27
Proposed Action:	**Develop/implement shelter-in-place presentations.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of death or injury to residents through education.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Lightning, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Arthur – Action #28
	Proposed Action:	**Develop/implement emergency first responder teams with Sabine Neches Chief's Association.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Regional
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages, death or injury through improved emergency response.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations – Emergency Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Lightning, Hail, Winter Storm, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Arthur – Action #29
	Proposed Action:	**Develop/implement coastal storm presentations to public, groups, schools, etc. Educate residents on risk mitigation techniques, early mitigation strategies, emergency kits, evacuation routes, and other appropriate materials.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages and death or injury to residents through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Arthur – Action #30
	Proposed Action:	**Adopt additional freeboard in the local floodplain ordinance. Require all new construction to meet/exceed minimum established flood elevations.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to new structures through higher elevation requirements.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Floodplain Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Port Arthur – Action #31
Proposed Action:	**Receive maximum credit for the NFIP CRS.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to new structures through higher construction standards and restrictions on floodplain development.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Floodplain Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Port Arthur – Action #32
Proposed Action:	**Develop/implement bus transportation for hurricane evacuations.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents through coordinated evacuation assistance.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations – Emergency Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Arthur – Action #33
	Proposed Action:	**Develop/implement transportation plan for special needs populations.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to special needs populations through coordinated evacuation assistance.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations – Emergency Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Tornado, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

Port Arthur – Action #34	
Proposed Action:	**Assist in implementation of 211 TX Linkage Access Service.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents through Texas Health and Services information access.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations – Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Arthur – Action #35
	Proposed Action:	**Improve storm water runoff by installing upgraded 8-foot by 7-foot concrete box in Tiger Bayou.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Tiger Bayou
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of flooding through improved drainage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #36
	Proposed Action:	**Improve Hwy. 365 from Hwy. 69 to Rhodair Gully for improved emergency access.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Hwy. 365 from Hwy. 69 to Rhodair Gully
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improve emergency access through road improvement.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Hail, Wildfire, Lightning, Winter Storm, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Arthur – Action #37
	Proposed Action:	**Decrease floodplain width in North Port Acres Ditch through improved drainage.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	North Port Acres Ditch
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to structures and infrastructure through improved drainage and reduction of the floodplain.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

Port Neches

	Port Neches – Action #1
Proposed Action:	**Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations in Port Neches
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents and first responders in Port Neches.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

		Port Neches – Action #2
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations in Port Neches
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents in Port Neches.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Neches – Action #3
	Proposed Action:	**Storm harden/retrofit critical facilities throughout Port Neches. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Critical facilities in Port Neches
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Port Neches – Action #4
Proposed Action:	**Elevate new and existing flood-prone structures and infrastructure throughout Port Neches.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Flood-prone structures and infrastructure in Port Neches
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to flood-prone structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Neches – Action #5
	Proposed Action:	**Elevate or upgrade bridges, culverts and other crossings throughout Port Neches to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Undersized bridges and culverts in Port Neches
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 4

	Port Neches – Action #6
Proposed Action:	**Pursue finding and implement drainage improvements throughout Port Neches. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout Port Neches
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Neches – Action #7
	Proposed Action:	**Secure, bury or otherwise harden exposed or vulnerable pipelines.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations throughout Port Neches
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of pipeline failure through mitigation of exposed lines.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Neches – Action #8
Proposed Action:	**Provide generators/back-up power systems with permanent hook-ups for critical facilities (including but not limited to lift stations, water plants, police, EMS, fire and other first responder facilities) throughout Port Neches.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout Port Neches
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $200,000 per site
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Neches – Action #9
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Utility lines throughout Port Neches
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMPG, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	Port Neches Emergency Management, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Port Neches – Action #10
Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Trees near power lines throughout Port Neches
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of loss of power and potential damages to structures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Neches – Action #11
	Proposed Action:	**Coordinate public-private partnerships to ensure special needs population are protected from extreme temperatures by establishing and promoting accessible heating or cooling centers in the community.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Local business and identified public facilities
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme temperatures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, local business partners
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Neches – Action #12
	Proposed Action:	**Conduct coastal storm presentations to educate the public on evacuation procedures, mitigation techniques, and risk associated with coastal storms.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Neches – Action #13
	Proposed Action:	**Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping, education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to residents and structures through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	Port Neches – Action #14
Proposed Action:	**Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	Port Neches Public Works, SETRPC
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Neches – Action #15
	Proposed Action:	**Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

	Port Neches – Action #16
Proposed Action:	**Retrofit existing structures or construct new structures to act as residential safe rooms during tornados or other severe weather events.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations TBD
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or death for residents.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Neches – Action #17
	Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Port Neches.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		Port Neches – Action #18
	Proposed Action:	**Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Flood-prone structures in Port Neches
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 5

		Port Neches – Action #19
	Proposed Action:	**Pursue flood protection measures to protect from surge from Hurricanes. Actions can include but are not limited to constructing and/ or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	Port Neches Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 4; Legal = 4; Economically Sound = 4; and Environmentally Sound = 4

		Port Neches – Action #20
	Proposed Action:	**Retrofit existing structures to act as cooling stations in times of extreme heat.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Various locations TBD
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 4; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

	Port Neches – Action #21
Proposed Action:	**Develop areas of defensible space to prevent damage due to wildfires.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Wildland Urban Interface
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures in or near the WUI.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	Port Neches Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 4; and Environmentally Sound = 5

		Port Neches – Action #22
	Proposed Action:	**Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 4; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 4; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

SETRPC

	SETRPC – Action #1
Proposed Action:	**Plan for the Protection of Vulnerable Populations by identifying at-risk populations and coordinating with home health agencies, medical equipment companies, local churches and neighborhood associations to assist these populations during extreme weather events. Organize strategies for protecting vulnerable populations and develop a plan to expediently activate strategies when need be.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
Risk Reduction Benefit *(Current Cost/Losses Avoided)*:	Protection of at-risk populations during extreme weather events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $100,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Jefferson County Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #2
	Proposed Action:	**Public Awareness and Education of Vulnerable Population through creation of a database and special group in STAN (Southeast Texas Alerting Network regional emergency alerting system) whereby public information protection actions can be disseminated.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Expedient access to and ability to communicate with those individuals, nursing homes, assisted living centers, hospitals and others who are most at risk during extreme hazard events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Area Agency on Aging and Disabilities, PDM, HMGP
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #3
	Proposed Action:	**Plan for future drought in the Southeast Texas region of Hardin, Jefferson, and Orange Counties by developing a drought emergency plan, developing criteria or triggers for drought-related actions, enact water conservation measures during drought conditions, and develop a drought communication plan and early warning system to facilitate timely communication of relevant information.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction of risk due to drought for residents in the Southeast Texas region.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000 - $100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local water plans and ordinances

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #4
	Proposed Action:	**Pursue the identification and construction of alternate fresh water resources.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce health risks associated with a lack of clean, uncontaminated water available to local residents.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $200,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Water Management Plans

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 3; Technically Feasible = 3; Administratively Possible = 5; Politically Acceptable = 3; Legal = 3; Economically Sound = 3; and Environmentally Sound = 3

		SETRPC – Action #5
	Proposed Action:	**Facilitate use of all mass notification systems including but not limited to the Southeast Texas Alerting Network (STAN), to notify and educate the public of impending hazardous events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the loss of life and property as a result of a drought, extreme heat, flood, hurricane, lightning, thunderstorm wind, tornado, winter storm, or wildfire.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hurricane, Tornado, Wildfire, Thunderstorm Wind, Winter Storm, Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	PSGP, PDM, HMGP
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	EOPs

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #6
	Proposed Action:	**Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes, Floods and other severe weather events.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Inland at strategic points outside the floodplain throughout the Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life as a result of a natural disaster by providing a safe structure in which residents can temporarily be housed.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce damages to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.5 - $5 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin County, Jefferson County, Orange County
Implementation Schedule:	Within 12-24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 3; Legal = 5; Economically Sound = 3; and Environmentally Sound = 3

	SETRPC – Action #7
Proposed Action:	**Retrofit/harden SETRPC building that serves as an alternate 911 Public Safety Answering Point (PSAP) site for local jurisdictions within the Southeast Texas region during times of natural disaster.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	2210 Eastex Freeway Beaumont, Texas 77703
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction of the loss of life and property through the continuity of operations of Public Safety Answering Points (PSAP) in the Southeast Texas region in the event a natural disaster necessitates PSAP relocation from the primary local jurisdiction site.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning
Effect on New/Existing Buildings:	Reduce risk to existing facility
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $2,500,000
Potential Funding Sources:	HMGP, PDM,
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plans/Local PSAP Standard Operating Procedures

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #8
	Proposed Action:	**Coordinate Emergency Management Plans for coastal storm/hurricane events. Specific efforts include encouraging jurisdictions to install and maintain back up power at identified facilities, construct and designate emergency operations centers for disaster/emergency operations, and solicit participation in Community Emergency Response training.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Continuity of emergency operations which saves lives and property.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $50,000
Potential Funding Sources:	HMGP, EMPG
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #9
	Proposed Action:	**Conduct flood insurance educational seminars for area realtors to increase their knowledge of National Flood Insurance Program (NFIP) and the benefits to homeowners in security flood insurance.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	All homeowners in the Southeast Texas region could benefit from owning flood insurance. Through education with realtors, who homeowners often turn to first for advice when purchasing a home, this important message could be conveyed and the public educated on the importance of flood insurance; whether or not a home is in the floodplain.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000 - $50,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #10
	Proposed Action:	**Coordinate public/private partnerships to ensure special needs populations are protected from health risks due to extreme weather conditions. Actions will be targeted toward citizens with physical limitations and others who may be unable to reach safety in times of severe weather. Volunteer groups may be available to assist by visiting special needs groups to ensure their safety and comfort during extreme weather events or assist when evacuations are necessary.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life to most vulnerable populations.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Earthquake, Geologic Hazards, Tsunami, Water Contamination
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #11
	Proposed Action:	**Coordinate and implement a natural hazards public awareness campaign among the jurisdictions. Efforts may include tropical storm/ hurricane awareness presentations, shelter-in-place presentations, evacuation maps, floodplain maps, mitigation damages, flood control projects, storm tracking maps, health and safety tips flyers, mitigation articles in local newspapers, and other such information as it relates to natural hazards. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries and on the SETRPC and jurisdictional websites.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damages to structures through mitigation education. Reduce risk of injury or loss of life to area residents.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Hail, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Lightning, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures through mitigation education and early preparation
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $75,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

	SETRPC – Action #12
Proposed Action:	**Construct water retention ponds to collect storm water run-off and use as an alternate water source for agricultural resources throughout the Southeast Texas region.**
BACKGROUND INFORMATION	
Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Lifesaving water alternate source and localized flood reduction.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on New/Existing Buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $250,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #13
	Proposed Action:	**Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following:** • **Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property.** • **Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Trees near power lines throughout Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life and property due to substantial damage from falling trees resulting in failing structures and reduce risk of power outages.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Hail, Lightning, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM, local Utility Fees
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Public Works SOP

COMMENTS

Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #14
	Proposed Action:	**Secure and maintain backup information systems to store critical information at off-site locations.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of critical government data and files through redundant systems.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $350,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound =

		SETRPC – Action #15
	Proposed Action:	**Coordinate with county and municipal governments to allow the SETRPC to maintain a copy of all local ordinances relevant to mitigation activities.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of local ordinances through redundant systems.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Drought, Extreme Heat, Tornado, Winter Storm, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 - $15,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #16
	Proposed Action:	**Acquire flood-prone properties throughout the region with a focus on Repetitive and Severe Repetitive Loss properties.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction in repetitive loss payments from FEMA for structures known to have flooded on more than one occasion.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000 - $10,000,000 (cost varies per structure)
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #17
	Proposed Action:	**Elevate flood-prone properties throughout the region.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction in repetitive loss payments from FEMA for structures known to lie in a floodplain or that have flooded.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000 - $2,000,000 (cost varies per structure)
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #18
	Proposed Action:	**Storm harden/retrofit critical facilities throughout the Southeast Texas Region. Actions can include but are not limited to window shutters, roof straps, hail resistant roofing, flood proofing, roll-up door reinforcement (i.e. fire stations), emergency backup/generator power with permanent hook-ups, fire resistant construction materials, window film, and surge protectors.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Avoid loss of property and, due to the critical nature of the facilities included in this action, potential loss of life.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Hail, Lightning, Winter Storm, Wildfire, Extreme Heat
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $2,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #19
	Proposed Action:	**Pursue drainage improvements throughout the regions. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction in property losses/repetitive loss buy outs and infrastructure damage.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $5,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plans

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #20
	Proposed Action:	**Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to:** • **Bury utility lines underground** • **Provide frangible links/break away connections on utility poles** • **Harden utility poles by converting from wood to concrete or metal utility poles** • **Increase the easement area/clearance of utility lines/poles from tree lines**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of power loss, associated damages, and line repairs.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Hail, Lightning, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000 - $600,000
Potential Funding Sources:	HMGP, PDM, Utility Fees
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #21
	Proposed Action:	**Coordinate with federal, state and local partners to provide all hazards, ICS, and specialized training that may enhance preparedness for first responders.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Increase in public safety knowledge base through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Drought, Extreme Heat, Winter Storm, Tornado, Lightning, Thunderstorm Wind, Wildfire, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 - $50,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #22
	Proposed Action:	**Identify and pursue any mitigation activities that would aid/enhance evacuations throughout the region.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Life safety benefits through education and awareness.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Tornado, Thunderstorm Wind, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #23
	Proposed Action:	**Continually review, revise, update, and systematically maintain floodplain data and maps of flood prone areas throughout the Southeast Texas Region.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to structures through understanding risk and vulnerability.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 - $5,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #24
	Proposed Action:	**Pursue the coordination, construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage from storm surge and sea level rise and other sources of salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damages to structures and infrastructure from storm surge and flooding.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

		SETRPC – Action #25
	Proposed Action:	**Pursue the coordination, construction, expansion, and maintenance of flood control structures/barriers for the purpose of protecting potable water sources and agricultural resources from water contamination and salt water intrusion.**
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Southeast Texas Region of Hardin, Jefferson and Orange Counties
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of potable water or inadequate water supply.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS
Additional Considerations: The following STAPLEE criteria were evaluated on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration. (1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)
Socially Acceptable = 5; Technically Feasible = 5; Administratively Possible = 5; Politically Acceptable = 5; Legal = 5; Economically Sound = 5; and Environmentally Sound = 5

SECTION 19: PLAN MAINTENANCE

Plan Maintenance Procedures

The following is an explanation of how Jefferson County, participating jurisdictions, and the general public will be involved in implementing, evaluating, and enhancing the Plan over time. The sustained hazard mitigation planning process consists of four main parts:

- Incorporation
- Monitoring and Evaluation
- Updating
- Continued Public Involvement

Incorporation

Jefferson County and participating jurisdictions will be responsible for further development and implementation of mitigation actions. Each action has been assigned to a specific department within the County and participating jurisdictions. The following describes the process by which Jefferson County will incorporate elements of the mitigation plan into other planning mechanisms.

Process of Incorporation

Once the Plan is adopted, Jefferson County, SETRPC and participating jurisdictions will implement actions based on priority and the availability of funding. The County currently implements policies and programs to reduce loss to life and property from hazards. The mitigation actions developed for this Plan Update enhance this ongoing effort and will be implemented through other program mechanisms where possible.

The potential funding sources listed for each identified action may be used when the jurisdiction seeks funds to implement actions. An implementation time period or a specific implementation date has been

assigned to each action as an incentive for completing each task and gauging whether actions are implemented in a timely manner.

Jefferson County and participating jurisdictions will integrate implementation of their mitigation actions with other plans and policies such as construction standards and emergency management plans, and ensure that these actions, or proposed projects, are reflected in other planning efforts. Coordinating and integrating components of other plans and policies into goals and objectives of the Plan will further maximize funding and provide possible cost-sharing of key projects, thereby reducing loss of lives and property, and mitigating hazards affecting the area.

Upon formal adoption of the Plan Update, planning team members from each participating jurisdiction will work to integrate the hazard mitigation strategies into other plans and codes, as they are developed. Participating team members will conduct periodic review of plans and policies, once per year at a minimum, and analyze the need for amendments in light of the approved Plan Update. The planning team will review all comprehensive land use plans, capital improvement plans, annual budget reviews, emergency operations or management plans, transportation plans, and any building codes to guide and control development. Participating jurisdictions will ensure that capital improvement planning in the future will also contribute to the goals of this hazard mitigation Plan Update to reduce the long-term risk to life and property from all hazards. Within one year of formal adoption of the hazard mitigation Plan Update, existing planning mechanisms will be reviewed by each jurisdiction.

Jefferson County is committed to supporting the cities, communities, and participating jurisdictions as they implement their mitigation actions. Jefferson County and participating planning team members will review and revise, as necessary, the long-range goals and objectives in strategic plan and budgets to ensure that they are consistent with this mitigation action plan. Additionally, the County will work to advance the goals of this hazard mitigation plan through its routine, ongoing, long-range planning, budgeting, and work processes.

Table 19-1. Methods of Incorporation of the Plan

Planning Mechanism	Department/Title Responsible	Incorporation of Plan
Grant Applications	Jefferson County: Emergency Management Coordinator Beaumont: Emergency Management Coordinator Bevil Oaks: Mayor China: Mayor Groves: Emergency Management Coordinator	The Plan Update will be evaluated by Jefferson County and participating jurisdictions when grant funding is sought for mitigation projects. If a project is not in the Plan Update, an amendment may be necessary to include the action in the Plan Update.

Planning Mechanism	Department/Title Responsible	Incorporation of Plan
	Nederland: Emergency Management Coordinator Nome: Mayor Port Arthur: Senior Planner Port Neches: Emergency Management Coordinator SETRPC: Regional Emergency Planner	
Annual Budget Review	Jefferson County: Emergency Management Coordinator Beaumont: Emergency Management Coordinator Bevil Oaks: Mayor China: Mayor Groves: Emergency Management Coordinator Nederland: Emergency Management Coordinator Nome: Mayor Port Arthur: Senior Planner Port Neches: Emergency Management Coordinator SETRPC: Regional Emergency Planner	Various departments and key personnel that participated in the planning process for Jefferson County and participating jurisdictions will review the Plan Update and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.
Regulatory Plans	Jefferson County: Emergency Management Coordinator Beaumont: Emergency Management Coordinator Bevil Oaks: Mayor China: Mayor Groves: Emergency Management Coordinator	Currently, Jefferson County and participating jurisdictions have regulatory plans in place, such as Emergency Management Plans, Continuity of Operations Plans, Economic Development, and Evacuation Plans. The Plan Update will be consulted when County and City departments review or revise their current regulatory planning mechanisms, or in the development of

Planning Mechanism	Department/Title Responsible	Incorporation of Plan
	Nederland: Emergency Management Coordinator Nome: Mayor Port Arthur: Senior Planner Port Neches: Emergency Management Coordinator SETRPC: Regional Emergency Planner	regulatory plans that are not currently in place.
Capital Improvement Plans	Jefferson County: Emergency Management Coordinator Beaumont: Emergency Management Coordinator Bevil Oaks: Mayor China: Mayor Groves: Emergency Management Coordinator Nederland: Emergency Management Coordinator Nome: Mayor Port Arthur: Senior Planner Port Neches: Emergency Management Coordinator SETRPC: Regional Emergency Planner	Jefferson County and participating jurisdictions have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County and City departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Floodplain Management Plans	Jefferson County: Floodplain Manager Beaumont: Floodplain Manager Bevil Oaks: Floodplain Manager China: Mayor Groves: Floodplain Manager Nederland: Floodplain Manager Nome: Mayor Port Arthur: Floodplain Manager	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding, and information found in Section 5 of this Plan Update discussing the people and property at risk to flood, will be reviewed and revised when Jefferson County updates their management plans or develops new plans.

Planning Mechanism	Department/Title Responsible	Incorporation of Plan
	Port Neches: Floodplain Manager SETRPC: Floodplain Manager	

Monitoring and Evaluation

Periodic revisions of the Plan Update are required to ensure that goals, objectives, and mitigation actions are kept current. Revisions may be required to ensure the Plan Update is in compliance with federal and state statutes and regulations. This section outlines the procedures for completing Plan revisions, updates, and review. Table 19-2 indicates the department and title of the party responsible for Plan monitoring, updating, and review of the Plan.

Table 19-2. Team Members Responsible for Plan Monitoring, Evaluating, Reviewing and Updating of the Plan

JURISDICTION	TITLE
Jefferson County	Emergency Management Coordinator
Beaumont	Emergency Management Coordinator
Bevil Oaks	Mayor
China	Mayor
Groves	Emergency Management Coordinator
Nederland	Emergency Management Coordinator
Nome	Mayor
Port Arthur	Senior Planner
Port Neches	Emergency Management Coordinator
SETRPC	Regional Emergency Planner

Monitoring

Designated Planning Team members are responsible for monitoring, updating, and reviewing the Plan Update, as shown in Table 19-2. Individuals holding the title listed in Table 19-2 will be responsible for monitoring the Plan Update on an annual basis. Plan monitoring, includes reviewing and incorporation into the Plan other existing planning mechanisms that relate or support goals and objectives of the Plan; monitoring the incorporation of the Plan into future updates of other existing planning mechanisms as appropriate; reviewing mitigation actions submitted and coordinating with various County and City departments to determine if mitigation actions need to be re-evaluated and updated; evaluating and updating the Plan as necessary; and monitoring plan maintenance to ensure that the process described is being followed, on an annual basis, throughout the planning process. The Planning Team will develop a

brief report that identifies if changes to the Plan Update are needed, such as recommending an action for funding. A summary of meeting notes will report the particulars involved in developing an action into a project.

Evaluation

As part of the evaluation process, the Planning Team will assess changes in risk; determine whether the implementation of mitigation actions is on schedule; determine whether there are any implementation problems, such as technical, political, legal, or coordination issues; and identify changes in land development or programs that affect mitigation priorities for each respective department or organization.

The Planning Team will meet on an annual basis to evaluate the Plan and identify any needed changes. The annual evaluation process will help to determine if any changes are necessary.

Updating

Plan Amendments

At any time, minor technical changes may be made to update the Jefferson County Hazard Mitigation Plan Update. Material changes to mitigation actions or major changes in the overall direction of the Plan Update or the policies contained within it, must be subject to formal adoption by the County and participating jurisdictions.

The County will review proposed amendments and vote to accept, reject, or amend the proposed change. Upon ratification, the amendment will be transmitted to TDEM.

In determining whether to recommend approval or denial of a Plan Update amendment request, the County will consider the following factors:

- Errors or omissions made in the identification of issues or needs during the preparation of the Plan Update;
- New issues or needs that were not adequately addressed in the Plan Update; and
- Changes in information, data, or assumptions from those on which the Plan Update was based.

Five (5) Year Review

The Plan will be thoroughly reviewed by the Planning Team at the end of three years from the approval date, to determine whether there have been significant changes in the planning area that necessitate changes in the types of mitigation actions proposed. Factors that may affect the content of the Plan include new development in identified hazard areas, increased exposure to hazards, disaster declarations, increase or decrease in capability to address hazards, and changes to federal or state legislation.

The Plan review process provides the County and participating jurisdictions an opportunity to evaluate mitigation actions that have been successful, identify losses avoided due to the implementation of specific mitigation measures, and address mitigation actions that may not have been successfully implemented as assigned.

It is recommended that the full Advisory Planning Team (Section 2, Table 2-2) meet to review the Plan at the end of three years because grant funds may be necessary for the development of a five-year update. Reviewing planning grant options in advance of the five-year Plan update deadline is recommended considering the timelines for grant and planning cycles can be in excess of a year.

Following the Plan review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and Plan amendment process outlined herein. Upon completion of the review, update, and amendment process the revised Plan will be submitted to TDEM for final review and approval in coordination with FEMA.

Continued Public Involvement

Public input was an integral part of the preparation of this Plan and will continue to be essential for Plan updates. The Public will be directly involved in the annual review and cyclical updates. Changes or suggestions to improve or update the Plan will provide opportunities for additional public input.

The public can review the Plan Update on Jefferson County's website where officials and the public are invited to provide ongoing feedback, via email to the County's Assistant Emergency Management Coordinator at mwhite@co.jefferson.tx.us. Additionally, hard copies will be kept at the SETRPC's office and the County's Engineering Office.

The Planning Team may also designate voluntary citizens from the County, or willing stakeholder members from the private sector businesses that were involved in the Plan's development to provide feedback on an annual basis. It is important that stakeholders and the immediate community maintain a vested interest in preserving the functionality of the planning area as it pertains to the overall goals of the mitigation plan. The Planning team is responsible for notifying stakeholders and community members on an annual basis, and maintaining the Plan.

Media, including local newspaper and radio stations, will be used to notify the public of any maintenance or periodic review activities during the implementation, monitoring, and evaluation phases. Additionally, local news media will be contacted to cover information regarding Plan updates, status of grant applications, and project implementation. Local and social media outlets, such as Facebook and Twitter, will keep the public and stakeholders apprised of potential opportunities to fund and implement mitigation projects identified in the Plan Update.

APPENDIX A: LOW RISK AND MANMADE HAZARDS

Overview

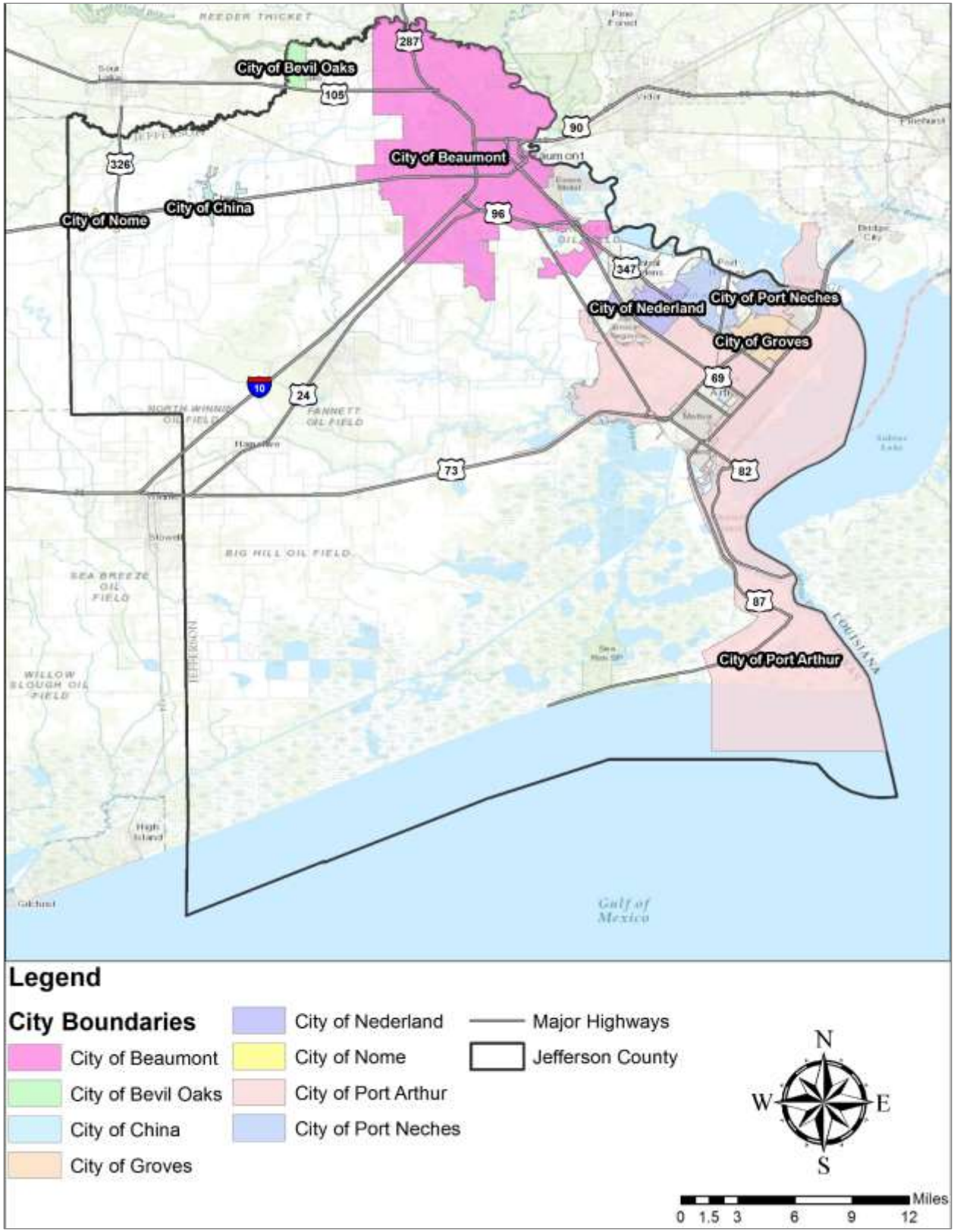
During the early stages of the planning process the team analyzed several natural hazards that were considered low risk. These hazards include Earthquake, Tsunami, and Geologic Hazards, and Dam Failure. In addition, the team reviewed technological hazards including Hazardous Material Incidents, Terrorism, and Water Contamination. A description of the hazard and Jefferson County's overall vulnerability to that hazard was developed. Annualized loss data is provided where available and impact is addressed looking at the warning time or potential speed of onset of the hazard.

None of these hazards have had reported damages to any of the critical facilities for the Jefferson County planning area, therefore the planning area has not had any impact due to these hazards nor do they pose a risk to the critical services provided. In the intent of 44 CFR 201.6(c)(2)(i) & 44 CRF 201.6(c)(2)(iii) the intent is to, "To understand the potential and chronic hazards affecting the planning area in order to identify which hazard risks are most significant (…),". Based on the intent, it is the participating jurisdictions belief that earthquakes, tsunamis, geologic hazards, and dam failure are not hazards that are most significant to the jurisdiction. During public outreach none of these hazards were a concern of the public population.

Study Area Definition

All areas of Jefferson County and participating jurisdictions and entities are included. Figure A-1 shows the study area for the Jefferson County HMAP Update 2017.

Figure A-1. Jefferson County Study Area



Hazard Profiles, Vulnerability, and Impact

Each low risk natural hazard includes a description of the hazard and a summary of the planning area's risk. For each of the three technological hazards, a description of the hazard and Jefferson County's overall vulnerability to that hazard was developed. Impact is addressed looking at the warning time or potential speed of onset of the hazard. Impact statements are defined in Table A-1 below.

Table A-1. Impact Statements

POTENTIAL SEVERITY	DESCRIPTION
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses resulting in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25 percent of property destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and illnesses are treatable with first aid. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property destroyed or with major damage.

Technological hazards refers to the origins of incidents that can arise from human activities, such as the construction and maintenance of dams. Technological hazards are distinct from natural hazards primarily because they originate from human activity. Whereas the risks presented by natural hazards may be increased or decreased as a result of human activity, they are not inherently human-induced. Therefore, dam failure is classified as a quasi-technological hazard.

For the purposes of this risk assessment, technological hazards are events or incidents associated with the use of gas and oil pipeline and their manufacture, transportation, and storage. Water contamination, acts of terrorism, and the use of hazardous materials across all industries are also considered technological hazards.

The scope of this risk assessment assumes that hazardous material incidents and water contamination events addressed in this section would be accidental in nature and that their consequences are unplanned and unintended.

Geologic Hazard

A geologic hazard is a natural geologic event that can endanger human lives and threaten property and infrastructure. While geologic hazards are by definition a natural event, they can be caused or exacerbated by human activities. For the purpose of this hazard mitigation action plan update for Jefferson County, included in this hazard type are riverine erosion, landslides, and land subsidence (sinkholes). The U.S. Geological Survey (USGS) serves as the primary data and forecasting source for geologic hazards.

Riverine erosion is defined as downstream flow, shifting, or removal of sediment from a watershed. Caving river and stream banks are common associations with the migration of river channel alignment, and can threaten structures, undermine bridge foundations, and pose public safety risk.

Landslide is a general term used to describe the process of movement of material (i.e., soil, rock, mud, etc.) down a slope by falling, sliding or flowing under the force of gravity. The major causes of landslides are earthquakes, volcanic eruptions, or extreme rain events. Landslides are commonly associated with areas of steep slopes, but can also occur in relatively level topography on un-retained constructed slopes and dirt embankments. Sloughing fill material can cause property and infrastructure damage, and indirectly threaten public safety.

Land Subsidence can occur either gradually or dramatically (as in sinkhole occurrence), and refers to the loss of surface elevation due to remove of subsurface support. Land subsidence can be caused by crustal deformation; sediment compaction; withdrawal of groundwater, hydrocarbons (crude oil and natural gas), geothermal fluids or minerals (Sulphur); or increased surface load associated with high-rise buildings.

All three geologic hazards were researched for previous occurrences. Impacts of geologic hazards in Jefferson County are not widespread, and historically have been limited to minor land loss along waterways, Sabine Lake and the banks of the Gulf Inter-Coastal Water Way. Probability of future events is considered unlikely. Due to relatively isolated occurrence of impacts and no recorded occurrence of damages, injuries or fatalities, the hazard is considered to have a negligible impact on the planning area and is therefore considered a nuisance.

Tsunami

The National Oceanic and Atmospheric Administration (NOAA) describes a tsunami as a series of ocean waves generated by sudden displacements in the sea floor, landslides, volcanic activity or other large, abrupt disturbance of the sea-surface. Tsunamis have reached heights of more than 100 feet. As the waves approach shallow coastal waters, they appear normal and the speed decreases. If the disturbance is close to the coastline, tsunamis can demolish coastal communities within minutes, and a large disturbance can cause inundation and destruction thousands of miles away from its epicenter.

The USGS monitors earthquakes through network of seismic detectors. This information is critical to understand when a tsunami wave might be generated. The USGS and NOAA's National Ocean Service has the responsibilities for providing ocean bathymetry, coastlines and topography. The information is critical to understand how and where a tsunami wave will come ashore. NOAA research develops models that forecast tsunami impacts and create inundation maps of modeled events. NOAA research provides the forecast models to the NOAA's Weather Service forecasters and the inundation models and maps to state and national planner and emergency managers. NOAA monitors sea height through a network of buoys and tide gauges. This information is critical to understand the height a tsunami wave may be when it comes ashore. NOAA completed the original 6-buoy operational array in 2001 and expanded to a full network of 30 stations in March 2008 which includes the Gulf of Mexico.

According to the National Oceanic and Atmospheric Administration (NOAA), since 1900, over 200 tsunami events have affected the coasts of the United States and its territories, causing more than 500 deaths. Tsunami events are well documented in the Pacific Ocean Basin. Tsunamis have also occurred in the Gulf of Mexico. In 1991, a magnitude 7.6 earthquake in Costa Rica produced a six foot high tsunami that flooded nearly 1,000 feet inland on the Caribbean side of the country. The Caribbean also has a number

of active submarine volcanoes and fault systems that are capable of producing large earthquakes like that in Haiti, which could generate a tsunami. There are no recorded occurrences of tsunami impacts in Jefferson County.

The National Tsunami Hazard Mitigation Program produced an assessment in August 2008 that assigned a "very low" hazard classification for the U.S. Gulf Coast based on previous frequency and local earthquake probability. Probability of future events is considered unlikely. Overall vulnerability to tsunami is considered very low based on the remote potential for causal.

Earthquake

An earthquake is a sudden motion or trembling of the earth caused by an abrupt release of stored energy in the rocks beneath the earth's surface. The energy released results in vibrations known as seismic waves that are responsible for the trembling and shaking of the ground during an earthquake. Ground motion is expressed as peak ground acceleration (PGA). PGA is expressed as a percent of gravity or "g".

Earthquakes are typically described in terms of magnitude and intensity. The traditional measurement of amplitude of the seismic wave through the assignment of a single number to quantify the amount of seismic energy released by an earthquake is the Richter scale. The intensity of how strong the shock was felt at a particular location is the Modified Mercalli Intensity (MMI) scale. The scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature and man-made structures. Table A-2 below is a combined earthquake magnitude and intensity comparison from the United States Geological Survey.

Table A-2. Earthquake Magnitude/Intensity Comparison[1]

PGA (% g)	Magnitude (Richter)	Intensity (MMI)	Description
<0.17	1.0 - 3.0	I	**I**. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	**II**. Felt only by a few persons at rest, especially on upper floors of buildings. **III**. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	**IV**. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. **V**. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.

[1] Source: Wald, D., et al., 1999, "Relationship between Peak Ground Acceleration, Peak Ground Motion, and Modified Mercalli Intensity in California," *Earthquake Spectra*, v. 15, p. 557 – 564.
USGS Magnitude/Intensity Comparison http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

PGA (% g)	Magnitude (Richter)	Intensity (MMI)	Description
9.2 - 34	5.0 - 5.9	VI - VII	**VI**. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. **VII**. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	**VIII**. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. **IX**. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	VIII or higher	**X**. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. **XI**. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly **XII**. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

There are no recorded earthquakes with epicenters in Jefferson County, and the planning area is roughly 250 miles from the region of recent (minor) seismic activity in Northeast Texas. The annual probability for earthquakes capable of structural damage in the planning area is considered very low. The magnitude or intensity of a potential earthquake in the planning area based on historical data is an Intensity level of I or II (Table A-2). Based on the probability of future occurrences and magnitude/severity the overall vulnerability is considered low and the hazard is considered to have a negligible impact on the planning area.

Water Contamination

Hazard Profile

Water Contamination is the introduction of point and non-point source pollutants into public ground and/or surface water supplies. Microbiological and chemical contaminants can enter water supplies. Chemicals can leach through soils from leaking underground storage tanks, feedlots and waste disposal sites. Human wastes and pesticides can also be carried into surface waters during high water events.

The Environmental Protection Agency (EPA) is the federal agency authorized to protect the environment and public health. Congress writes the laws and the President signs them into law. The EPA is a regulatory agency with the duty to prepare administrative rules and procedures on how these laws and Presidential Executive Orders will be implemented and enforced.

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the Clean Water Act, the

EPA has implemented pollution control programs. The Clean Water Act made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. The EPA's National Pollution Discharge Elimination System (NPDES) permit program controls discharges.

Further, the EPA is the federal authority to protect drinking water. The Safe Water Drinking Act was established to protect the quality of drinking water in the U.S. The law focuses on all water actually or potentially designed for drinking use, whether from above ground or underground sources. The Act authorizes the EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary health related standards[2].

States must adopt rules that are at least as restrictive as the Clean Water Act and the Safe Water Drinking Act standards. The Texas Commission on Environmental Quality establishes State rules and regulations for public water systems and also specifies construction and operational standards for public water supply systems.

Disasters such as hurricanes and floods can disrupt drinking water supply and wastewater disposal systems. The Texas Commission on Environmental Quality provides guidance on remediation of public water supply systems after potential contamination due to natural disasters. Further, the Jefferson County Emergency Management Plan provides guidance regarding emergency water supplies after a disaster.

Location

Potential and ongoing water contamination is present along all waterways and in the groundwater supply. Per a 1990 report by the Texas Water Development Board, surface water supplies the majority of municipal and industrial demands, which make up the largest portion of total water use in the planning area. Ground-water needs, including all municipal requirements in Jefferson County, were met almost entirely from the lower Chicot Aquifer.

Extent

In general, levels of water contamination can influence community health when considered severe. Accordingly, magnitude and severity of water contamination is considered Critical by the Team, with potential public safety risks present and the potential for extended loss of function for water processing facilities. The high concentration of hazardous materials processing and shipping facilities in the planning area, low topographic gradient influencing river discharge rates and levels of dissolved oxygen, and relatively high total maximum daily load readings (TMDLs) in monitored surface water, all contribute to the magnitude and severity assessment by the Team.

Previous Occurrences

According to the Evaluation of Water Resources of Orange and Eastern Jefferson Counties (Texas Water Development Board, 1990), the main ground-water quality problem is elevated chloride concentrations caused by saline-water encroachment in areas of concentrated pumpage, although from the late 1970's to 1988, chloride concentrations have not changed significantly due to decreased ground-water withdrawals.

[2] Source: EPA

Probability of Future Events

Considering ongoing problems and previous water quality monitoring results, probability of future occurrence is considered highly likely.

Vulnerability and Impact

Water contamination can have a "substantial" impact. Overall vulnerability for the planning area could result in multiple deaths during extreme contamination events.

Dam Failure

Hazard Profile

Dams are water storage, control, or diversion structures that impound water upstream in reservoirs. Dam failure can take several forms, including a collapse of or breach in the structure. While most dams have storage volumes small enough that failures have few or no repercussions, dams storing large amounts can cause significant flooding downstream. Dam failures can result from any one or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which cause most failures;
- Inadequate spillway capacity, resulting in excess overtopping of the embankment;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, or maintain gates, valves, and other operational components;
- Improper design or use of improper construction materials;
- Failure of upstream dams in the same drainage basin;
- Landslides into reservoirs, which cause surges that result in overtopping;
- High winds, which can cause significant wave action and result in substantial erosion;
- Destructive acts of terrorism; and,
- Earthquakes, which typically cause longitudinal cracks at the tops of the embankments, leading to structural failure.

Benefits provided by dams include water supplies for drinking, irrigation and industrial uses, flood control, hydroelectric power, recreation, and navigation. At the same time, dams also represent a risk to public safety. Dams require ongoing maintenance, monitoring, safety inspections, and sometimes even rehabilitation to continue safe service.

Location

For dams in Jefferson County, location, volume, elevation, condition, and classification information were factored into the risk ranking in Figure A-2, which illustrates general locations for each dam in the area. Currently, there are 3 dams located in Jefferson County and all 3 are classified as "low-hazard" dams. The dams are listed in Table A-3, along with regulation information.

Figure A-2. Dam Locations in Jefferson County

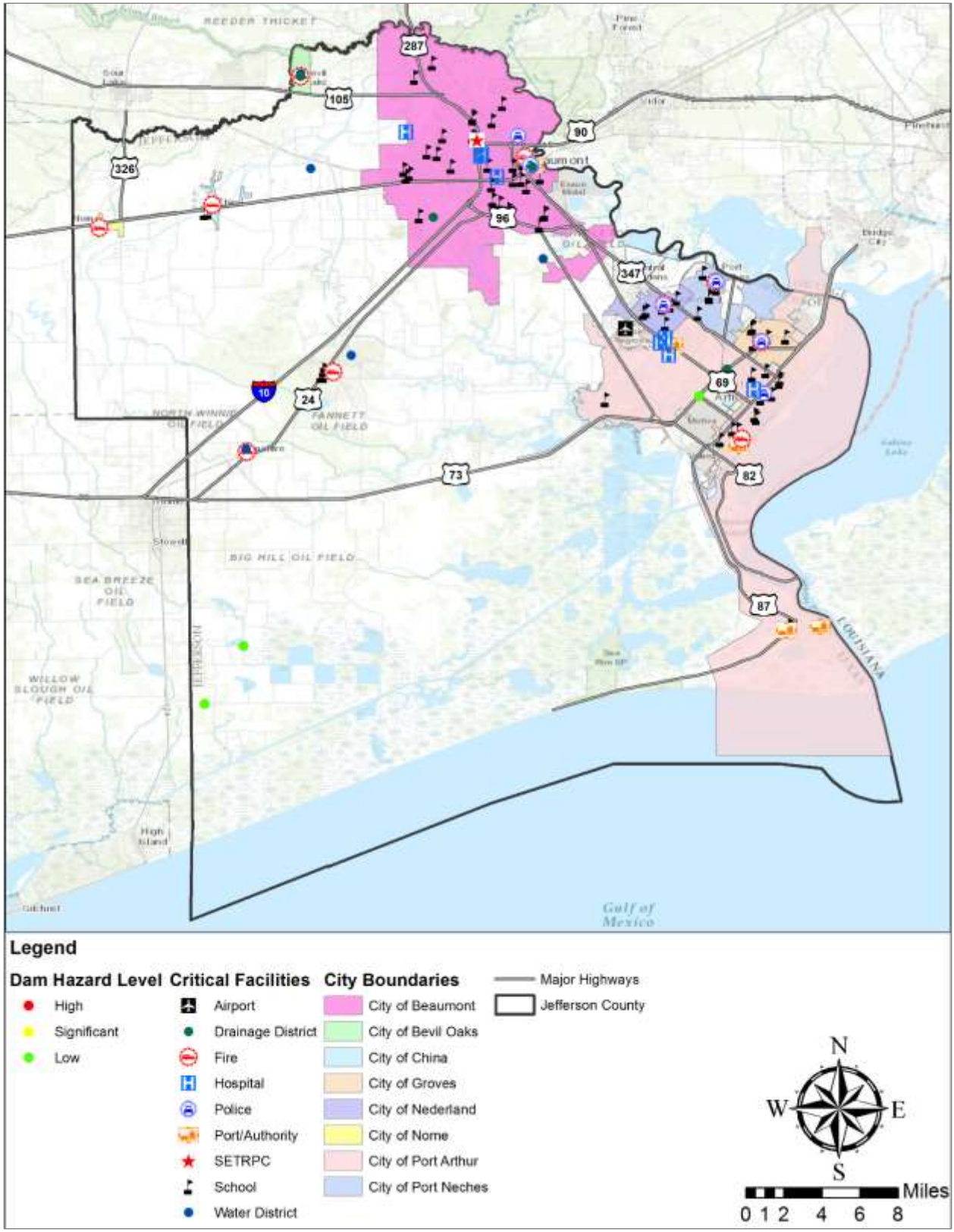


Table A-3. Jefferson County Dam Survey

JURISDICTION	DAM NAME	HEIGHT (ft.)	STORAGE (Acre ft.)	POTENTIAL HAZARD CLASSIFICATION	EXTENT
Port Arthur	Port Arthur Raw Water Reservoir Levee	14	300	Low	No Impact
Jefferson County	McBride Lake Levee	7	450	Low	No Impact
Jefferson County	Spindletop Weir Saltwater Barrier	12	375	Low	No Impact

Extent

The extent or magnitude of a dam failure event is described in terms of the classification of damages that could result from a dam's failure, not the probability of failure. Table A-4 represents the average extent or magnitude of a dam failure event that could be expected for the Jefferson County planning area, including all participating jurisdictions. The "Extent Classification" column was determined by taking the average of dams in the jurisdiction and weighing low hazard dams as a 1, significant hazard dams as a 2, and high hazard dams as a 3 based on the potential severity, warning time, and duration.

Table A-4. Extent by Jurisdiction

JURISDICTION	DAMS & CLASSIFICATION	EXTENT CLASSIFICATION	LEVEL OF INTENSITY TO MITIGATE
Jefferson County	2 – Low	None	The county has 2 low hazard dams with limited storage capacity. Loss of life is not expected and any economic loss would be negligible.
Beaumont	None	None	There are no dams or inundation areas located within the city limits.
Bevil Oaks	None	None	There are no dams or inundation areas located within the city limits.
China	None	None	There are no dams or inundation areas located within the city limits.
Groves	None	None	There are no dams or inundation areas located within the city limits.
Nederland	None	None	There are no dams or inundation areas located within the city limits.
Nome	None	None	There are no dams or inundation areas located within the city limits.
Port Arthur	1 – Low	None	The city has 1 low hazard dam with limited storage capacity. Loss of life is not expected and any economic loss would be negligible.
Port Neches	None	None	There are no dams or inundation areas located within the city limits.

Historical Occurrences

The State of Texas has not experienced loss of life or extensive economic damage due to a dam failure since the first half of the 20th century. However, there may be many incidents that are not reported and, therefore, the actual number of incidents is likely to be greater.

There has not been a recorded dam failure event for the entire Jefferson County planning area, including all participating jurisdictions.

Probability of Future Events

No historical events of dam failure have been recorded in the Jefferson County planning area, though the risk of dam failure is monitored closely. Due to the lack of historical occurrences, the probability of a future event is unlikely, meaning an event is possible in the next 10 years.

Vulnerability and Impact

There are 3 dams in the Jefferson County planning area, and all 3 dams are considered low hazard dams. Low hazard dams are those at which failure or mis-operation probably would not result in loss of human life and cause limited economic and/or environmental losses. Damage to agriculture and structures near both dams is considered negligible due to the small size and limited capacity of each dam.

The potential severity of a dam failure in the planning area, including the SETRPC and all participating jurisdictions, would be "Limited." As a result, a dam breach could result in injuries that are treatable with first aid, with facilities being shut down for 24 hours or less, and less than 10 percent of property destroyed or damaged.

Hazardous Materials Incident (Fixed and Mobile)

Hazard Profile

In a hazardous materials incident, solid, liquid, and/or gaseous contaminants may be released from fixed or mobile containers, although this profile focuses on fixed sites. Weather conditions will directly affect how the hazard develops.

The location of the most concentrated and potentially hazardous materials in the planning area are: fixed industrial facilities including oil and gas wells and storage facilities, pipelines, large and small industrial complexes that use or process chemicals or petroleum products, highways, and railroads. Numerous other sources are also present across the planning area, including storage areas for insecticides, herbicides, and fertilizers, wrecking yards, retail fueling stations, and abandoned industrial facilities. Within regard to pipeline locations, roughly one third (1/3) of the 367,000 linear miles of pipelines transporting hazardous materials in the State of Texas are located in the southeast region of the state. This concentration of pipelines in the region that includes Jefferson County relates to a corresponding high probability of hazardous material transport accidents.

The Toxics Release Inventory (TRI) is a publicly available database from the federal Environmental Protection Agency (EPA) that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups, as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. Each year, facilities that meet certain activity thresholds must report their releases and other waste management activities for listed toxic

chemicals to EPA and to their state or tribal entity. A facility must report if it meets the following three criteria:

- The facility falls within one of the following industrial categories: manufacturing; metal mining; coal mining; electric generating facilities that combust coal and/or oil; chemical wholesale distributors; petroleum terminals and bulk storage facilities; RCRA Subtitle C treatment, storage and disposal (TSD) facilities; and solvent recovery services.
- Have 10 or more full-time employee equivalents.
- Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year. Persistent, bioaccumulative and toxic (PBT) chemicals are subject to different thresholds of 10 pounds, 100 pounds or 0.1 grams, depending on the chemical.

Tier 2 data is a publicly available database from the Texas Department of State Health Services Tier 2 Chemical Reporting Program. Under the community right-to-know program laws upheld at the state and federal level, all facilities which store significant quantities of hazardous chemicals must share this information with state and local emergency responders and planners. Facilities in Texas share this information by filing annual hazardous chemical inventories with the state, with Local Emergency Planning Committees (LEPCs) and with local fire departments. The Texas Tier 2 Reports contain facility identification information and detailed chemical data about hazardous chemicals stored at the facility.

A facility must report if it meets the following criteria:

- Any company using chemicals that could present a physical or health hazard must report them, according to Tier 2 requirements.
- If an industry has an OSHA deemed hazardous chemical that exceeds the appropriate threshold at a certain point in time, that chemical must be reported. These chemicals may be on the list of 356 Extremely Hazardous Substances (EHS) or could be one of the 650,000 reportable hazardous substances (not on the EHS list). This reporting format is for a "snapshot in time." EHS chemicals have to be reported if the quantity is either greater than 500 pounds, or if the Threshold Planning Quantity (TPQ) amount is less than 500 pounds.

Location

The locations of available TRI and Tier 2 toxic sites in the Jefferson County planning area are shown below in Table A-5.

Table A-5. Toxic Sites in Jefferson County[3]

JURISDICTION	FACILITY NAME	ADDRESS	NUMBER OF CHEMICALS
JEFFERSON COUNTY	CHEMTREAT INC	4200 TWIN CITY HWY	2
JEFFERSON COUNTY	CHEMOURS BEAUMONT PLANT	5470 N TWIN CITY HWY	14
JEFFERSON COUNTY	LUCITE INTERNATIONAL INC	6350 N TWIN CITY HWY	11

[3] Source: EPA Toxic Release Inventory

JURISDICTION	FACILITY NAME	ADDRESS	NUMBER OF CHEMICALS
JEFFERSON COUNTY	SASOL CHEMICALS (USA) LLC	HWY 124 & ROLLINS RD	2
JEFFERSON COUNTY	PHILLIPS 66 PIPELINE LLC-BEAUMONT TERMINAL	HWY 366 1/2 MILE E OF INTERSECTION W HWY 347	14
BEAUMONT	MARTIN OPERATING PTNR-NECHES	1 GULF STATES RD	4
BEAUMONT	MARTIN OPERATING PTNR-STANOLIND	10 SULFUR PLANT RD	4
BEAUMONT	EASTHAM FORGE INC.	1050 NECHES ST.	5
BEAUMONT	GE WATER & PROCESS TECHNOLOGIES BEAUMONT FACILITY	10658 HWY 90	12
BEAUMONT	GOODYEAR TIRE & RUBBER CO	11241 INTERSTATE HWY 10	18
BEAUMONT	MOBIL CHEMICAL CO BEAUMONT POLYETHYLENE PLANT	11440 HWY 90	8
BEAUMONT	TOTAL PETROCHEMICALS & REFINING USA INC-BEAUMONT PLANT	11455 INTERSTATE HWY 10	2
BEAUMONT	TXI OPERATIONS LP-SOUTH READY MIX PLANT	1250 E FLORIDA ST	1
BEAUMONT	CHEMTRADE REFINERY SERVICES INC	1400 OLIN RD	2
BEAUMONT	BASF CORP - BEAUMONT	14385 W PORT ARTHUR RD	17
BEAUMONT	COLONIAL TANK FARM	14713 W PORT ARTHUR RD	9
BEAUMONT	GERDAU AMERISTEEL US INC-BEAUMONT WIRE OPERATIONS	220 AVE A	1
BEAUMONT	TXI OPERATIONS LP-DOLLINGER READY MIX PLANT	2525 DOLLINGER	1
BEAUMONT	DRAGON WESPINE FACILITY	2609 WESPINE RD	1
BEAUMONT	LNVA-NORTH REGIONAL TREATMENT PLANT	2655 GULF STATES RD	24
BEAUMONT	EXXONMOBIL OIL CORP BEAUMONT CHEMICAL PLANT	2775 GULF STATES RD	43
BEAUMONT	ARKEMA INC	2810 GULF STATE RD	11
BEAUMONT	AZZ GALVANIZING SERVICES-BEAUMONT	500 INDUSTRIAL RD	2
BEAUMONT	FEDERAL CORRECTIONAL COMPLEX	5430 KNAUTH RD	1
BEAUMONT	NOV XL SYSTEMS BEAUMONT	5780 HAGNER RD	2
BEAUMONT	COASTAL CHEMICAL CO LLC	6534 INDUSTRIAL ROAD	5
BEAUMONT	GULFCO FORGE & MACHINE	6817 INDUSTRIAL RD	3
BEAUMONT	CB&I-BEAUMONT	850 PINE ST	7

JURISDICTION	FACILITY NAME	ADDRESS	NUMBER OF CHEMICALS
BEAUMONT	OHMSTEDE LTD	895 N MAIN ST	4
BEAUMONT	EXXONMOBIL OIL BEAUMONT REFINERY	E END OF BURT ST	43
PORT ARTHUR	AIR PRODUCTS LLC	1801 S GULFWAY DR	43
PORT ARTHUR	TXI PORT ARTHUR READY MIX	2.36 M FROM THE INTERX OF GULFWAY DR & HWY 82	1
PORT ARTHUR	CHEVRON PHILLIPS CHEMICAL CO	2001 S GULFWAY DR	21
PORT ARTHUR	STANDARD ALLOYS INC (PORT ARTHUR)	201 W LAKESHORE DR	2
PORT ARTHUR	KMTEX LLC	2450 S GULFWAY DR	16
PORT ARTHUR	MOTIVA-PORT ARTHUR REFINERY	2555 SAVANNAH AVE	31
PORT ARTHUR	OXBOW CALCINING LLC	3901 COKE DOCK RD	7
PORT ARTHUR	MOTIVA-PORT ARTHUR TERMINAL	3901 TEXACO ISLAND RD	11
PORT ARTHUR	FLINT HILLS RESOURCES PORT ARTHUR LLC	4241 SAVANNAH AVE	18
PORT ARTHUR	TEAM FABRICATORS	650 MAIN AVENUE	1
PORT ARTHUR	TOTAL PETROCHEMICALS & REFINING USA INC-PORT ARTHUR REFI	7600 32ND ST	24
PORT ARTHUR	VEOLIA ES TECHNICAL SOLUTIONS LLC PORT ARTHUR FACILITY	HWY 73, 3.5 MILES W OF TAYLOR BAYOU	207
PORT ARTHUR	BASF TOTAL PETROCHEMICALS LLC	NE OF INTERSECTION OF HWY 73 & HWY 366	24
PORT NECHES	LION ELASTOMERS LLC	1615 MAIN ST	5
PORT NECHES	TPC GROUP	2102 SPUR 136	14
PORT NECHES	AIR LIQUIDE LARGE INDUSTRIES US LP PORT NECHES	2121 PARK ST	1
PORT NECHES	CALABRIAN CORP	5500 HWY 366	1
PORT NECHES	HUNTSMAN PETROCHEMICAL LLC PORT NECHES FACILITY	6001 HWY 366	35
PORT NECHES	MOTIVA PORT NECHES TERMINAL	CORNER SPUR 136 & GRIGSBY DR	7

Extent

From a hazardous materials incident, the micro-meteorological effects of the buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering-in-place can protect people and property from harmful effects. Non-compliance with fire and building codes, as well as failure to maintain existing fire and containment features can substantially increase the damage from a hazardous materials

release. The duration of a hazardous materials incident can range from hours to days. Warning time for hazardous materials incidents is minimal to none.

Previous Occurrences

Hazardous materials are substances which if released or misused can cause death, serious injury, long-lasting health effects, and damage to structure and other properties as well as to the environment. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

A total of 126 transportation incidents have been reported in the Jefferson County planning area over the last 67 years. The data collected is from 1950 to 2016 and identifies the hazardous materials transportation incidents as in-transit, loading, and unloading of transport vehicles. A summary of reported events are listed in Table A-6 below by jurisdiction.

Table A-6. Jefferson County Hazardous Material Incident Events by Jurisdiction[4]

JURISDICTION	NUMBER OF INCIDENTS	INJURIES	FATALITIES	PROPERTY AND CROP DAMAGE
Beaumont	1	0	0	$0
Bevil Oaks	0	0	0	$0
China	1	0	0	$440
Groves	0	0	0	$0
Nederland	18	0	0	$99
Nome	2	0	0	$70,585
Port Arthur	169	23	0	$372,529
Port Neches	21	9	1	$7,612
Jefferson County	11	0	0	$135,270
TOTAL LOSSES	**223**	**32**	**1**	**$586,535**

Probability of Future Events

Based on the historic incident records, the frequency of occurrence is highly likely and an event is probable in the next year in the Jefferson County planning area.

Vulnerability and Impact

Hazardous materials or toxic releases can have a "substantial" impact. Such events can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage.

[4] Damages reported in 2016 dollars.

Terrorism

Hazard Profile

The Federal Bureau of Investigation (FBI) categorizes terrorism in the United States as one of two types—domestic terrorism or international terrorism. Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction. International terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside of the United States, or whose activities transcend their national boundaries.

A terrorist attack can take several forms, depending on the technological means available to the terrorist, the nature of issue motivating the attack, and the points of weakness of the terrorist's target. Bombings are the most frequently used terrorist method in the United States. A terrorist using a chemical or biological weapon is of particular concern to officials. Special training and equipment is needed in order to safely manage a Weapons of Mass Destruction incident.

Biological agents are infectious microbes or toxins used to produce illness or death in people, animals or plants. Biological agents can be dispersed as aerosols or airborne particles. Terrorists may use biological agents to contaminate food or water, as they are extremely difficult to detect.

Chemical agents kill or incapacitate people, destroy livestock, or ravage crops. Some chemical agents are odorless and tasteless and are therefore difficult to detect. These chemical agents can have an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days).

The Department of Defense estimates that as many as 26 nations may possess chemical agents and/or weapons, and an additional 12 may be seeking to develop them. The Central Intelligence Agency reports that at least 10 countries are believed to possess or are currently conducting research on biological agents for weaponization.

Terrorist incidents – as with other natural and technological disasters – involve the application of one or more modes of harmful force to the built environment. These modes include contamination (as in the case of chemical, biological radiological or nuclear hazards), energy (explosives, arson, and even electromagnetic waves), or denial of service (sabotage, infrastructure breakdown, and transportation service disruption).

Location

There is no distinct geographic boundary to the threat of terrorism. An event is possible throughout the Jefferson County planning area.

Extent

The Homeland Security Advisory System, issued by the U. S. Department of Homeland Security, previously used a color-coded terrorism warning system that identified five threat levels. In 2011, the Department of Homeland Security (DHS) replaced the color-coded alerts of the Homeland Security Advisory System (HSAS) with the National Terrorism Advisory System (NTAS), designed to more effectively communicate information about terrorist threats by providing timely, detailed information to the American public.

NTAS now consists of two types of advisories: Bulletins and Alerts. DHS has added Bulletins to the advisory system to be able to communicate current developments or general trends regarding threats of terrorism.

NTAS Bulletins permit the Secretary to communicate critical terrorism information that, while not necessarily indicative of a specific threat against the United States, can reach homeland security partners or the public quickly, thereby allowing recipients to implement necessary protective measures. Because DHS may issue NTAS Bulletins in circumstances not warranting a more specific warning, NTAS Bulletins provide the Secretary with greater flexibility to provide timely information to stakeholders and members of the public.

When there is specific, credible information about a terrorist threat against the United States, DHS will share an NTAS Alert with the American public when circumstances warrant doing so. The Alert may include specific information, if available, about the nature of the threat, including the geographic region, mode of transportation, or critical infrastructure potentially affected by the threat, as well as steps that individuals and communities can take to protect themselves and help prevent, mitigate or respond to the threat. The Alert may take one of two forms: Elevated, if there is credible threat information, but only general information about timing and target such that it is reasonable to recommend implementation of protective measures to thwart or mitigate against an attack; or Imminent, if the threat is believed credible, specific, and impending in the very near term. Terrorism Advisory System Alerts are described in Figure A-3.[5]

Figure A-3. National Terrorism Advisory System

The Red Cross also issues Advisory System Recommendations for individuals, families, neighborhoods, schools and businesses for each alert level. These may be found at: *www.redcross.org*.

Heightened periods for terrorism risk are based on intelligence and other information. A potential terrorist event could devastate the community physically, economically and psychologically for many years to come. Warning time for terrorism is minimal to none.

Previous Occurrences

The history of terrorism on United States soil includes the attacks of September 11, 2001, on the World Trade Center in New York and the Pentagon in Washington, D.C. and the ensuing anthrax attacks; the 1995 bombing of the Murrah Federal Building in Oklahoma City; and the bombing of the World Trade Center in 1993.

Jefferson County has not experienced a terrorist act. While complete prevention of an attack may not be attainable, the County can lessen the likelihood and/or the potential effects of an incident. The County continues to improve its readiness to respond to a terrorist incident through participation in state and federal programs that provide training and equipment for agencies that would respond to a local terrorist incident, and in exercises that help to improve agency coordination and test local response plans.

[5] Source: Department of Homeland Security, https://www.dhs.gov/national-terrorism-advisory-system

Probability of Future Events

The types, frequencies, and locations of many natural hazards are identifiable and, even in some cases, predictable, as the laws of physics and nature govern them. Malevolence, however, cannot be forecast with any accuracy. There is, therefore, some potential for most, if not all, types of intentional terrorist acts to occur anywhere and at any time.

Vulnerability and Impact

There is no defined geographic boundary for a terrorist event. All of the population, buildings, critical facilities, infrastructure and lifelines and hazardous materials facilities are considered exposed to the hazards of terrorism and could potentially be affected.

There are no past local events. Therefore, all assets and facilities are potentially at risk to damages that may, for the most part, be secondary.

Terrorist events can have a "substantial" severity of impact. They can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage.

APPENDIX B: PLANNING TEAM

Planning Team Members

The Jefferson County Hazard Mitigation Plan Update 2017 (Plan or Plan Update), was organized using a direct representative model. An Executive Planning Team from Jefferson County and participating jurisdictions, shown in Table B-1, was formed to coordinate planning efforts and request input and participation in the planning process. Table B-2 reflects the Advisory Planning Team, consisting of representatives from area organizations and departments of the jurisdictions that participated throughout the planning process. Table B-3 is comprised of member Stakeholders who were invited to attend meetings to provide Plan Update input. The public were also invited to participate throughout the planning process. Public outreach efforts and meeting documentation is provided in Appendix E.

Table B-1. Executive Planning Team

ORGANIZATION/JURISDICTION	TITLE
Jefferson County	Emergency Management Coordinator
City of Beaumont	Emergency Management Coordinator
City of Bevil Oaks	Mayor/ Floodplain Manager
City of China	Mayor
City of Groves	Emergency Management Coordinator
City of Nederland	Emergency Management Coordinator
City of Nome	Mayor
City of Port Arthur	Senior Planner
City of Port Neches	Emergency Management Coordinator
SETRPC	Homeland Security and Emergency Management Planning Director

Table B-2. Advisory Planning Team

ORGANIZATION/JURISDICTION	TITLE
City of Beaumont	Communications Manager
City of Beaumont	Emergency Management Assistant

ORGANIZATION/JURISDICTION	TITLE
City of Beaumont	Emergency Management Specialist
City of Beaumont	Director of Technology Services
City of Beaumont Police Department	Assistant Chief
City of China	City Secretary
City of Nederland Police Department	Assistant Chief
City of Nome	City Secretary
City of Port Arthur	Senior Planner
City of Port Arthur Development Services	Director
City of Port Arthur Fire Department	Emergency Management Coordinator
City of Port Arthur Police Department	Emergency Management Coordinator
City of Port Neches Fire Department	Emergency Management Coordinator
City of Taylor Landing	Mayor
Jefferson County	Assistant Emergency Management Coordinator
SETRPC	Regional Emergency Planner

Stakeholders

The following groups listed in Table B-3 represent a list of Jefferson County organizations who attended meetings, public meetings and workshops throughout the planning process. Invited organizations and stakeholders participated and were integral to providing comments and data for the Plan Update. For a list of attendees at meetings, please see Appendix F[1].

Table B-3. Stakeholders

AGENCY/ORGANIZATION	TITLE
Colonial Pipeline	Manager
Lamar University	Assistant Professor
Local Emergency Planning Committee	Chairperson
Jefferson County Drainage District 7	Graduate Engineer
Jefferson County Drainage District 7	Supervisor

[1] Information contained in Appendix F is exempt from public release under the Freedom of Information1 Act (FOIA).

Appendix B: Planning Team

AGENCY/ORGANIZATION	TITLE
RPS	Senior Consulting Engineer
South East Texas Disaster Recovery Group	Executive Director
Texas House of Representatives	Texas US Representative
Texas State Senate	Texas State Senator
United Way	Executive Director
City of Kountze	Emergency Management Coordinator
City of Lumberton	City Manager
City of Rose Hill Acres	Mayor
City of Silsbee	Emergency Management Coordinator
City of Silsbee	Assistant Emergency Management Coordinator
City of Sour Lake	City Manager
City of Sour Lake	Police Chief
Hardin County	Emergency Management Coordinator
Hardin County	Floodplain Administrator
South East Texas Regional Planning Commission	Homeland Security and Emergency Management Planning Director
City of Bridge City	Emergency Management Coordinator
City of Orange	Deputy Chief/Emergency Management Coordinator
City of Pinehurst	Emergency Management Coordinator
City of Pine Forest	Emergency Management Coordinator
City of Rose City	City Secretary
City of Vidor Police Department	Emergency Management Coordinator
City of West Orange	Emergency Management Coordinator
Orange County	Tax Assessor-Collector
Orange County Office of Emergency Management	Deputy Emergency Management Coordinator
Orange County Office of Emergency Management	Emergency Management Coordinator

APPENDIX C: PUBLIC SURVEY RESULTS

Overview

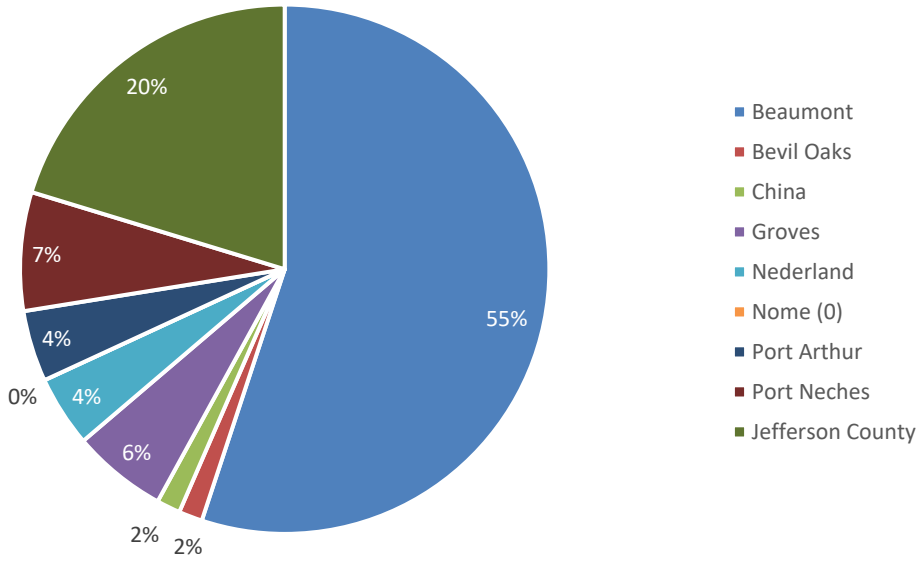
Jefferson County prepared a public survey that requested public opinion on a wide range of questions relating to natural hazards. The survey was made available on websites including the Jefferson County Office of Emergency Management Facebook page as well as the SETRPC webpage. This survey link was also distributed at public meetings throughout the planning process.

A total of 69 surveys were collected, the results of which are analyzed in Appendix C. The purpose of the survey was twofold: 1) to solicit public input during the planning process, and 2) to help the jurisdictions identify any potential actions or problem areas.

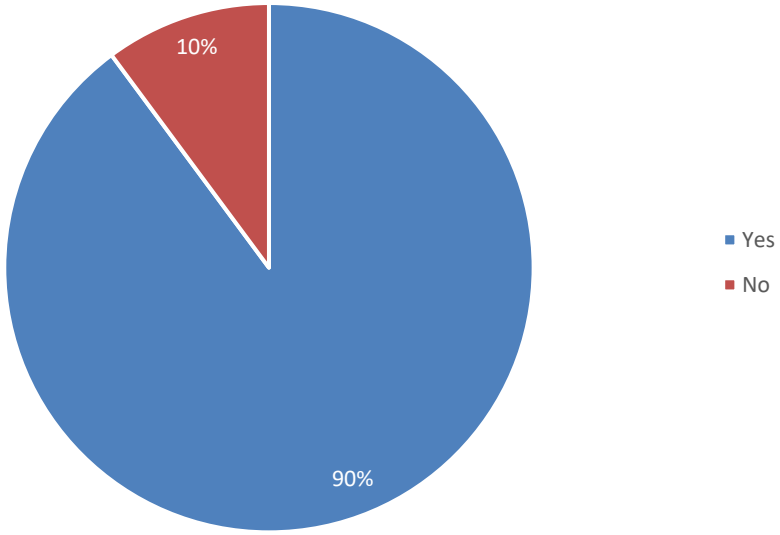
The following survey results depict the percentage of responses for each answer. Similar responses have been summarized for questions that did not provide a multiple-choice answer or that required an explanation.

Public Survey Results

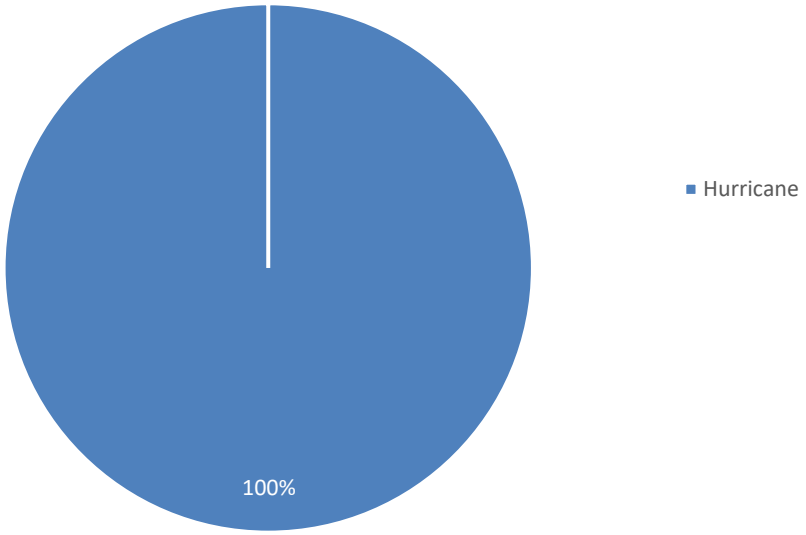
1. Please state the jurisdiction (city and community) where you reside.



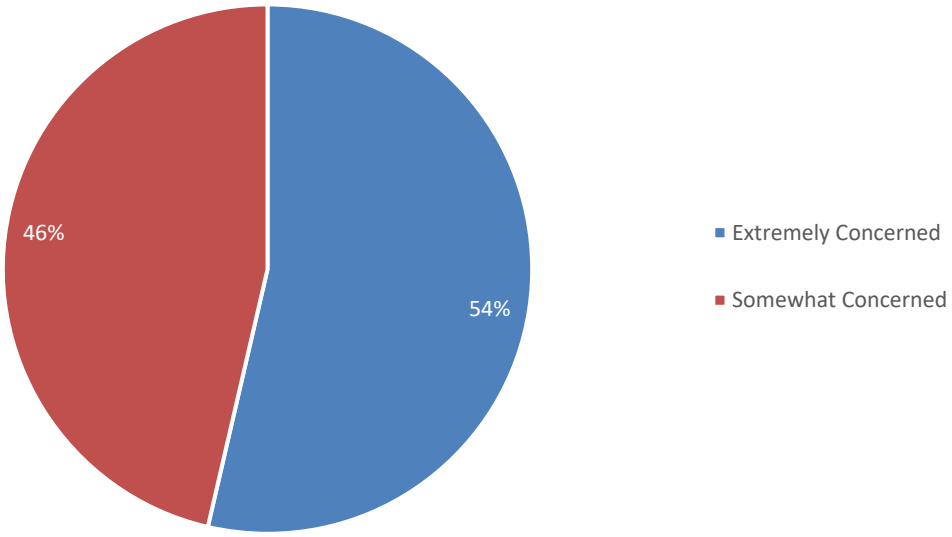
2. A. Have you ever experienced or been impacted by a disaster?



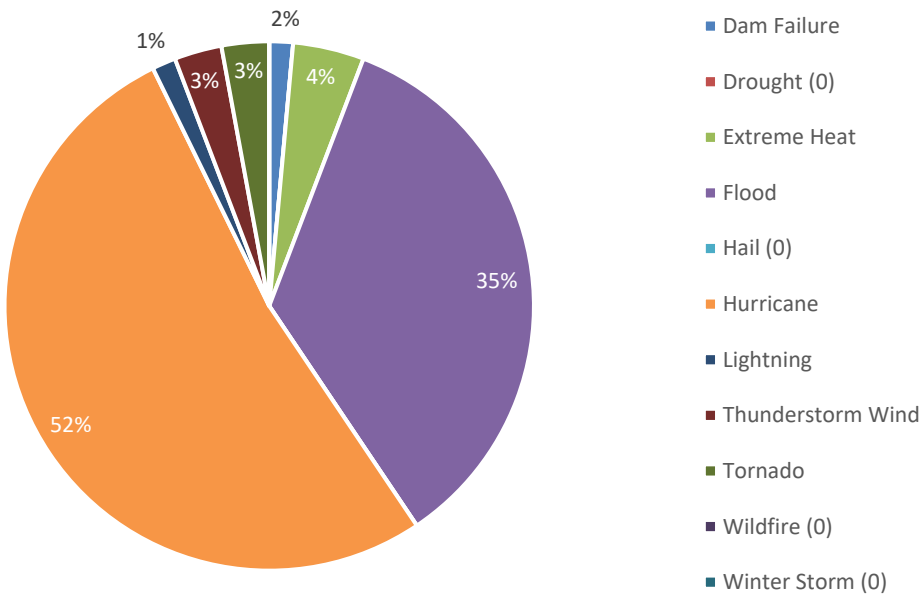
2. B. If “Yes”, please explain:



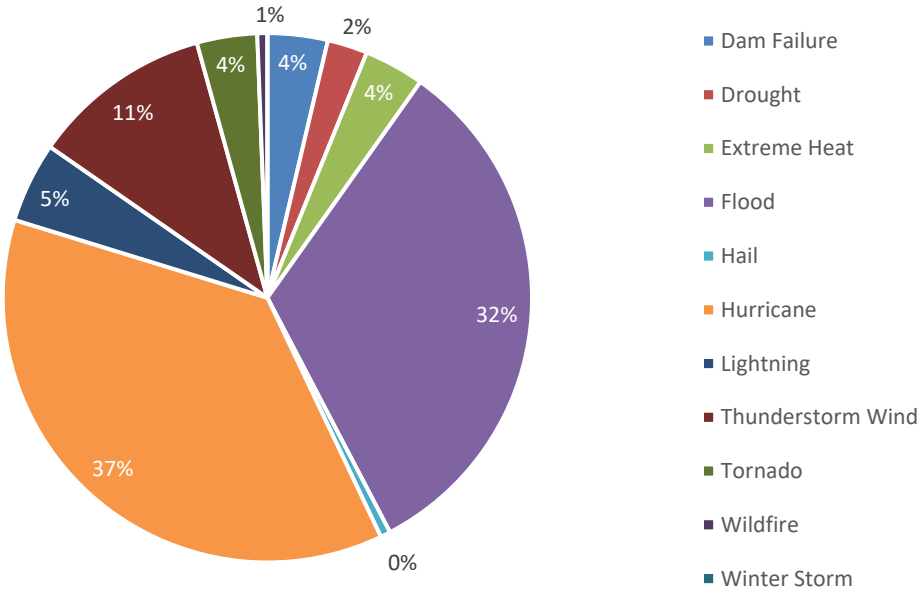
3. How concerned are you about the possibility of your community being impacted by a disaster?



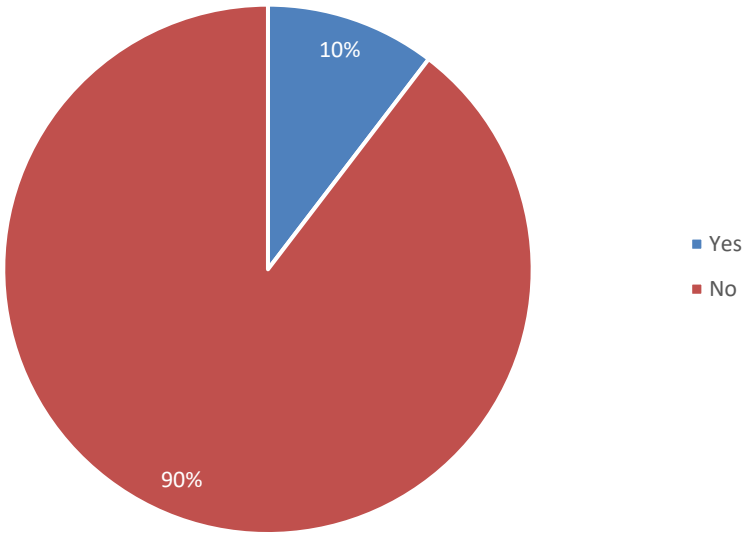
4. Please select the one hazard you think is the highest threat to your neighborhood:



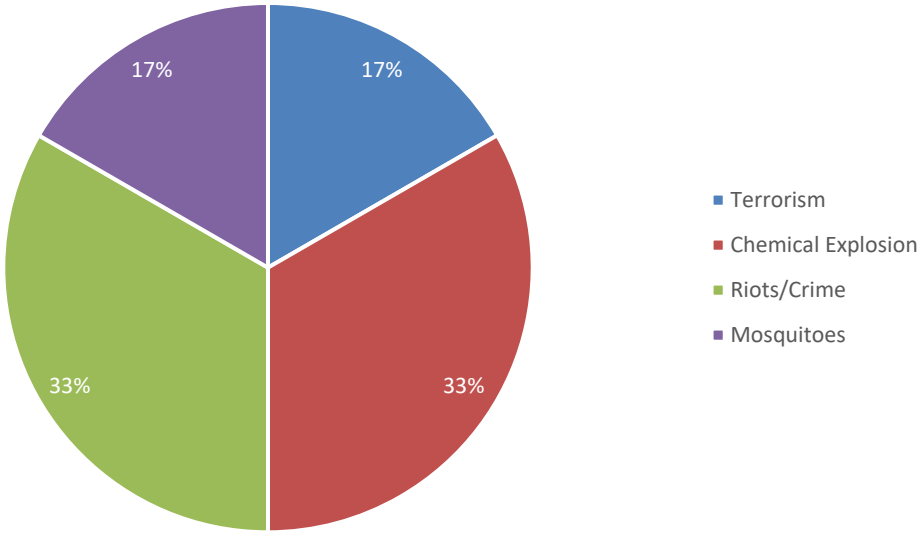
5. Please select the one hazard you think is the second highest threat to your neighborhood:



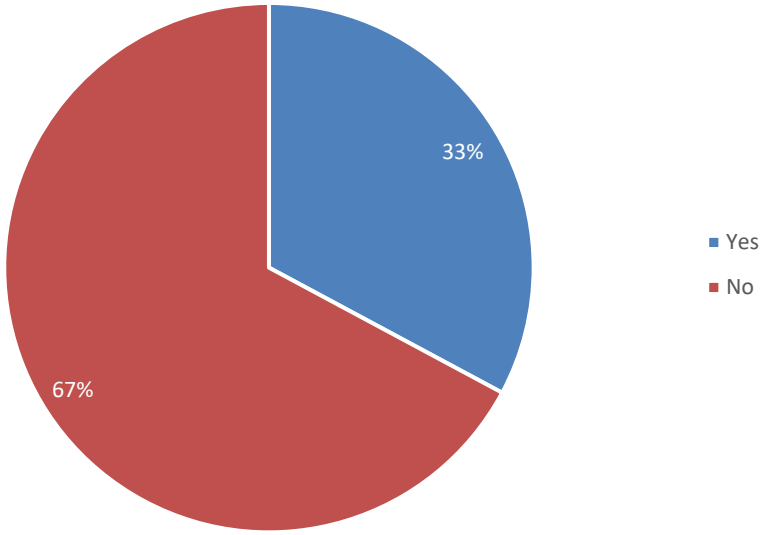
6. A. Are there hazards not listed above that you think is a wide-scale threat to your neighborhood?



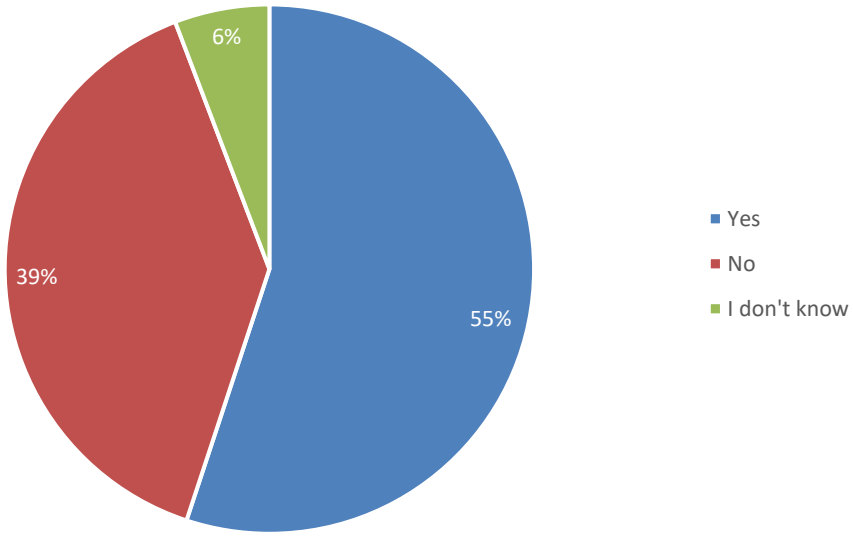
6. B. If "Yes", please explain:



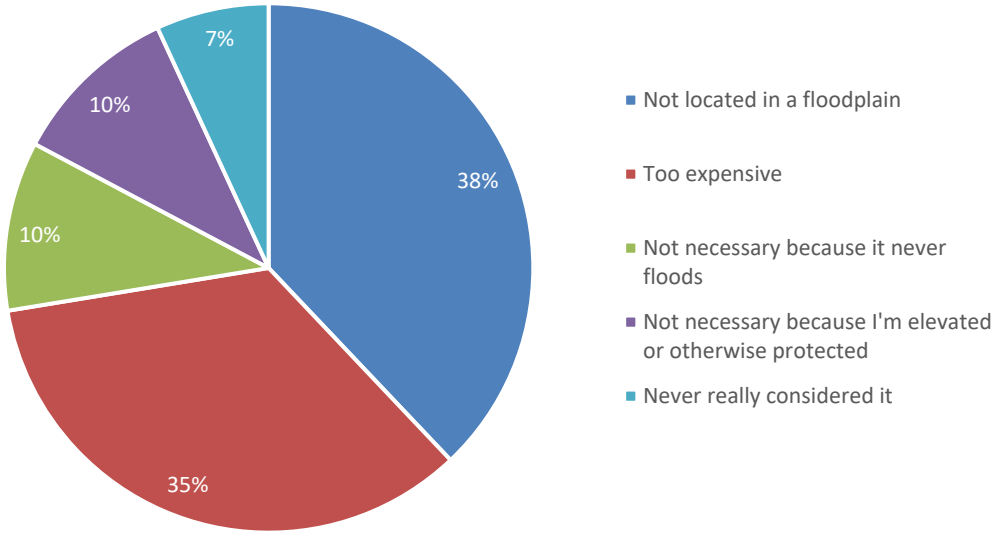
7. Is your home located in a floodplain?



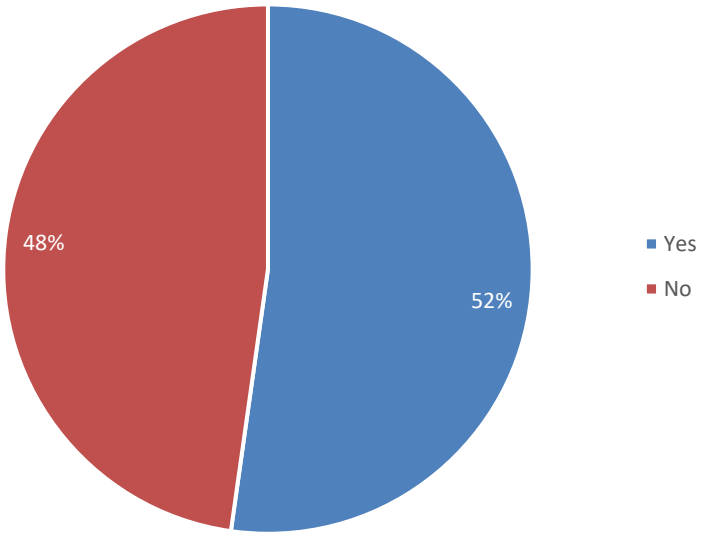
8. Do you have flood insurance?



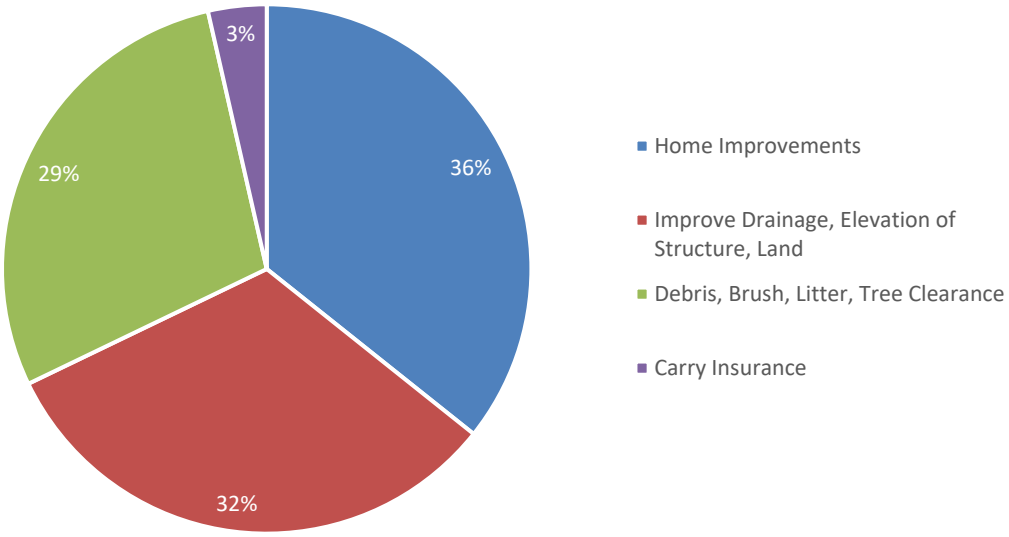
9. If you do not have flood insurance, why not?



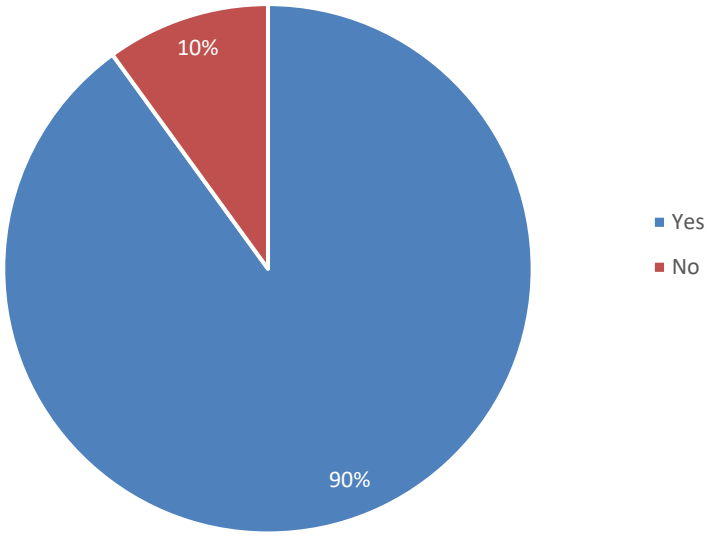
10. A. Have you taken any actions to make your home or neighborhood more resistant to hazards?



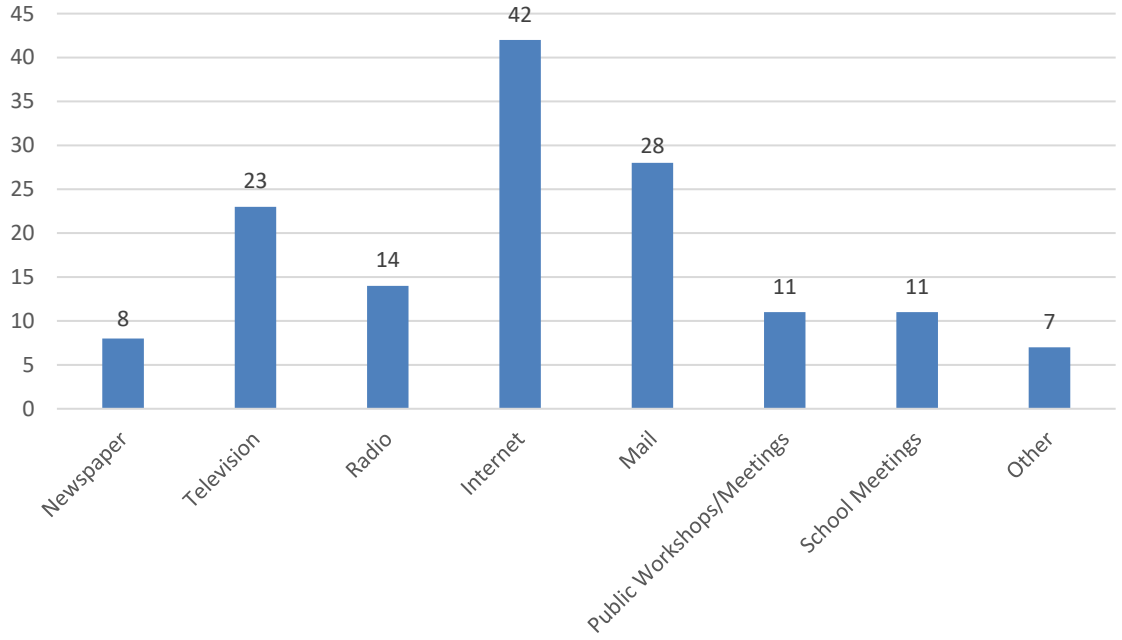
10. B. What have you done?



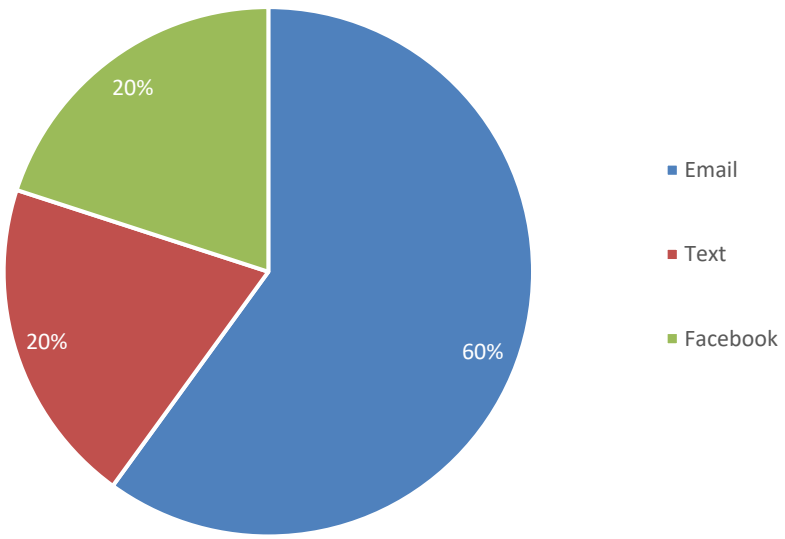
11. Are you interested in making your home or neighborhood more resistant to hazards?



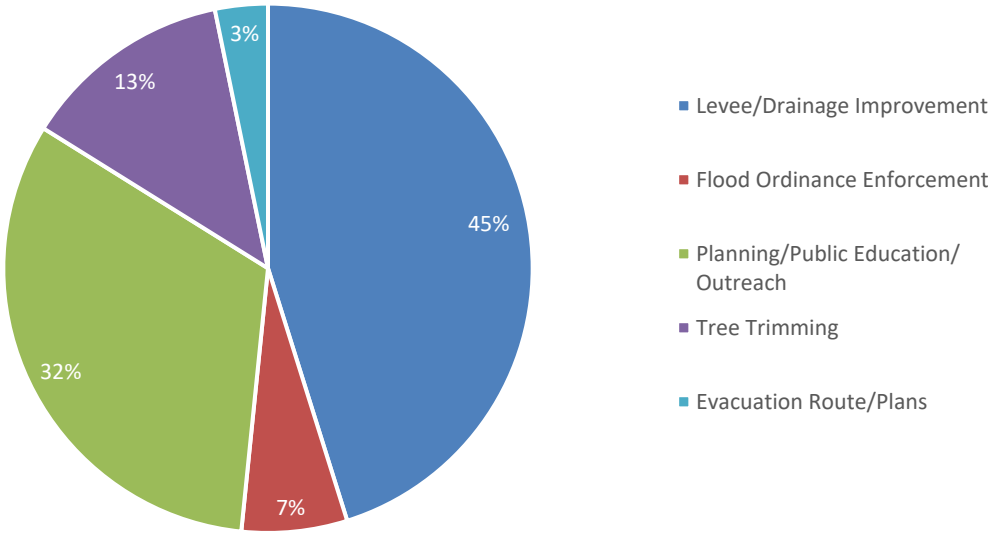
12. A. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?



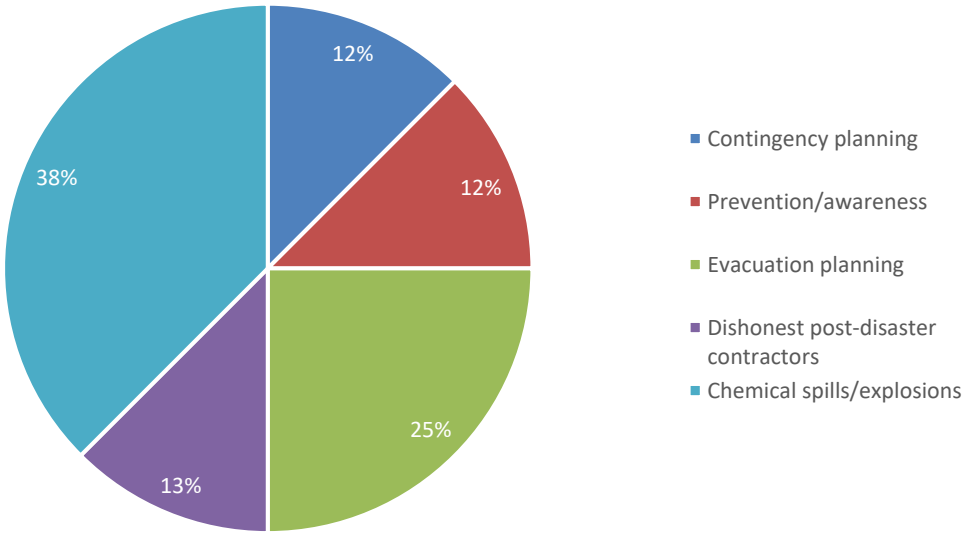
12. B. If other, please specify.



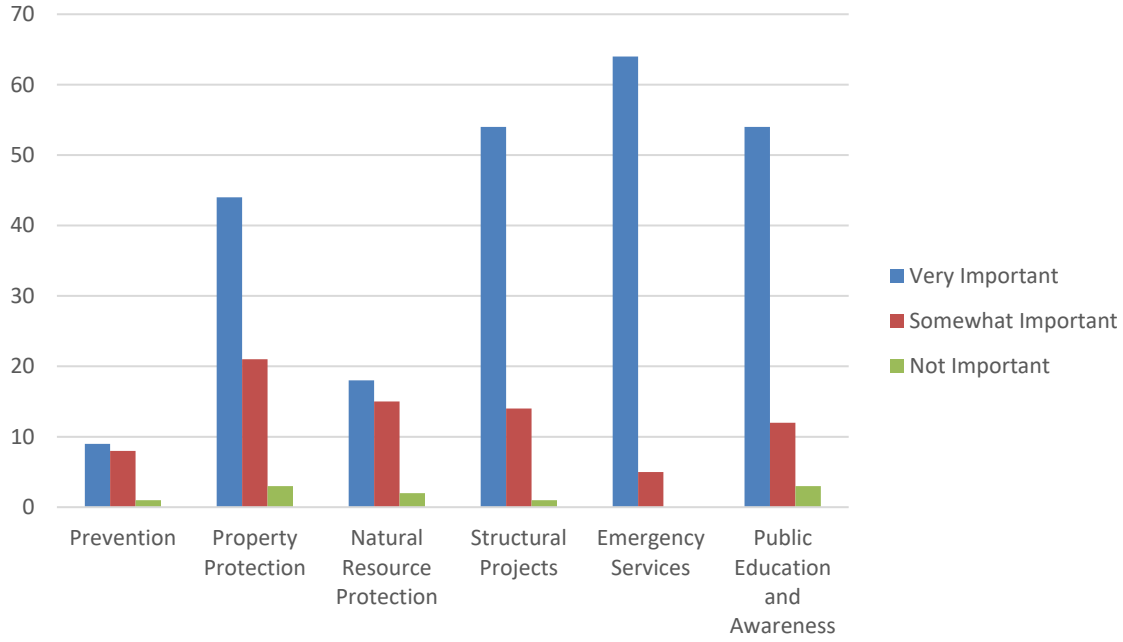
13. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?



14. Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?



15. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.



Prevention / Local Plans & Regulations - Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

Property Protection - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.

Natural Resource Protection - Actions that in addition to minimizing hazard losses also preserve or restore the functions of natural systems. Examples include: floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.

Structural Projects - Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, seawalls detention / retention basins, channel modification, retaining walls and storm sewers.

Emergency Services - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical facilities or systems.

Public Education and Awareness - Actions to inform citizens about hazards and techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials and demonstration events.

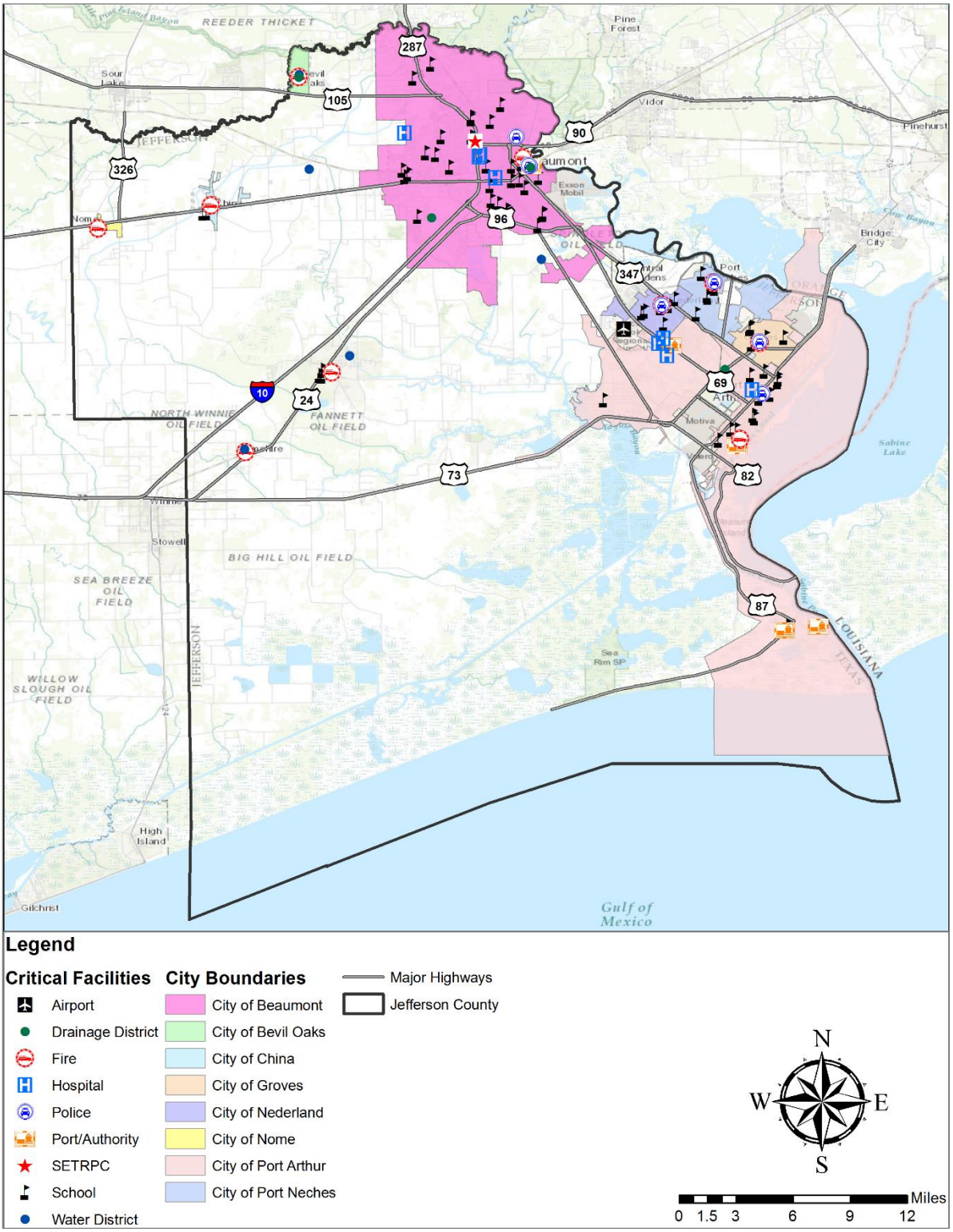
APPENDIX D: CRITICAL FACILITIES

Overview

This Appendix is **For Official Use Only (FOUO)** and may be exempt from public release under Freedom of Information Act (FOIA). Figures D-1 through D-9 locates all critical facilities that were included in the risk assessment. Mapped facilities were provided by Jefferson County Planning Team members. Table D-1 notes the critical facilities by type.

Critical Facilities

Figure D-1. Critical Facilities in Jefferson County



Appendix D: Critical Facilities

Table D-1. Critical Facilities by Type in Jefferson County

TYPE	NUMBER
Fire Stations	10
Police Stations	6
Hospitals	9
Schools	68
Port/Authority	4
SETRPC	1
Airports	1

Figure D-2. Critical Facilities in City of Beaumont

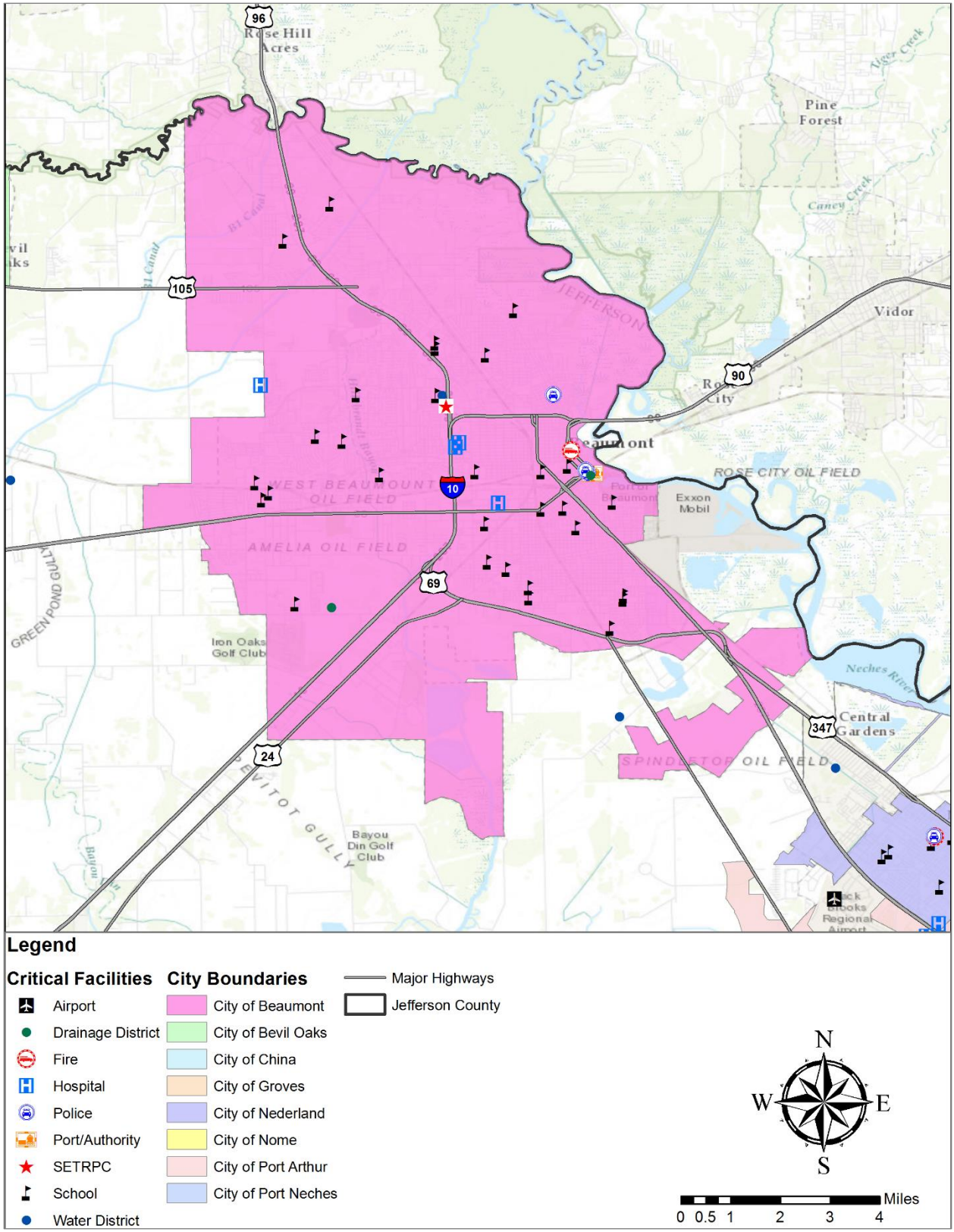


Figure D-3. Critical Facilities in City of Bevil Oaks

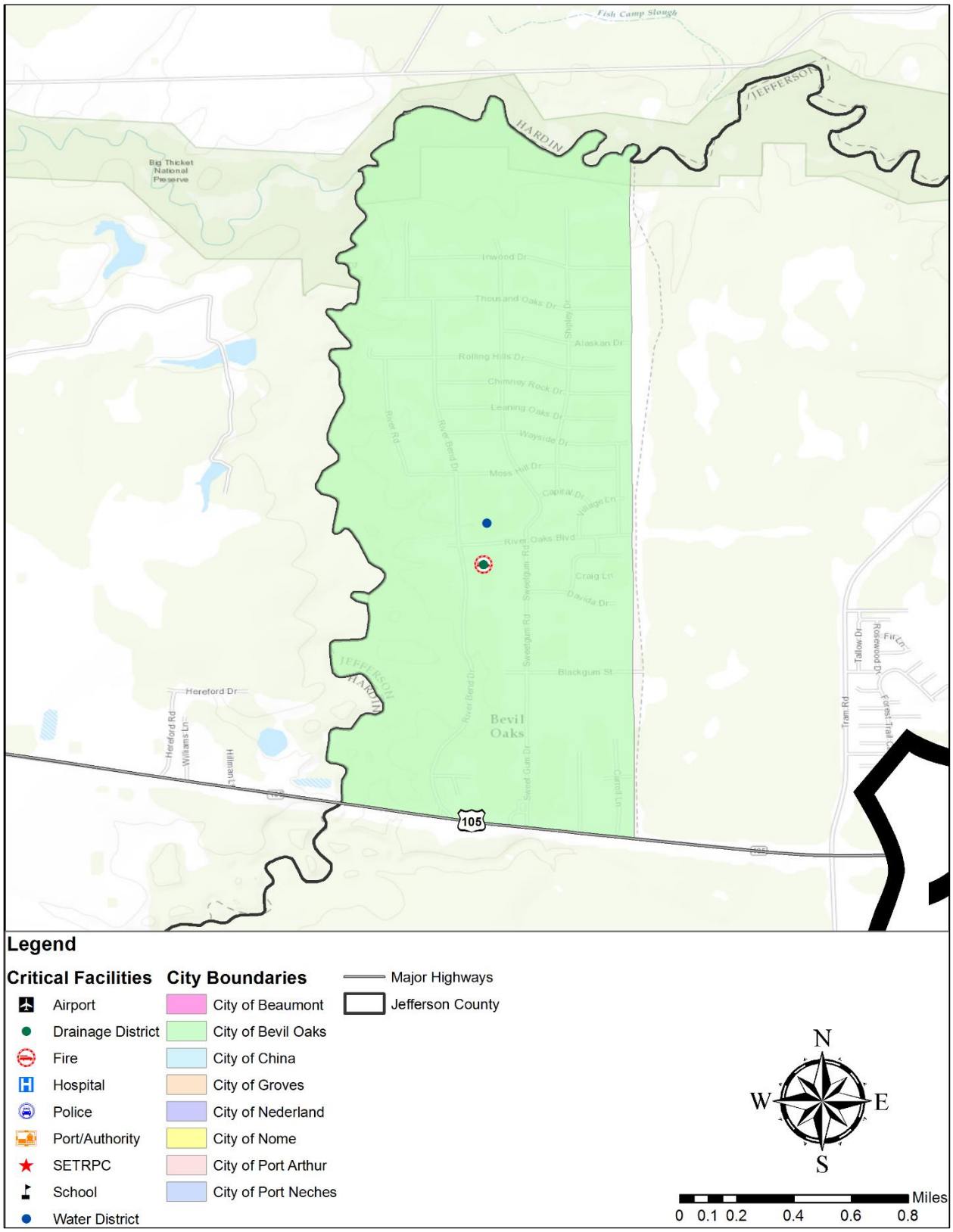


Figure D-4. Critical Facilities in City of China

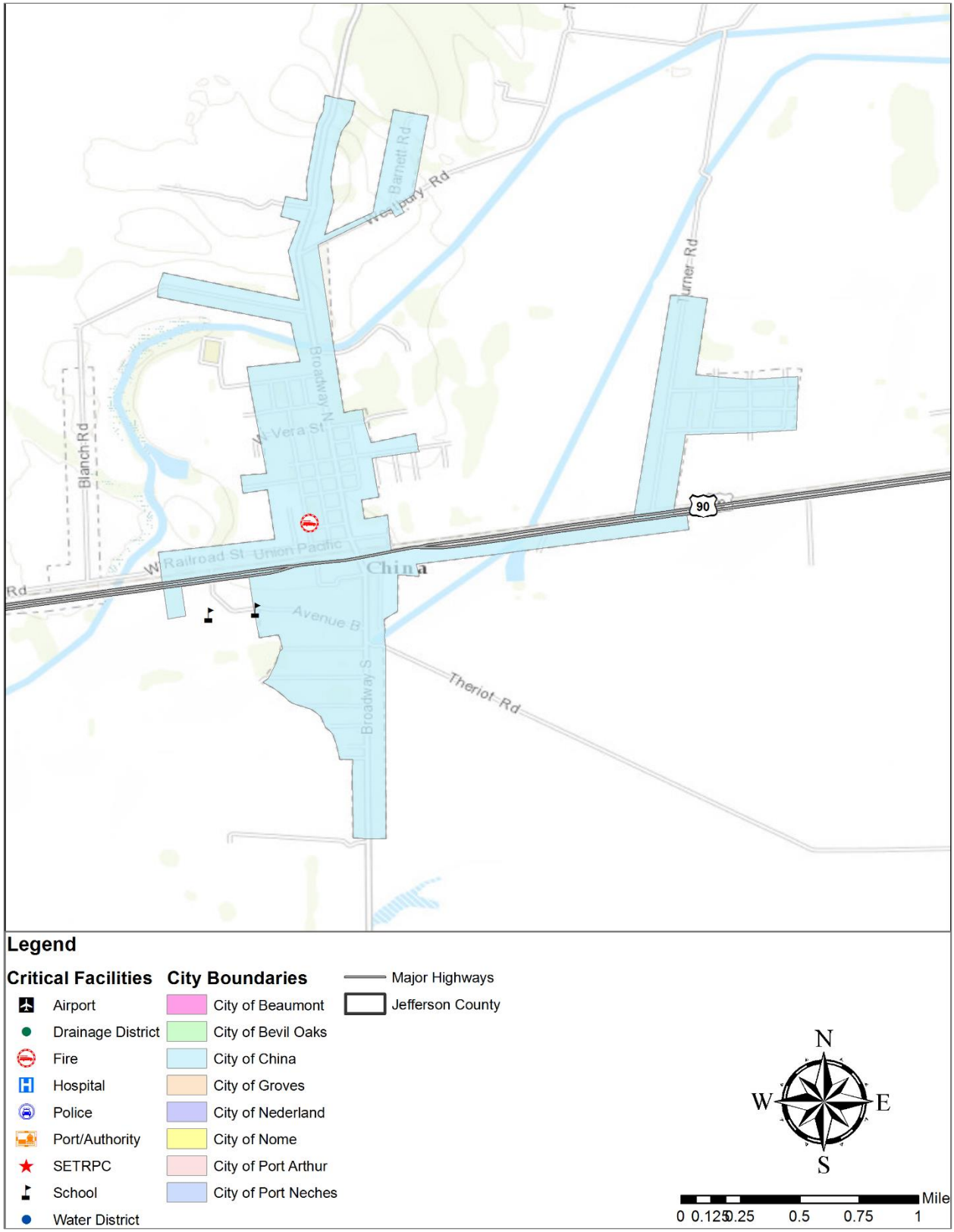


Figure D-5. Critical Facilities in Groves

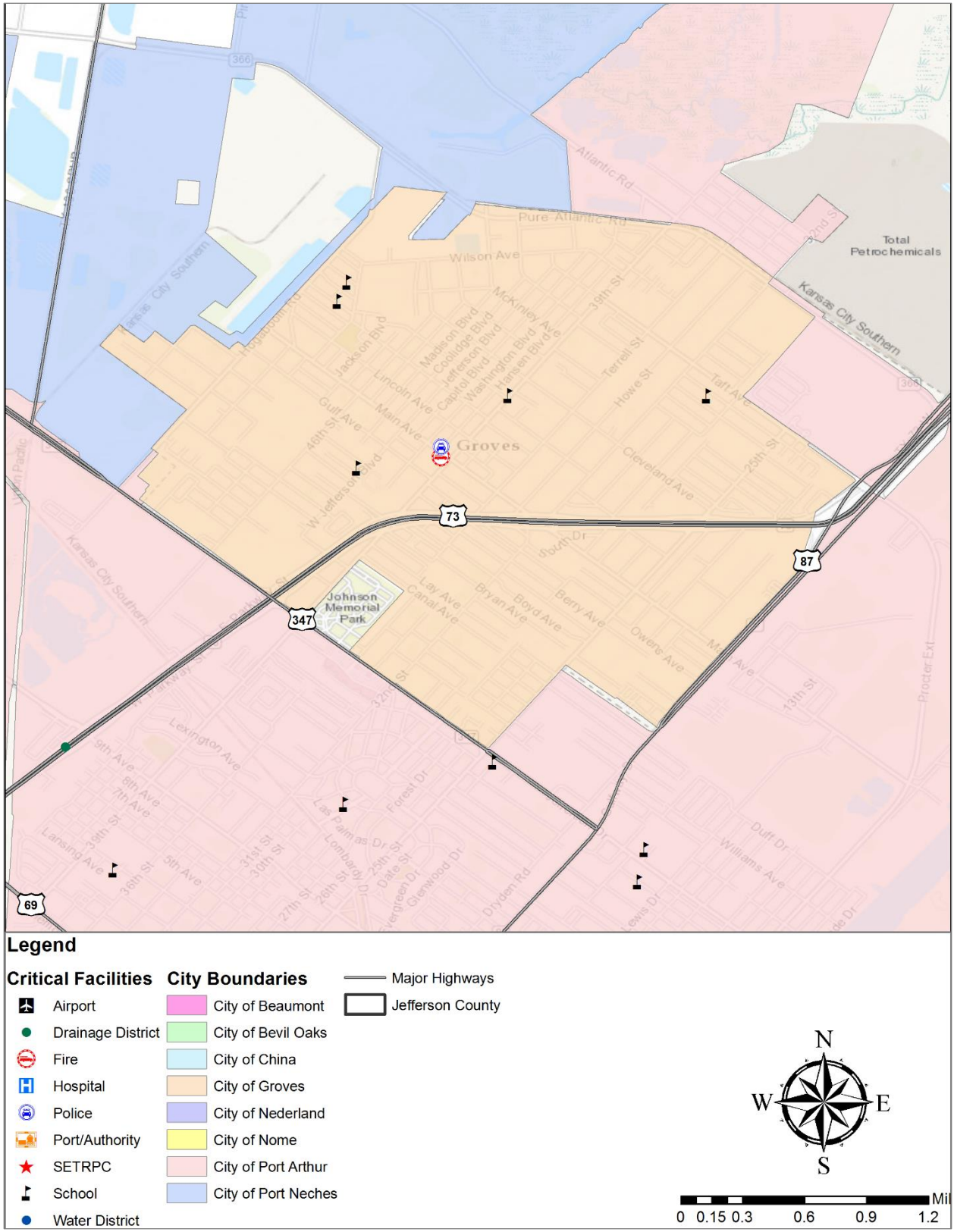


Figure D-6. Critical Facilities in City of Nederland

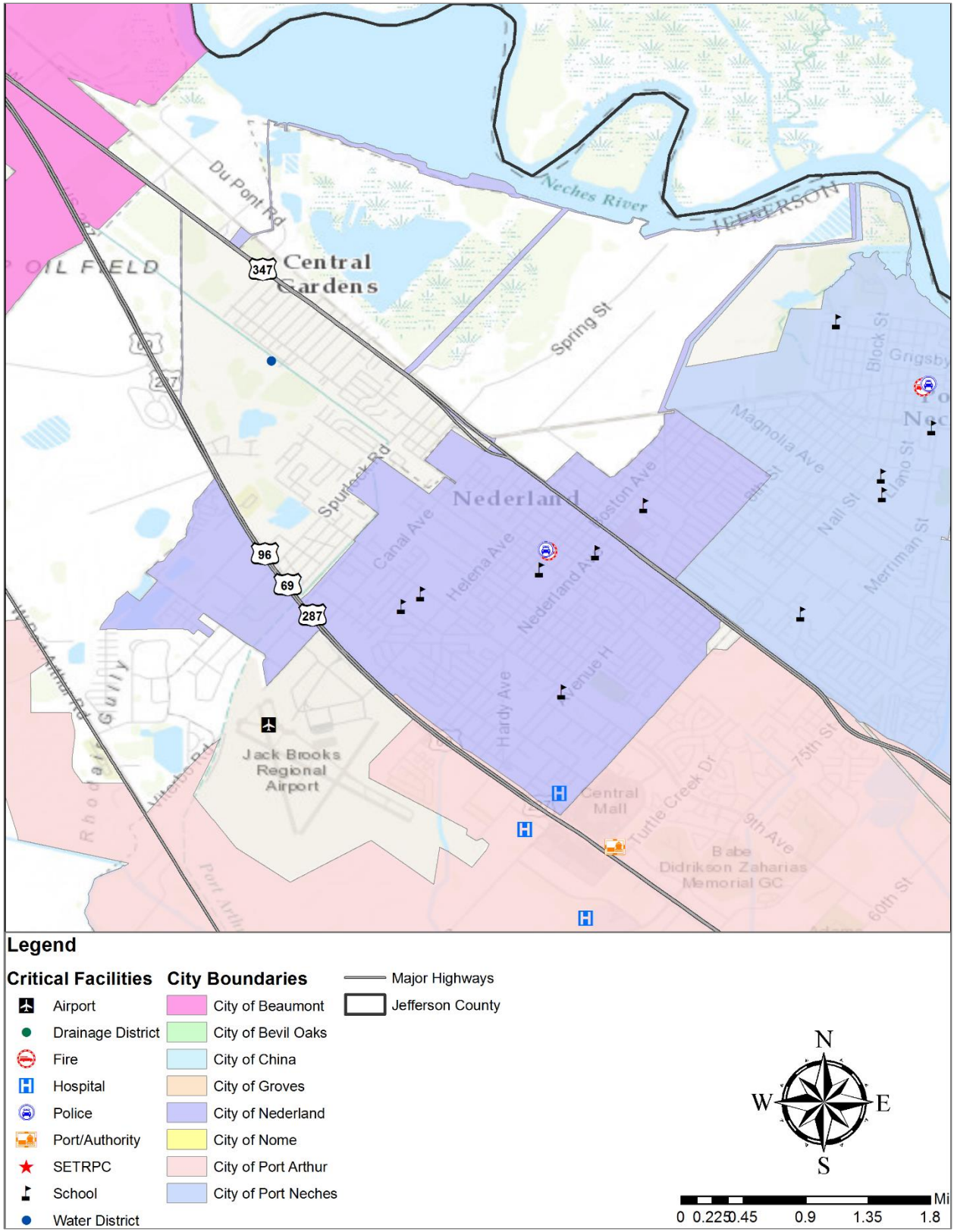


Figure D-7. Critical Facilities in Nome

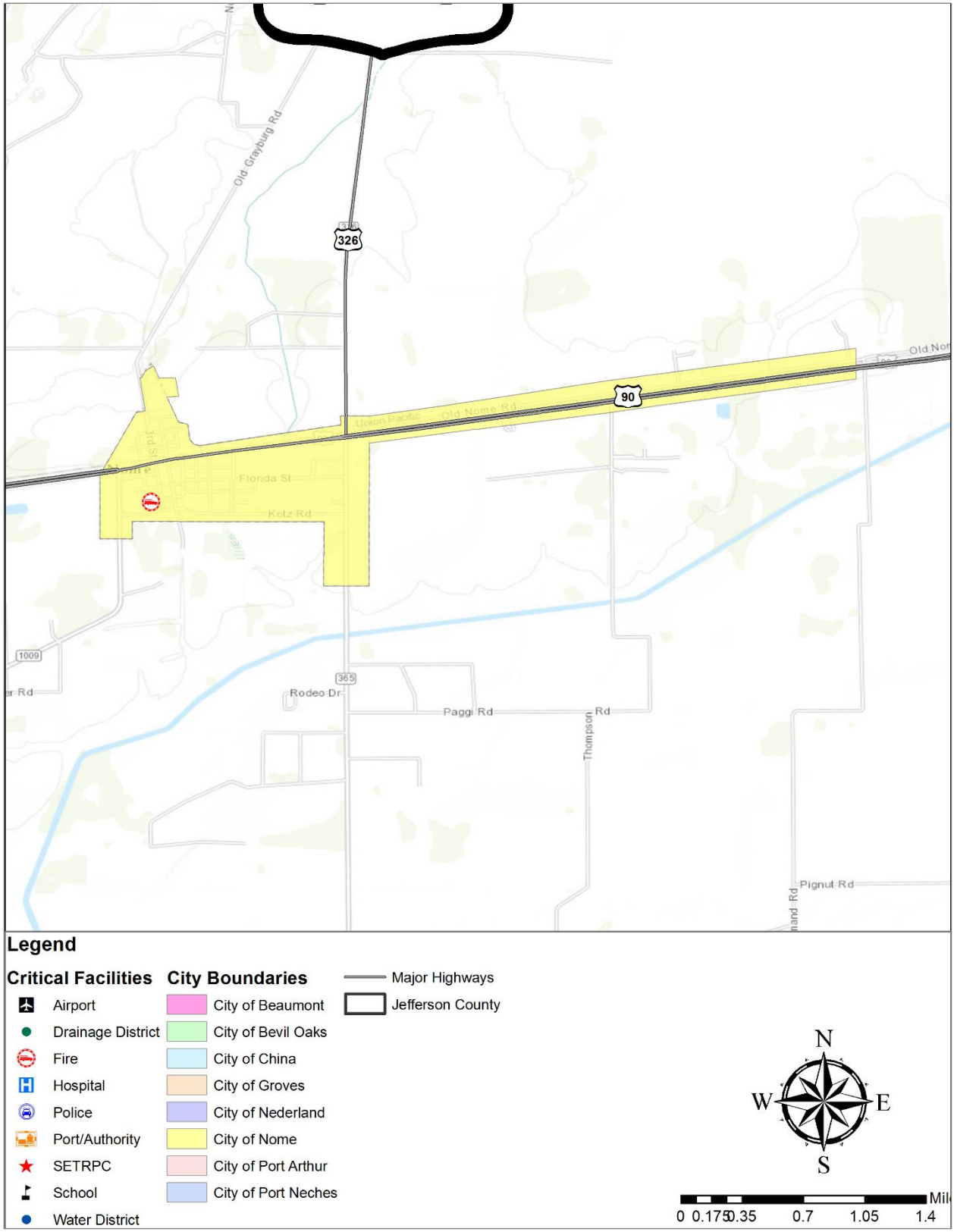


Figure D-8. Critical Facilities in City of Port Arthur

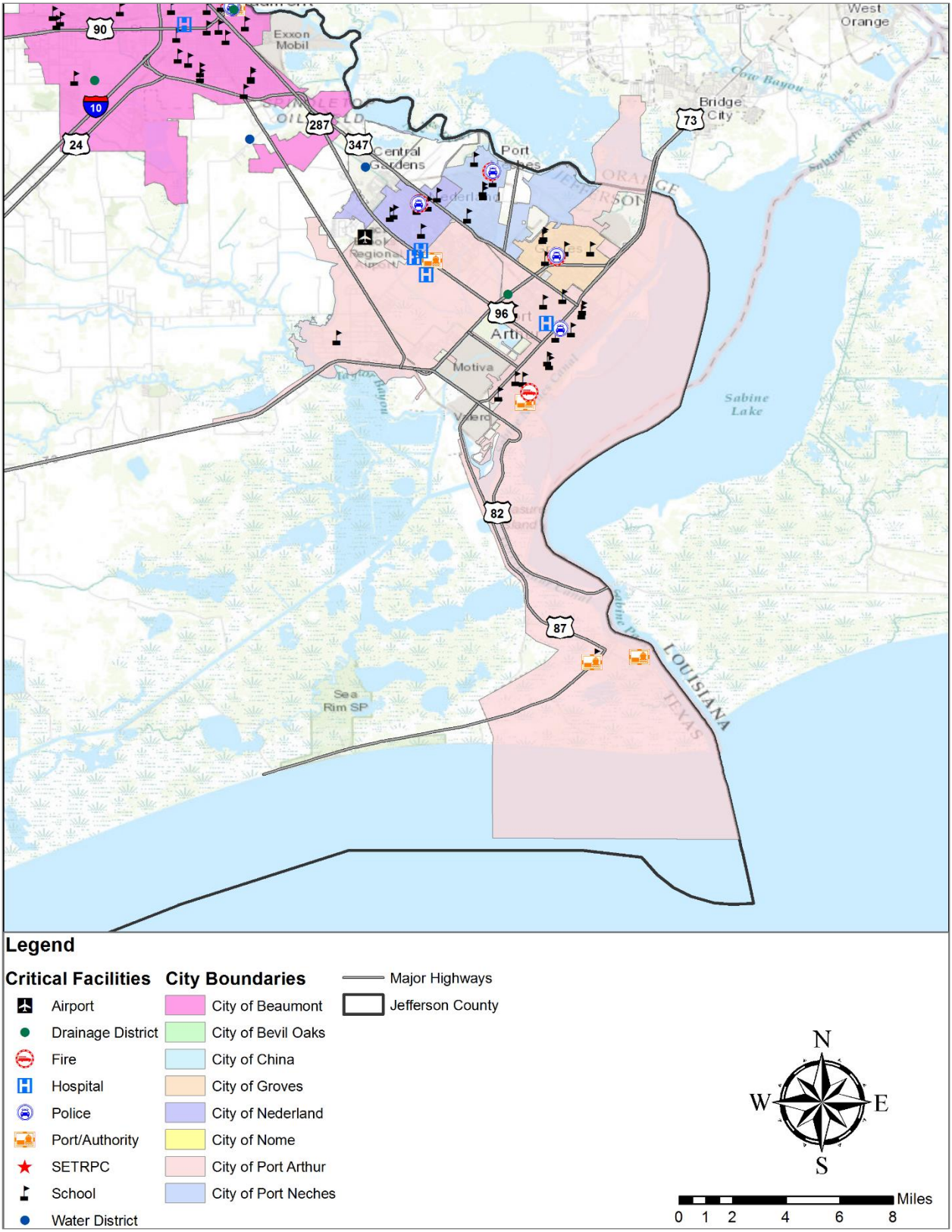
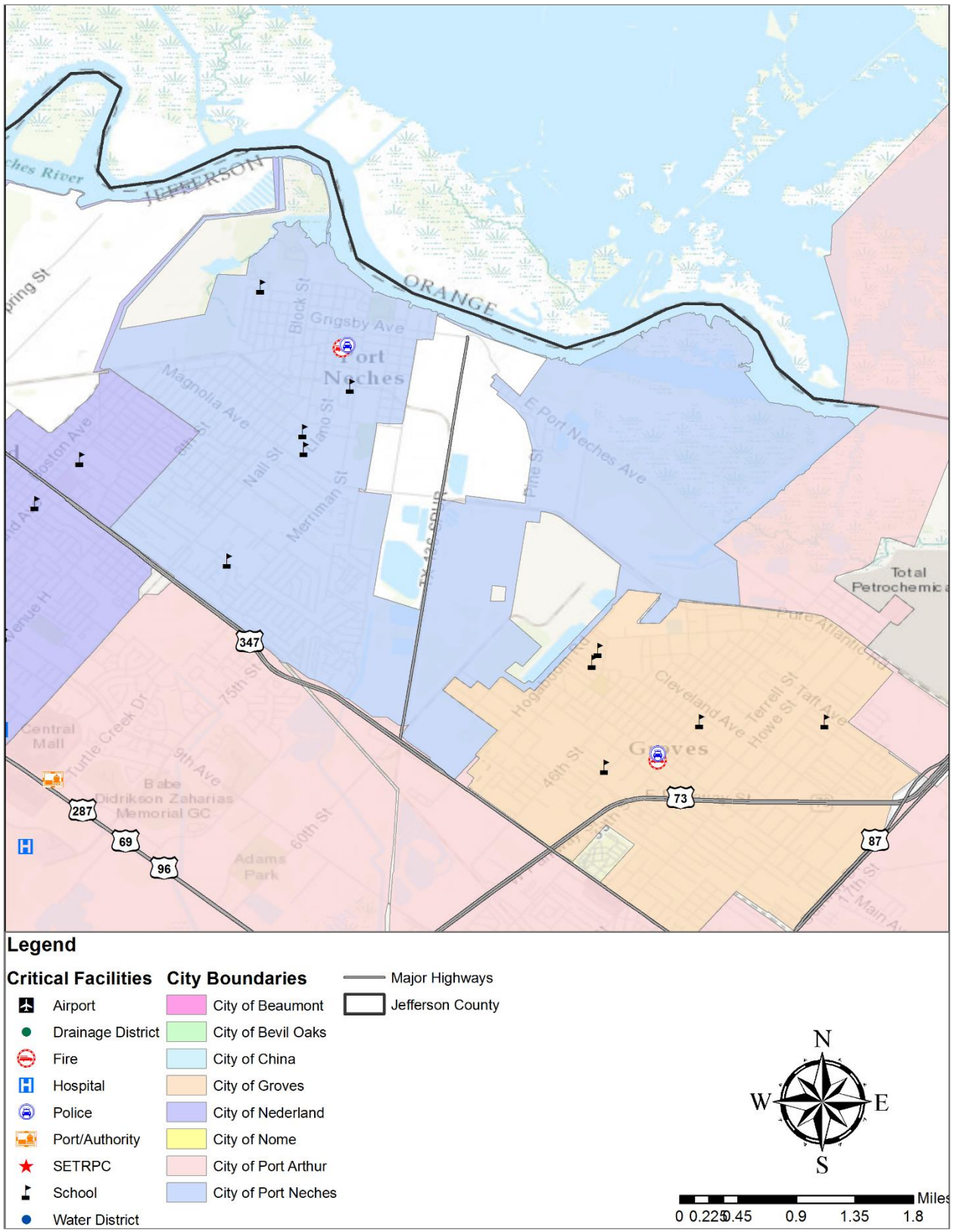


Figure D-9. Critical Facilities in City of Port Neches



APPENDIX E: DAM LOCATIONS

Overview

Appendix E is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

Table E-1 below reflects all dams that are located in Jefferson County. This list includes High, Significant, and Low Hazard Dams.

Dam Locations

Table E-1. Listing of Jefferson County Dam Locations and Storage Capacities

JURISDICTION	LATITUDE	LONGITUDE	HEIGHT (Ft.)	STORAGE (Acre Feet)
Jefferson County	29.90444	-93.96833	14	300
Jefferson County	29.67051	-94.34415	7	450
Jefferson County	29.7146	-94.31468	12	375

APPENDIX F: MEETING DOCUMENTATION

Workshop Documentation

Appendix F is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

Jefferson County held a series of Planning Team workshops: a Kickoff Workshop on March 30, 2016, a Risk Assessment Workshop on June 1, 2016, and a Mitigation Workshop on August 24, 2016. At each of these workshops members of the Planning Team were informed of the planning process, expressed opinions, and volunteered information. SETPRC hosted three public meetings (one following each workshop). The sign-in sheets for each workshop and public meeting are included below. For more details on the workshops and planning process, see Section 2.

Figure F-1. SETPRC Kickoff Workshop, 03.30.16

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

REGISTRATION

MEETING: Mitigation Action Plan Kick-Off Meeting

LOCATION: SETRPC – Homer E Nagel Conference Room
2210 Eastex Freeway
Beaumont, Texas 77703

DATE: Wednesday, March 30, 2016 1:30pm

PLEASE PRINT AND WRITE LEGIBLY

NAME:	TITLE:	AGENCY:	ADDRESS:	E-MAIL ADDRESS	PHONE NUMBER:
Robert L Havens	Deputy Fire Chief EMC	Port Arthur Fire Dept	300 WACO	rhavens@portarthur.com	409 5838734
Jack Provost	City Manager	City of Sour Lake	625 Hwy 105 W Sour Lake	jprovost@cityofsourlake.com	409-287-3573
Dave L. Shows	Chief	Vidor PD		dlshows@cityofvidor.com	409-769-4561
Chris Serres	Finance Director	OCWC1	460 E Bolivar Vidor, Tx	cserres@ocwc1.com	409-769-2669 Ext234
Jacob Rollins	Graduate Engineer	DD7		jrollins@ljaengineering.com	409-659-1947
Jon Sherwin	Public Works Supervisor	City of West Orange	2700 Austin Ave., West Orange 77630	jsherwin@cityofwestorange.com	(409) 659-4992
Amanda Young	Hardin County Floodplain	Hardin County	300 Monroe Kountze 77625	amanda.young@co.hardin.tx.us	409-651-8890
Glenda Piazza	City of Bmt Emg Mgmt Asst	Beaumont	700 Orleans 77701	gpiazza@BeaumontTexas.gov	409-980-7280
LeeAnne Brown	Deputy Chief/EMC	City of Orange	501 N. 7TH Orange 77630	lbrown@orangefd.com	409.988.3323

South East Texas Regional Planning Commission – Registration Sign-In Sheet

NAME:	TITLE:	AGENCY:	ADDRESS:	E-MAIL ADDRESS:	PHONE NUMBER:
John Owens	Deputy Chief of Police/EMC	Port Arthur P.D.	645 Fourth Street P.A. TX. 77641	jowens@portarthurpd.com	409-983-8616
Jeff LaComb	EMC	City of Kountze	1025 W Pine	jlkch@sbcGlobal.net	790-8990
Tod McDowell	Capt/EMC	City of Bridge City	2290 Texas Ave. Bridge City, TX	tmcdowell@bridgecitypd.com	409-735-5028
Bryant Chapman	Fire Chief	OCESD #1	2351 Hwy 12 Vidor	chief1@ocesd1.com	409-769-8294
Rick Thomisee	Mayor	Rose Hill Acres	100 Jordan Rd	r/thomisee@ymail.com	454 6593 409 755 4940
Larry Saurage	Chief	Sour Lake PD	625 Hwy 105W	Chief301@cityofsourlake.com	409 287 2059
Paul Brown	SR. Planner	Port Arthur	444 4TH St PA 77640	paul.brown@portarthurtx.gov	983-8139
Terry LaFleur	Comm. Manager	City of BMT		TLafleur@BeaumontTexas.gov	409 673 7636
Shaqueena Nobles	EM Spec.	City of Bmt	700 Orleans	SNobles@beaumonttexas.gov	409-980-7285
Bart Bartkowiak	CTO	COB	801 Main	bbartkowiak@beaumonttexas.gov	880-3752
Tim Ocnaschek	EMC	Beaumont	700 Orleans	TOcnaschek@BeaumontTexas.gov	880-3804
Theresa Wigley	EMC	Hardin Co	300 W. Monroe Kountze TX	Theresa.Wigley@co.hardin.tx.us	246-5119
[illegible]	EMC	NOR	[illegible]	[illegible]	723 1529
Greg Fountain	EMC	Jefferson County	1149 Pearl St. Bmt, TX 77701	gfountain@co.jefferson.tx.us	835-8757
[illegible]	Mayor	Taylor Landing			
Paul Nelson	Fire Chief/EMC	Port Neches FD	606 Magnolia Ave	pnelson@ci.port-neches.tx.us	608-770-1529

South East Texas Regional Planning Commission – Registration Sign-In Sheet

Appendix F: Meeting Documentation

NAME:	TITLE:	AGENCY:	ADDRESS:	E-MAIL ADDRESS:	PHONE NUMBER:
Jim Clay	Asst Chief	Bmt PD	255 College Bmt, TX	jclay@BeaumontTexas.gov	409-880-3881
Ron Burton	Director Dev Serv	City of Port Arthur	444 4th Street	Ron.burton@PortArthurTx.gov	409-983-8136
Amanda Moore	OCPH-PHEP		11475 FM1442 Orange	amoore@co.orange.tx.us	4096704135

South East Texas Regional Planning Commission – Registration Sign-In Sheet

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

H2O PARTNERS

SETRPC HAZARD MITIGATION PLAN KICKOFF
Planning / Stakeholder Workshop
South East Texas Regional Planning Commission, Beaumont, TX
March 30, 2016

Name/Title	Department	Phone	Email
Rachel Andrews	H2O Partners	512-983-0092	rachel@h2opartnersusa.com
Gary Porter Acol	Nederland PD	409-723-1517	[illegible]
Ryan Peabody, EMC	Orange County OEM	409 238 0013	[illegible]
Mike White	Jefferson County	835-8757	mwhite@co.jefferson.tx
[illegible]	City of Vidor	409-769-4561	[illegible]@cityofvidor.com
Jerry Parker	Vidor ISD	409-951-8966	jparker@vidorisd.org
Heidi Watson	H2O Partners	512 568 2259	heidi@h2opartnersusa.com

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Appendix F: Meeting Documentation

Figure F-2. SETPRC Risk Assessment Workshop, 06.01.16

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

REGISTRATION

MEETING: SETRPC Hazard Mitigation Planning Team Meeting

LOCATION: SETRPC – Homer E Nagel Conference Room
2210 Eastex Freeway
Beaumont, Texas 77703

DATE: Wednesday, June 1, 2016 1:30pm

Risk Assessment Workshop

PLEASE PRINT AND WRITE LEGIBLY

Name	Title	Agency	Address	Email Address	Phone Number
Aleta Cappen	City of Vidor PD	City of Vidor	695 East Railroad, Vidor 77662	acappen@cityofvidor.com	409-769-4561
Amanda Moore	OCPH-PHEP	OCPH	11475 FM 1442 Orange	amoore@co.orange.tx.us	409-670-4135
Amanda Young	Hardin County Floodplain	Hardin County	300 Monroe Kountze 77625	amanda.young@co.hardin.tx.us	409-651-8890
Bart Bartkowiak	CTO	City of Beaumont	801 Main	bbartkowiak@beaumonttexas.gov	880-3752
Bryant Champagne	Fire Chief	OCESD#1	2351 Hwy 12 Vidor	chief1@ocesd1.com	409-769-8294
Chris Serres	Finance Director	OCWC1	460 E Bolivar, Vidor TX	cserres@ocwc1.com	409-769-2269 ext.234
Dave L. Shows	Chief	Vidor P.D.		dshows@cityofvidor.com	409-769-4561
Gary Collins	Fire Chief/EMC	Nederland	1404 Boston Ave. Neaderland	gcollins@ci.nederland.tx.us	723-1529
Gary Porter	Assistant Chief	Nederland PD		gporter@ci.nederland.tx.us	409-723-1517
Glenda Piazza	City of Bmt Emergency Management Assistant	Beaumont	700 Orleans 77701	gpiazza@BeaumontTexas.gov	409-980-7280
Greg Fountain	EMC	Jefferson County	1149 Pearl St. Beaumont TX 77701	gfountain@co.jefferson.tx.us	835-8757
Jack Provost	City Manager	City of Sour Lake	625 Hwy 105 W Sour Lake	jprovost@cityof sourlake.com	409-287-3573
Jacob Rollins	Graduate Engineer	DD7		jrollins@ljaengineering.com	409-659-1947
Jeff LaComb	EMC	City of Kountze	1025 W. Pine	jlkeh@sbcGlobal.net	790-8990
Jerry Parker	Chief	Vidor ISD	120 E Bolivar	jparker@vidorisd.org	409-951-8966
Jim Clay	Assistant Chief	Beaumont PD	225 College St. Beaumont TX	jclay@beaumonttexas.gov	409-880-3881

South East Texas Regional Planning Commission – Registration Sign-In Sheet

John Durkay	Mayor	Taylor Landing			527-3349
John Owens	Deputy Chief of Police/EMC	Port Arthur P.D.	645 Fourth Street, P.A. TX 77641	jowens@portarthurpd.com	409-983-8616
Jon Sherwin	Public Works Supervisor	City of West Orange	2700 Austin Ave, West Orange 77630	jsherwin@cityofwestorange.com	409-659-4992
Larry Saurge	Chief	Sour Lake P.D.	625 Hwy 105 W Sour Lake	chief301@cityofsourlake.com	409-287-2059
LeeAnne Brown	Deputy Chief/EMC	City of Orange	501 N. 7th Orange 77630	lbrown@orangefd.com	409-988-3323
Mike White		Jefferson County		mwhite@co.jefferson.tx.us	835-8757
Paul Borwn	Sr. Planner	Port Arthur	444 4th St. P.A. 77640	paul.brown@portarthurtx.gov	983-8139
Paul Nelson	Fire Chief/EMC	Port Neches	606 Magnolia Ave	pnelson@ci.port-neches.tx.us	608-770-1529
Rick Thomisee	Mayor	Rose Hill Acres	100 Jordan Road	rlthomisee@gmail.com	409-755-4940
Robert L. Havens	Deputy Fire Chief / EMC	Port Arthur Fire Department	300 Waco	rhavens@portarthur.com	409-583-8734
Ron Burton	Director	City of Port Arthur	444 4th St. P.A. 77640	Ron.burton@portarthur.tx.gov	409-983-8136
Ryan Peabody	EMC	Orange County OEM		rpeabody@co.orange.tx.us	409-228-0013
Shaqueena Nobles	EM Spec	City of Beaumont	700 Orleans 77701	Snobles@beaumonttexas.gov	409-980-7285
Terry LaFleur	Community Manager	City of Beaumont		Tlafleur@beaumontTexas.gov	409-673-7636
Theresa Wigley	EMC	Hardin County	300 W. Monroe, Kountze TX	Theresa.Wigley@co.hardin.tx.us	246-5119
Tim Ocnaschek	EMC	Beaumont	700 Orleans 77701	tocnaschek@beaumonttexas.gov	880-3804
Tod McDowell	Capt. / EMC	City of Bridge City	2290 Texas Ave. Bridge City TX	tmcdowell@bridgecitypd.com	409-735-5028
Dale Jackson	Fire Chief / EMC	City of Groves			
Mike White	DEMC	Jefferson County	1149 Pearl St	mwhite@co.jefferson.tx.us	835-8757
Ricky Bodin	Dep. Chief	Orange County ESD #2	330 Blvd Bridge City, TX	ocesd2chief@[illegible]	409-882-4231
Missy Hillsbury	~~[illegible]~~ EMC	Orange County	123 S. 6th St, Orange	mpillsbury@co.orange.tx.us	409-988-5770
Larry Richard	Fire Chief	Port Arthur	PO Box 1089 PA [illegible]	[illegible].com	409 983 8738
Rachel Andrews	H2O Partners Mitigation Specialist		2160 Addie Roy Rd Austin	[illegible]@h2opartnersusa.com	512-983-6092
Lanie Brown	U.S. Rep Brian Babin	Orange County	420 W. Green Ave.	lanie.brown@mail.house.gov	409-883-8075
Lisa Reeves	@ IT	Orange County	801 W. Division	lreeves@co.orange.tx.us	409-221-9334
Dean Fuller	City of West Orange	Orange County	2700 Western Ave	dfuller@cityofwestorange.com	409-883-3468
Don Harmon	Orange Co Sheriff's Office / Captain	Orange Co. Sheriff	205 Border Orange, Tx	dharmon@co.orange.tx.us	409-233-9185
Jessica Hill	Exec. Dir.	OCEDC	123 S. 6th St. Orange	jhill@orangecountyedc.com	409-310-9358
Kelvin Knauf	City of Orange Plng. Dir	City of Orange	303 N. 8th, Orange	kknauf@orangetx.org	409-883-1034
Ronnie Hollier	~~Jeff Co. PD~~ / Supervisor	Jeff. Co. DD7	4401 9th Ave	rhollier@dd7.org	409 985 4369
Robert Smith	~~Orange Co. ESD #1~~ [illegible]	OCESD 1	2351 Hwy 12	chief2@ocesd1.com	409-769-8294

South East Texas Regional Planning Commission – Registration Sign-In Sheet

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

REGISTRATION

MEETING: SETRPC Hazard Mitigation Planning Team Meeting

LOCATION: SETRPC – Homer E Nagel Conference Room
2210 Eastex Freeway
Beaumont, Texas 77703

DATE: Wednesday, June 1, 2016 1:30pm
Risk Assessment Workshop

PLEASE PRINT AND WRITE LEGIBLY

Name	Title	Agency	Address	Email Address	Phone Number
Berna Tokgoz	Assistant Prof.	Lamar University	Cherry Engineering Room 2002	berna.tokgoz@lamar.edu	(409)880 8815
Shawn Blackwell	Assistant Police Chief	Silsbee	1104 [illegible]	sblackwell@[illegible]	409-[illegible]
Mike Austin	OEP EMC	Beaumont EDC	700 Orleans Bmt	[illegible]@beaumont[illegible]	(409) [illegible]
Lynda Gunstream	Orange Co Tax Assess-Coll	Orange Co	P.O. Box 1568 Orange	lgunstream@co.orange.tx.us	409 882-7989
Mark Davis	Chief & EMC	Silsbee			
Joel Ardoin	Director Environmental Health	Orange County	11474 FM 1442 Orange	jardoin@co.orange.tx.us	409-745-1463
Becky Ford	Mayor/CFM	City of Bevil Oaks	13378 Alaskan DR Bmt	b.ford63@aol.com	409-753-1475
Kayla Arceneaux	Regional Emergency Planner	SETRPC	2210 Eastex Frwy Bmt	KArceneaux@setrpc.org	409-924-7513
Heidi Watson	Mitigation Specialist	H2O Partners		heidi@h2opartnersusa.com	512-568-2259

South East Texas Regional Planning Commission – Registration Sign-In Sheet

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

REGISTRATION

MEETING: SETRPC Hazard Mitigation Planning Team Meeting

LOCATION: SETRPC – Homer E Nagel Conference Room
2210 Eastex Freeway
Beaumont, Texas 77703

DATE: Wednesday, June 1, 2016 1:30pm

PLEASE PRINT AND WRITE LEGIBLY

Name	Title	Agency	Address	Email Address	Phone Number
Lori Ardoin	HR Director	Orange	123 Sixth St Orange Tx 77630	lardoin@co.orange.tx.us	409-882-7858

South East Texas Regional Planning Commission – Registration Sign-In Sheet

Figure F-3. SETPRC Mitigation Actions Workshop, 08.24.16

SETRPC

H$_2$O PARTNERS

SETRPC HAZARD MITIGATION PLAN MITIGATION ACTIONS
Planning / Stakeholder Workshop
South East Texas Regional Planning Commission, Beaumont, TX
August 24, 2016

Name/Title	Department	Phone	Email
Robert L Havens Dep EMC	Port Arthur FD	409 344 1021	rhavens@PortArthur.com
John Owens Deputy Chief, EMC	Port Arthur P.D.	409-983-8616	jowens@portarthurpd.com
Michael R. White DEMC	Jefferson County	409 835 8757	mwhite@co.jefferson.tx.us
Mike Custer DEMC	City of Beaumont	409 239 8233	mcuster@BeaumontTexas.gov
Shaqueem Nobles EM Spec.	City of Beaumont	409-980-7285	snobles@Beaumonttexas.gov
Tim Ocnaschek EMC	City of Beaumont	880-3804	TOcnaschek@beaumontTexas.gov
Dale Jackson Fire Chief EMC	City of Groves	960-5761	djackson@cigrovestx.com
Gary Collins EC/EMC	City of Nederland	723-1531	gcollins@ci.nederland.tx.us
Alda Cappon Sgt/EMC	City of Vidor	409-238-4448	acappen@cityofvidor.com
Charles Cox	Orange County EMC	409-238-9169	ccox@co.orange.tx.us
Ronnie Hollier	Jeff Co. DD7	409-985-4369	rhollier@dd7.org
LeeAnne Brown	City of Orange	~~409-8~~ 409-988-7359	lbrown@orangefd.com

1

SETRPC

H$_2$O PARTNERS

SETRPC HAZARD MITIGATION PLAN RISK ASSESSMENT
Planning / Stakeholder Workshop
South East Texas Regional Planning Commission, Beaumont, TX
August 24, 2016

Name/Title	Department	Phone	Email
Rebecca M. Ford, Mayor	City of Bevil Oaks	409-781-4440 cell 409-753-1475 office	b-ford63@aol.com
Greg Fountain EMC	Jefferson County	409-835-8757	gfountain@co.jefferson.tx.us
Jack Provost City Manager	City of Sour Lake	409-781-2525	jprovost@cityofsourlake.com
~~Ronald~~ Ron Burton	City of Port Arthur Dev Services Director	409-983-8136	ron.burton@portarthurTx.gov

2

SETRPC H2O PARTNERS

SETRPC HAZARD MITIGATION PLAN RISK ASSESSMENT
Planning / Stakeholder Workshop
South East Texas Regional Planning Commission, Beaumont, TX
August 24, 2016

Name/Title	Department	Phone	Email
MARK DAVIS / Police Chief - EMC	City of Silsbee	385-3714	mdavis@cityofsilsbee.com
Shawn Blackwell / Asst Chief / Asst. EMC	City of Silsbee	385-3714	sblackwell@cityofsilsbee.com
Steven Stafford / Engr. Superintendent	Jefferson Co. Engineering	835-8584	sstafford@co.jefferson.tx.us
STEVE CLARK - City of Lumberton		755-0031	SCLARK@gtbiz class.com
Rhonda Murphy	H2O Partners	512-571-2098	RMurphy@H2OpartnersUSA.com

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SETRPC H2O PARTNERS

SETRPC HAZARD MITIGATION PLAN RISK ASSESSMENT
Planning / Stakeholder Workshop
South East Texas Regional Planning Commission, Beaumont, TX
August 24, 2016

Name/Title	Department	Phone	Email
Jeffery L. McComb	EMC City of Kountze	409-790-8550	JLKCH@SBCGlobal.Net
Theresa Wigley, EMC	Hardin County	409-246-5119	Theresa.wigley@co.hardin.tx.us
Rick Thomisee	Mayor/EMC Rose Hill Acres	409-755-4940	rlthomiseeexmail.com
Chris Serres	Finance Director OCWC #1	409-769-2669	cserres@ocwc1.com
Shawn Blackwell	Silsbee, City of	409-651-8668	sblackwell@cityofsilsbee.com
Rachel Andrews	H2O Partners	512-983-0093	rachel@h2opartners.usa
Heidi Watson	H2O Partners	512-568-2259	heidi@h2opartnersusa.com

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Public Meeting Documentation

As discussed in Section 2, a series of three public meetings were held in conjunction with each of the SETRPC workshops. Documentation in the form of sign-in sheets for each of the meetings follows.

Figure F-4. SETPRC Public Kickoff Workshop, 03.30.16

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

REGISTRATION

MEETING: Mitigation Action Plan Public Meeting
LOCATION: SETRPC – Homer E Nagel Conference Room, 2210 Eastex Freeway, Beaumont, Texas 77703
DATE: Wednesday, March 30, 2016 5:30pm

PLEASE PRINT AND WRITE LEGIBLY

NAME:	TITLE:	AGENCY:	ADDRESS:	E-MAIL ADDRESS	PHONE NUMBER:
Rachel Andrews	Mitigation Specialist	H2O Partners	Austin, TX	rachel@h2opartners	512 983-0092
Heidi Watson	Mitigation Specialist	H2O Partners	Austin TX	heidi@h2opartnersusa.com	512-568-2259
Sue Landry	Director	SETRPC	2210 Eastex Bmt 77703	slandry@setrpc.org	409.924.7514
Kaylan Arceneaux	REP	SETRPC	2210 Eastex Frwy Bmt	KArceneaux@setrpc.org	409-924-7573

Figure F-5. SETPRC Public Risk Assessment Workshop, 06.01.16

SETRPC H2O PARTNERS

SETRPC HAZARD MITIGATION PLAN
Public Meeting
Hardin County Courthouse Commissioners' Courtroom, Kountze, TX
June 1, 2016

Name/Title	Department	Phone	Email
Wayne McDaniel,	County Judge – Hardin County	409-246-5120	Wayne.McDaniel
Theresa Wigley	Emerg Mgt Coor - Hardin Cnty	409-246-5119	Theresa.Wigley@co.hardin.tx.us
Sue Landry	SETRPC	409.924.7514	slandry@setrpc.org
Mike Custer	BEAUMONT EOC/PD	409-239-8233	mcuster@beaumonttexas.gov
Rachel Andrews	H2O Partners	512-983-0092	rachel@h2opartnersusa.com
Heidi Watson	H2O Partners	512 568 2259	heidi@h2opartnersusa.com

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Figure F-6. SETPRC Public Mitigation Actions Workshop, 08.24.16

SETRPC

H2O PARTNERS

SETRPC HAZARD MITIGATION PLAN
Public Meeting
Orange County Expo Center, Orange, TX
August 24, 2016

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Public Notices

Invitations to take the public survey and public notices to announce Jefferson County's participation in the Plan Update development process were posted on various websites and on Facebook as shown in Figures F-7 through F-12.

Figure F-7. Public Notice, Jefferson County Drainage District No. 7 Web Page, HMAP Update

Figure F-8. Public Notice, Jefferson County Office of Emergency Management Facebook Page, Survey Posting

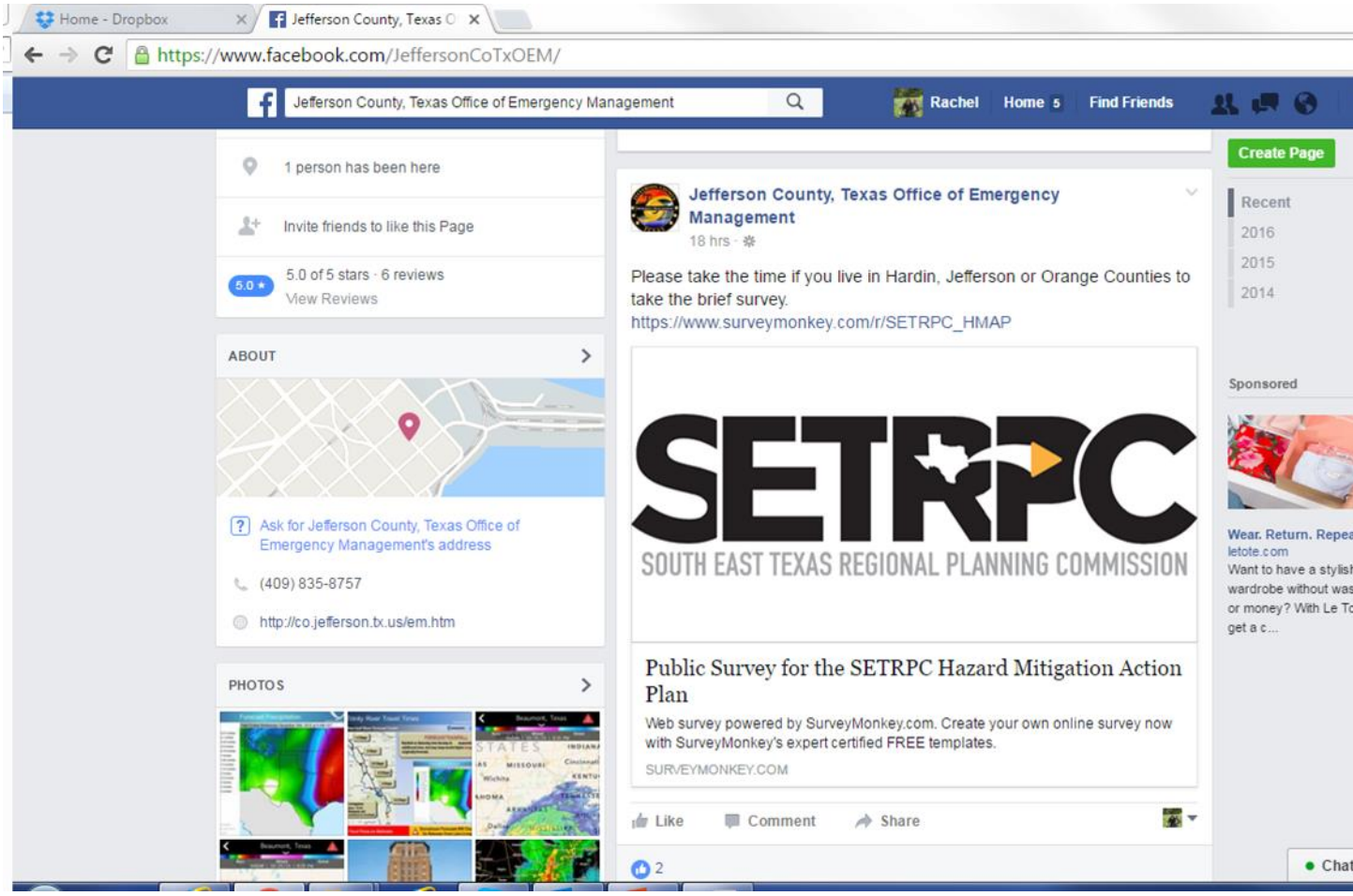

Figure F-9. Public Notice, South East Texas Regional Planning Commission Web Page, 03.30.16 Public Meeting

Figure F-10. Public Notice, South East Texas Regional Planning Commission Calendar Posting, 06.01.16 Public Meeting and Survey Invitations

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

2016

FUTURE CALENDAR

DATE:	EVENT:	LOCATION:	TIME:
MAY			
05/19	South East Texas Foster Grandparent In-service	Appomattox Club Harriot Street Beaumont	8:30 am – 12:30 pm
05/26	Jefferson-Orange-Hardin Regional Transportation Study (JOHRTS) Transportation Planning Committee	Homer E. Nagel Room	10:00 am
05/30	**Memorial Day**	**SETRPC Offices Closed**	
JUNE			
06/01	Mitigation Action Plan Public Meeting	Hardin County Courthouse 300 West Monroe Kountze	5:30 pm
06/08	Regional Coordination Steering Committee	MCM Elegante'	1:30 pm Ballroom D
06/09	Jefferson-Orange-Hardin Regional Transportation Study (JOHRTS) Technical Committee	Transportation Room	10:00 am
06/15	**Executive Committee**	**Homer E. Nagel Room**	**12:00 pm**
06/16	South East Texas Coalition for the Homeless	Homer E. Nagel Room	3:00 pm
06/23	South East Texas Foster Grandparent In-service	Appomattox Club Harriot Street Beaumont	8:30 am – 12:30 pm
JULY	**NO EXECUTIVE COMMITTEE SCHEDULED**		
07/04	Independence Day	SETRPC Offices Closed	
07/06	Community Services Block Grant Advisory Board	Homer E. Nagel Room	3:00 pm – 5:00 pm
07/21	South East Texas Coalition for the Homeless	Homer E. Nagel Room	3:00 pm
07/28	Jefferson-Orange-Hardin Regional Transportation Study (JOHRTS) Transportation Planning Committee *(Previously scheduled for 7/21/16)*	Homer E. Nagel Room	10:00 am

President – Kirk Roccaforte, Bridge City | 1st VP – Eddie Arnold, Jefferson County | 2nd VP – Chris Kirkendall, Hardin County
3rd VP – Barry Burton, Orange County | Treasurer – Rebecca Ford, Bevil Oaks | Secretary – Mary Adams, Kountze
Executive Director - Shaun P. Davis
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SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

Public Participation in Hazard Mitigation Action Plan

The South East Texas Regional Planning Commission (SETRPC) will hold the second Mitigation Action Plan public meeting on Wednesday, June 1, 2016 beginning at 5:30pm at the Hardin County Courthouse, Commissioner's Courtroom located at 300 West Monroe, Kountze, Texas 77625. The meeting will encourage the public's participation in the risk assessment portion of updating the Hazard Mitigation Action Plans for the South East Texas Region of Hardin, Jefferson and Orange Counties. The Federal Emergency Management Administration (FEMA) requires the plans be updated every five (5) years. The goal of the Mitigation Action Plans is to outline projects within the region that can mitigate/reduce/prevent the loss of life and property as a result of a natural disaster. The public is encouraged to attend. For more information, or if special accommodations are needed, please contact Sue Landry at **slandry@setrpc.org** or (409) 924-7514.

You can also participate by completing an online survey by going to:

https://www.surveymonkey.com/r/SETRPC_HMAP

Figure F-11. Public Notice, South East Texas Regional Planning Commission Web Page, 06.01.16 Public Meeting and Survey Invitations

SETRPC - Home Page 1 of 2

SETRPC
South East Texas Regional Planning Commission

Home | Departments | Programs | Executive Committee | About SETRPC | Contact Us

The South East Texas Regional Planning Commission welcomes you to SETRPC Online!

-- Ford Park

Home Tuesday, 03 May 2016

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2-1-1 TEXAS
Connecting People and Services

Main Menu
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- Ike Housing Information
- Calendar / Events
- Jobs
- Regional Directory
- Regional Maps
- Census Data
- RFP / IFB
- Links

RSS Newsfeed

STAN
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LAMAR UNIVERSITY

AAA Vendor Application/RFP

AAASET Service Definitions FFY 2015
Vendor APPLICATION FFY 2015-16
Potential Vendor Letter FFY 2015-16

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You can also participate by completing an online survey.
Take the survey.

GLO Commissioner's Coastal Resiliency Advisory Group

The Commissioner of the Texas General Land Office (GLO), in partnership with the Regional Councils of Government (COGs) located along the Texas Coast, is creating an advisory group that will serve as a forum for community leaders and stakeholders to provide input and recommendations on regional and statewide issues relating to coastal resiliency and recovery.

CCRA - Information and Guidance
CCRAG - Application

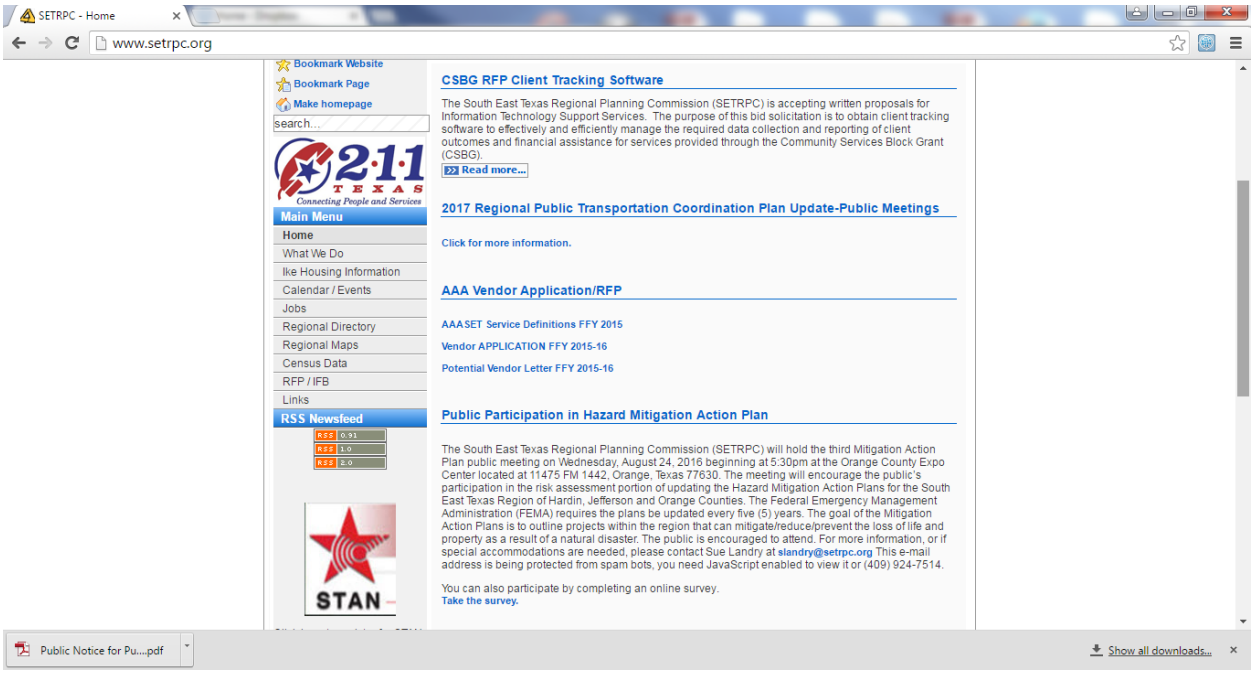
2016 Mayor and County Recognition Day For National Service (FGP, RSVP, and AARP Experienced Corps)

To show your support for the service the Volunteer Programs (FGP, RSVP, and AARP Experienced Corps) provide to our area children and community, each mayor and county official in Hardin, Jefferson, and Orange Counties are asked to complete the attached form. Also, a sample proclamation is provide for you in support of National Senior Corps Week. The celebration will be held on Thursday, May 5, 2016 at the Port Arthur Bob Bowers Civic Center from 8:30 a.m. – 12:30 p.m. This event is being sponsored by CHRISTUS DUBUIS of Beaumont and Port Arthur.

Profile Form

http://www.setrpc.org/ 5/3/2016

Figure F-12. Public Notice, SETRPC Webpage Posting, 08.24.16 Public Meeting and Survey Invitations



APPENDIX G: CAPABILITY ASSESSMENT

Overview

The Planning Team completed a Capability Assessment Survey at the beginning of the planning process. The completed Capability Assessment Checklist, included in Appendix G, provides information on existing policies, plans, and regulations for Jefferson County and the participating jurisdictions.

A Capability Assessment is an integral component of the Plan Update development process. The Capability Assessment serves to evaluate a community's existing planning and regulatory capabilities to support implementation of the Plan's Mitigation Strategy Objectives.

Each community has a unique set of capabilities including policies, programs, staff, funding, and other resources available to accomplish hazard mitigation objectives and reduce long-term vulnerability. The Planning Team identified existing capabilities in each jurisdiction that currently reduce disaster losses or could be used to reduce losses in the future, and capabilities that inadvertently increase risks in the community.

Jefferson County Multi-Jurisdictional Capability Assessment

CAPABILITY CHECKLIST	*Jefferson County*	*City of Beaumont*	*City of Bevil Oaks*	*City of China*	*City of Groves*	*City of Nederland*	*City of Nome*	*City of Port Arthur*	*City of Port Neches*	*SETRPC*
Planning/Regulatory Tool										
Hazard Mitigation Plan	X	X	X	X	X	X	X	X	X	X
Comprehensive Land Use Plan		X		X	X	X		X		
Stormwater Management Plan/Ordinance	X	X		X	X	X		X	X	
Emergency Operations Plan	X	X		X		X		X	X	X
Capital Improvements Plan	X	X		X		X		X	X	
Floodplain Management Plan	X	X	X	X	X	X		X	X	
Flood Response Plan	X	X		X	X				X	
Historic Preservation Plan	X	X						X		
Continuity of Operations Plan	X			X	X	X		X		X
Evacuation Plan	X	X		X	X	X		X		X
National Flood Insurance Program (NFIP)	X	X	X	X	X	X	X	X	X	
NFIP Community Rating System		X	X					X		
NFIP Floodplain Ordinance	X	X	X	X	X	X	X	X	X	
Building Code	X	X	X	X	X	X		X	X	
Fire Code		X	X	X	X	X		X	X	
Other Plans										
Administrative and Technical Capability										
Planners		X						X	X	X

CAPABILITY CHECKLIST	*Jefferson County*	*City of Beaumont*	*City of Bevil Oaks*	*City of China*	*City of Groves*	*City of Nederland*	*City of Nome*	*City of Port Arthur*	*City of Port Neches*	*SETRPC*
Engineers	X	X	X			X		X	X	
Emergency Manager	X	X	X		X	X		X	X	
Floodplain Manager	X	X	X		X	X		X	X	
Personnel skilled in Geographic Information Systems (GIS)	X	X						X		X
Resource development staff or grant writers	X	X						X	X	
Financial Resources										
Capital Improvement Programming	X	X							X	
Community Development Block Grants (CDBG)	X	X		X		X		X	X	
Stormwater Utility Fees				X						
Development Impact Fees										
Partnering Agreements or Intergovernmental Agreements		X		X				X		
Other										

APPENDIX

City of Taylor Landing Mitigation Plan Participation

NOTE: Taylor Landing is a Type C general law municipality located entirely within Jefferson County and can best plan for hazard mitigation by partnering on an interlocal basis with the County. It has a population of approximately 275 people, maintains a sewage treatment plant TCEQ licensed, a road system, a drainage system, and a garbage collection service. Since the incorporation of the City, it has done all of its hazard mitigation planning in cooperation with, under interlocal contract with, and subject to oversight by Jefferson County.

In 2006, the City of Taylor Landing and Jefferson County partnered to update the County's Local Mitigation Plan. This plan was adopted at the end of 2006. It also did so in 2012 when the plan was revised and in 2016 when the plan was revised again. Representatives of the City fully participated in this update process under the oversight of the South East Texas Regional Planning Commission. Therefore, the City seeks to be "added" to the Jefferson County Local Mitigation Plan Update.

According to the Federal Emergency Management Agency (FEMA), "Additional jurisdictions may be added to an existing, FEMA-approved, mitigation plan, only if the conditions below are met (if all three conditions are not met, the jurisdiction may develop its own mitigation plan).

1. The jurisdiction(s) asking to be included is located within the boundaries of, or adjacent to, the area covered by the multi-jurisdictional mitigation plan.
2. The organization that was responsible for preparing and submitting the multi-jurisdictional mitigation plan to the State and FEMA agrees with the addition of the requesting jurisdiction(s) to the mitigation plan.
3. When the multi-jurisdictional mitigation plan was developed, the risk assessment included an analysis of the major hazards, specifically the natural hazards that have the potential to impact the additional jurisdiction(s).

If these conditions can be met, there are two options that can be used to add additional jurisdictions to a FEMA-approved mitigation plan. Regardless of the option chosen, each jurisdiction joining a multi-hazard planning process and seeking to receive credit from FEMA for an approved mitigation plan must satisfy all of the Local Mitigation Plan requirements identified at 44 CFR §201.6.

The following actions must be taken to add new jurisdictions to the existing multi-jurisdictional mitigation plan and enable them to receive approval as part of the mitigation plan:

1. The requesting jurisdiction(s) must review the multi-jurisdictional hazard analysis and determine if there are any additional hazards that have not been addressed and threaten the jurisdiction(s). If none exist, the jurisdiction(s) must document their review process and state that no additional hazards exist. If the review reveals additional hazards, the jurisdiction(s) must analyze the risks it/they face associated with those hazards and include this analysis in their written appendix to the multi-jurisdictional mitigation plan. The existing risk assessment cannot be resubmitted without this additional documentation.
2. The requesting jurisdiction(s) must document agreement with the stated mitigation goals of the multi-jurisdictional mitigation plan. Additional goals specific to the requesting jurisdiction may be added. Each additional jurisdiction must also develop a list of proposed mitigation actions appropriate for that jurisdiction. These can include the common actions outline in the multi-jurisdictional mitigation plan, but must include specific mitigation actions for each profiled hazard the jurisdiction itself [sic].
3. The requesting jurisdiction(s) must document the involvement of both the general and the local government in the planning process in accordance with 44 CFR §201.6. The level of participation in the multi-jurisdictional mitigation plan must be consistent for the additional jurisdictions.

4. The annex or appendix, along with the multi-jurisdictional mitigation plan, and a letter of concurrence from the agency or organization responsible for the mitigation plan, must be submitted to the State for formal review. When the State finds the mitigation plan approvable, it will forward it to FEMA. When FEMA's review finds the mitigation plan 'approvable pending adoption,' the new jurisdiction can formally adopt the full mitigation plan and its jurisdiction-specific annex or appendix and submit the mitigation plan in final form through the State to FEMA for approval.

The mitigation plan approval date for the added jurisdictions will continue to be the date given by FEMA for the multi-jurisdictional mitigation plan. This means that the additional jurisdictions will have less than the entire 5-year plan approval window before they will need to engage in the required update for the full multi-jurisdictional mitigation plan" (FEMA, 2008, pp. 21-23).

The City believes its most important hazard mitigation step is to comply with FEMA NFIP building code restrictions for construction of structures. All structures of significance in the City are single family private residences and since 2009 all constructed structures have been required to obtain a building permit with an elevation certificate showing first level of habitation to be eighteen inches over BFE. No structure has been built since then without such a permit. The City maintains a flood plain administrator and building permit issue activity under the office of the Mayor.

The City owns and operates a sewage treatment plant, damaged by high waters in Ike in 2008. It has since kept all water sensitive components high and during Harvey damage was significantly reduced.

The City has since 2009 actively participated in the STEAR 211 program registering all individuals requiring evacuation assistance. There is a STEAR designated coordinator who has completed the State training program.

The City has regularly attended meetings of the Sabine Neches Chiefs Association to ensure coordination with regional emergency management. It has executed an interlocal agreement with Jefferson County whereby the Jefferson County EMC is also the City EMC and the City has adopted the Jefferson County Emergency Management Plan.

The City has promulgated all emergency management communications to its residents to ensure they are timely informed of potential emergencies.

All coordination activities with the County and with the SETRPC have been delegated to the Mayor who has accomplished all such coordination. The Mayor as Emergency Management Director has completed all NIMS training and has ensured full NIFP compliance consistent with adopted City ordinances.

These activities have included in County-wide and City specific risk analysis, the primary risk to the City being rising Taylor Bayou because of either rain events or hurricane surge. The surge analysis was the experience of the City during Ike, the largest surge event in recent Texas history and the rain analysis

was proven accurate after Harvey with no substantial damage to any City structure. Harvey did not produce a repeated substantial damage event.

All other risks possibly applicable to the City have been analyzed by the County and the SETRPC and the City has studied these risks for applicability to the City.

The City will maintain this Appendix by continued meeting with, coordination with and discussion with Jefferson County Emergency Management and the SETRPC. Any actions required by those plans applicable to the City will be effected.

During Hurricane Ike, September 2008, the City experienced one severe NFIP loss and that structure was demolished. During Hurricane Harvey, September 2017, the City experienced no severe and no severe repetitive NFIP losses.

The City has commenced steps necessary for Texas to review this adoption and to recommend that FEMA recognize the adoption.