CADDO

PARISH HAZARD MITIGATION UPDATE – 2016

This Page Left Intentionally Blank

CADDO PARISH

HAZARD MITIGATION PLAN UPDATE

Prepared for:

Caddo Parish

Prepared by:

Stephenson Disaster Management Institute

Ms. Lauren Stevens
Mr. Chris Rippetoe
Mr. Joseph Harris
Mr. Brant Mitchell
Dr. Carol J. Friedland, P.E., Ph.D., C.F.M.
Mr. Stuart Nolan

Louisiana State University – LA Emerging Technology Center
Baton Rouge, LA 70803

October 24, 2017

This Page Left Intentionally Blank

ACKNOWLEDGMENTS

This 2016 Caddo Parish Hazard Mitigation Plan Update was coordinated by the Caddo Parish Hazard Mitigation Plan Update Steering Committee, in collaboration with the participating jurisdictions as well as community stakeholders and the general public. The participating jurisdictions are made up of the following communities:

Unincorporated Caddo Parish
Village of Belcher
Town of Blanchard
Village of Gilliam
Town of Greenwood
Village of Hosston
Town of Ida
Town of Mooringsport
Town of Oil City
Village of Rodessa
City of Shreveport
Town of Vivian

Special thanks is directed to all of those who assisted in contributing feedback and expertise on this document, especially the Caddo Parish Office of Homeland Security and Emergency Management. These combined efforts have made this project possible. The Caddo Parish Steering Committee consists of the following individuals, who are credited in the creation of this document:

John Fourcade	Belcher Police Department
Major Fant	Belcher Police Department
Debra Smith	Blanchard
Gary Presswood	Blanchard Police Department
Bryant Williams	Caddo Fire District 4
Keith Harris	Caddo Fire District 5
Damon Johnson	Caddo Fire District 6
Danny Richardson	Caddo Fire District 7
Jay Paulette	Caddo Fire District 8
Ali Mustapha	Caddo Levee Board
James Demouchet	Caddo Parish
Tim Weaver	Caddo Parish
Randy Lucky	Caddo Parish Commission
Woody Wilson	Caddo Parish Commission
Dan Cotten	Caddo Parish Fire District 1
Jeff Akes	Caddo Parish Fire District 1
Ernest Mitchell	Caddo Parish Fire District 3
DE Stevens	Caddo Parish Sheriff's Office
Steve Prator	Caddo Parish Sheriff's Office
Lisa Carmack	Caddo Parish Sheriff's Office OHSEP
Robert Jump	Caddo Parish Sheriff's Office OHSEP
Tony LeBlanc	Caddo Parish Sheriff's Office OHSEP
Barbara Featherson	City of Shreveport
Brian Crawford	City of Shreveport
Patrick Furlong	City of Shreveport

Ollie Tyler	City of Shreveport
Shayne Gibson	Greenwood Police Department
Helen Adger	Village of Gilliam
Whitlow Giles	Hosston Police Department
David Austin	Ida Police Department
Knox Andress	Louisiana Poison Control Center
Tabitha Dendy	Mooringsport
Tom Bass	Oil City Police Department
Kisha McDow	Oil City Town Hall
Patrick Card	Overton Brooks VA
Cecil Littlejohn	Rodessa Police Department
Scott Wolverton	Shreveport Fire Department
Skip Pinkston	Shreveport Fire Department
Bill Goodin	Shreveport Police Department
Willie Shaw	Shreveport Police Department
Ryan Nelson	Vivian Police Department

The 2016 Caddo Parish Hazard Mitigation Plan Update was written by the Stephenson Disaster Management Institute, Louisiana State University. Further comments should be directed to the Caddo Parish Office of Homeland Security and Emergency Preparedness: 1144 Texas Avenue, Shreveport, LA 71101.

Contents

This Page Left Intentionally Blank

1. Introduction

Hazard Mitigation is defined as sustained actions taken to reduce or eliminate long-term risk from hazards and their effects. Hazard Mitigation Planning is the process through which natural hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are determined, prioritized, and implemented.

In that regard, this plan (a) documents the Caddo Parish Hazard Mitigation Plan Update process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make Caddo Parish less vulnerable and more disaster resistant. It also includes mitigation project scoping to further identify the extent of work, estimated costs, and implementation timing requirements of proposed selected mitigation projects. Information in the plan will be used to help guide and coordinate mitigation activities and local policy decisions affecting future land use.

The Caddo Parish Hazard Mitigation Plan is a multi-jurisdictional plan that includes the following jurisdictions which participated in the planning process:

- Unincorporated Caddo Parish
- Village of Belcher
- Town of Blanchard
- Village of Gilliam
- Town of Greenwood
- Village of Hosston
- Town of Ida
- Town of Mooringsport
- Town of Oil City
- Village of Rodessa
- City of Shreveport
- Town of Vivian

The Federal Emergency Management Agency (FEMA), now under the Department of Homeland Security, has made reducing losses from natural disasters one of its primary goals. The Hazard Mitigation Plan (HMP) and subsequent implementation of recommended projects, measures, and policies is the primary means to achieving these goals. Mitigation planning and project implementation has become even more significant in a post-Katrina and Rita environment in Louisiana.

This Hazard Mitigation Plan is a comprehensive plan for disaster resiliency in Caddo Parish. The parish is subject to natural hazards that threaten life and health and have caused extensive property damage. To better understand these hazards and their impacts on people and property, and to identify ways to reduce those impacts, the parish's Office of Homeland Security and Emergency Preparedness undertook this Natural Hazards Mitigation Plan.

"Hazard mitigation" does not mean that all hazards are stopped or prevented. It does not suggest complete elimination of the damage or disruption caused by such incidents. Natural forces are powerful and most natural hazards are well beyond our ability to control. Mitigation does not mean quick fixes. It is a long term approach to reduce hazard vulnerability. As defined by FEMA, "hazard mitigation" means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event.

Why this plan? Every community faces different hazards and every community has different resources and interests to bring to bear on its problems. Because there are many ways to deal with natural hazards and many agencies that can help, there is no one solution or cookbook for managing or mitigating their effects.

Planning is one of the best ways to correct these shortcomings and produce a program of activities that will best mitigate the impact of local hazards and meet other local needs. A well-prepared plan will ensure that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with other goals and programs, preventing conflicts and reducing the costs of implementing each individual activity.

Mitigation activities need funding. Under the Disaster Mitigation Act of 2000 (42 USC 5165), a mitigation plan is a requirement for federal mitigation funds. Therefore, a mitigation plan will both guide the best use of mitigation funding and meet the prerequisite for obtaining such funds from FEMA. FEMA also recognizes plans through its Community Rating System, a program that reduces flood insurance premiums in participating communities. This program is described at the end of this chapter.

This plan identifies activities that can be undertaken by both the public and the private sectors to reduce safety hazards, health hazards, and property damage caused by natural hazards. It fulfills the federal mitigation planning requirements, qualifies for Community Rating System credit, and provides the parish and its municipalities with a blueprint for reducing the impacts of these natural hazards on people and property.

Location, Demography, and Economy

Location

Caddo Parish is located in the extreme northwest corner of Louisiana and possesses a total area of 937 square miles (599,685 acres). Its physiography is characterized by rolling and hilly uplands, generally sloping intermediate terraces, and bottom lands within the main valleys.

Its southern border touches both Desoto and Red River Parishes, and the Red River forms its eastern border with Bossier Parish. Caddo Parish shares its northern border with the State of Arkansas (Miller County) and its western border with the State of Texas (Cass, Marion, Harrison, and Panola Counties). The City of Shreveport is the Parish seat.

Figure 1-1: Location of Caddo Parish within the State of Louisiana

The major roadways carrying northbound and southbound traffic through Caddo Parish include Interstate Highway 49 (I-49), United States Highway (U.S.) 171 and U.S. 71. Additional north-south traffic is carried by LA 1, which bisects Caddo Parish from its far northwestern corner to its southeastern corner. Most of the incorporated communities in Caddo Parish are situated on or near U.S. 71 or LA 1. Additionally, LA 169 heads south from Caddo Lake along the western edge of the Parish where it terminates at Logansport in Desoto Parish.

I-20 is the primary road traveling east-west, although there are many secondary state and parish roads that facilitate travel in an east-west direction. I-220 splits off I-20 and circles around Shreveport, merging with I-20 again east of Bossier City in Bossier Parish.

Dominant landscape features for the majority of Caddo Parish consist of wooded areas, rolling hills, and open farmland. However, a significant amount of land around the City of Shreveport is urban or suburban. The Red River, which forms the eastern border of the parish, is complemented by other bayous and lakes in the parish. These include Pierre, Black, Cypress, Kelly, Paw Paw, and Wallace Bayous; and Caddo, Cross, Wallace, and Black Bayou Lakes. Average elevation in the Parish is about 210 feet above sea level.

Caddo Parish is located in Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 7.

As noted above, Caddo Parish is located in the northwestern region of Louisiana.

Figure 1-2: Louisiana Homeland Security Regions

Table 1-1: Caddo Parish Population
(Source: U.S. Census Bureau)

	2010 Census	2014 Census	Current Year (If Available)	Percent Change 2010 - 2014
Total Population	254,969	252,603	____	-0.90%
Population Density (Pop/Sq. Mi.)	290.2	____	____	____
Total Households	112,028	112,696	____	____

Economy

Initially a center of steamboat commerce due to its location on the banks of the Red River, the City of Shreveport has always been the driving force of the Caddo Parish economy. This became even more evident during its rise to prominence as a major player in the United States oil business. After the oil and gas industry downturn in the 1980's, Shreveport has largely transitioned to a service economy. In particular, the area has seen a rapid growth in the gaming industry, hosting various riverboat gambling casinos.

However, there was a revival in the Energy sector of the Caddo Parish economy with the exploration of the Haynesville Shale, a rock formation that underlies large parts of southwestern Arkansas, northwest Louisiana, and East Texas. At its peak, Haynesville gas production peaked at 7.2 billion cubic feet per day. As of June 2015, the U.S. Energy Information Administration estimated that the Haynesville Shale was producing approximately 6.74 billion cubic feet per day, almost 10% of all the natural gas produced in the United States.

Shreveport is also a major medical center of the region and state. The Louisiana State University Health Sciences Center Shreveport operates at expanded facilities once used by the former Confederate Memorial Medical Center. Major hospitals include Christus Schumpert, Willis Knighton, and the Shriners Hospital for Children. Industry data for business patterns in Caddo Parish can be found in the table below:

Table 1-2: Business Patterns in Caddo Parish
(Source: http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl)

Business Description	Number of Employees	Number of Establishments	Annual Payroll ($1,000)
Retail Trade	285	27	6,334
Manufacturing	32	6	974
Health Care and Social Assistance	642	26	20,458
Mining, Quarrying, Oil and Gas Extraction	20-99	2	___
Transportation and Warehousing	20	6	1,076
Construction	20-99	7	___
Real Estate and Rental and Leasing	0-19	3	___
Wholesale Trade	20-99	4	___
Other Services (except Public Administration)	103	24	1,609
Accommodation and Food Services	140	9	1,542
Financial and Insurance	97	10	3,623
Professional, Scientific, and Technical Services	20-99	30	2,106
Information	0-19	3	350
Arts, Entertainment, and Recreation	0-19	3	1,542
Management of Companies and Enterprises	20-99	2	___
Agriculture, Forestry, Fishing and Hunting	76	13	1,989
Utilities	20-99	5	___

While nature has presented the parish with a variety of hazards, the parish has the human resources that can face those hazards and manage the impact they have on people and property. This plan will discuss hazards affecting Caddo Parish. Hazard Profiles (see Section Two) contain detailed information on the likelihood of occurrence, possible magnitude or intensity, areas of the parish that could be affected, and conditions that could influence the manifestation of the hazard.

Hazard Mitigation

To fully understand hazard mitigation efforts in Caddo Parish and throughout Louisiana, it is first crucial to understand how hazard mitigation relates to the broader concept of emergency management. In the early 1980s, the newly-created Federal Emergency Management Agency (FEMA) was charged with developing a structure for how the federal, state, and local governments would respond to disasters. FEMA developed the *four phases of emergency management*, an approach which can be applied to all disasters. The four phases are as follows:

- **Hazard Mitigation**—described by FEMA and the Disaster Mitigation Act of 2000 (DMA 2000) as "any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event." The goal of mitigation is to save lives and reduce property damage. Besides significantly aiding in the obviously desirous goal of saving human lives, mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities and minimize community disruption, helping communities return to usual daily living in the aftermath of disaster. Examples of mitigation involve a range of activities and actions including the following: land-use planning, adoption and enforcement of building codes, and construction projects (e.g., flood proofing homes through elevation, or acquisition or relocation away from floodplains).
- **Emergency Preparedness**—includes plans and preparations made to save lives and property and to facilitate response operations before a disaster event.
- **Disaster Response**—includes actions taken to provide emergency assistance, save lives, minimize property damage, and speed recovery immediately following a disaster.
- **Disaster Recovery**—includes actions taken to return to a normal or improved operating condition following a disaster.

Figure 1-3 illustrates the basic relationship between these phases of emergency management. While hazard mitigation may occur both before and after a disaster event, it is significantly more effective when implemented before an event occurs. This is one of the key elements of this plan and its overall strategy: reduce risk before disaster strikes in order to minimize the need for post-disaster response and recovery.

As *Figure 1-3* demonstrates, mitigation relies on updating in the wake of disaster. This can give the appearance that mitigation is only reactive rather than proactive. In reality, however, post-disaster revision is a vital component of improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.

Figure 1-3: The Four Phases of Emergency Management and their Relation to Future Hazard Mitigation
(Source: Louisiana State Hazard Mitigation Plan 2014)

Unfortunately, this cycle can be painful for a community. For instance, the risks of disasters that could create catastrophic incidents in Louisiana were thought to be relatively well-understood prior to 2005. However, the impact of the 2005 hurricane season on the Gulf Coast region of the United States prompted a new level of planning and engagement related to disaster response, recovery, and hazard mitigation. Hurricanes Katrina and Rita hit three weeks apart and together

caused astonishing damage to human life and to property. The two storms highlighted a hurricane season that spawned 28 storms—unparalleled in American history. The 2005 hurricane season confirmed Louisiana's extreme exposure to natural disasters and both the positive effects and the concerns resulting from engineered flood-protection solutions.

The catastrophic events of 2005 had profound impacts on emergency management and hazard mitigation throughout Louisiana. As detailed later in this document, significant funding has been made available to the State of Louisiana and its parishes for the purpose of hazard mitigation planning. The storms also raised awareness of the importance of hazard mitigation among decision-makers and the general population, which has been particularly important since natural hazards will likely be increasing in frequency, magnitude, and impact in the coming years due to climate change.

General Strategy

During the last update to the Louisiana State Hazard Mitigation Plan, the State Hazard Mitigation Team (SHMT) began a long-term effort to better integrate key components of all plans with hazard mitigation implications in Louisiana to ensure that the programs, policies, recommendations, and implementation strategies are internally consistent. As each of these documents has been adopted by various agencies within the state, the SHMT has worked to incorporate this information into the decision process.

Part of the ongoing integration process is that GOHSEP encourages the parishes and the local municipalities with independent hazard mitigation plans to utilize the same plan format and methodologies as the State Hazard Mitigation Plan in order to create continuity of information from local to state mitigation plans and programs.

The 2016 Caddo Parish Hazard Mitigation Plan maintains much of the information from the 2006 and 2011 plan versions, but it now reflects the order and methodologies of the 2011 Louisiana State Hazard Mitigation Plan. The sections in the 2011 Caddo Hazard Mitigation Plan were as follows:

- Section One Introduction
- Section Two Parish Profile
- Section Three Planning Process
- Section Four Risk Assessment
- Section Five Mitigation Strategy
- Section Six Plan Maintenance
- Section Seven Action Plan
- Tables
- Figures
- Appendices

This plan update now also coheres with the Plain Writing Act of 2010, which requires federal agencies to use clear communication that is accessible, consistent, understandable, and useful to the public. While the state of Louisiana and its political subdivisions are not required to meet such standards, the Act aligns with best practices in hazard mitigation. Since successful hazard mitigation relies on full implementation and cooperation at all levels of government and community, a successful hazard mitigation plan must also be easily used at all of these levels. Nevertheless, the Caddo Parish Hazard Mitigation Steering Committee was not ignorant or dismissive of the successful analysis and mitigation planning executed in previous plan updates. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

2016 Plan Update

This 2016 plan update proceeds with the previous goals of the Caddo Parish Hazard Mitigation Plan. The current goals are as follows:

- Improve/enhance critical public facilities and equipment to ensure operability before, during, and after hazard events
- Enhance public safety and protect lives from dangers of natural hazards
- Facilitate sound development in the parish to reduce or eliminate the potential impact of hazards
- Enhance public awareness of natural hazards and understanding of disaster preparedness

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the Spatial Hazard Events and Losses Database for the United States (SHELDUS) was used as a data source for hazard identification because it incorporates all storm event data from the National Climatic Data Center (NCDC) Storm Events Database used in previous plans, as well as storm event data from other sources including the NOAA Storm Prediction Center, National Hurricane Center, and U.S. Fire Administration. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. Second, instead of eleven, separate sections for numerous tables, maps, and appendices, the present plan update has four sections and five appendices. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of repetition between sections from the previous plan updates. The 2016 plan update is organized generally as follows:

- Section One Introduction
- Section Two Hazard Identification and Parish-Wide Risk Assessment
- Section Three Capability Assessment
- Section Four Mitigation Strategy
- Appendix A Planning Process
- Appendix B Plan Maintenance
- Appendix C Essential Facilities
- Appendix D Plan Adoption
- Appendix E State Required Worksheets

Table 1-4: Plan Crosswalk

2011 Plan	Revised Plan (2016)
Section 1: Introduction	Section 1: Introduction
Section 2: Parish Profile	Section 1: Introduction
Section 3: Planning Process	Appendix A: Planning Process
Section 4: Risk Assessment	Section 2: Hazard Identification and Risk Assessment, Section 3: Capability Assessment
Section 5: Mitigation Strategy	Section 4: Mitigation Strategy
Section 6: Plan Maintenance	Appendix B: Plan Maintenance
Section 7: Action Plan	Section 4: Mitigation Strategy
Appendices	Appendices A, B, C, D, E

Despite changes in this plan update, the plan remains consistent in its emphasis on the few types of hazards that pose the most risk to loss of life, injury, and property in Caddo Parish and its municipalities. The extent of this risk is dictated primarily by its geographic location. Most significantly, Caddo Parish remains at high risk of water inundation from various sources, including flooding, tornadoes, and tropical cyclone activity. All of the parish is also at high risk of damages from high winds and wind-borne debris caused by various meteorological phenomena. Other hazards threaten the parish and/or its municipalities, although not to such great degrees and not in such widespread ways. In all cases, the relative social vulnerability of areas threatened and affected plays a significant role in how governmental agencies and their partners (local, parish, state, and federal) prepare for and respond to disasters.

Mitigation efforts related to particular hazards are highly individualized by jurisdiction. Flexibility in response and planning is essential. The most important step forward to improve hazard management capability is to improve coordination and information sharing between the various levels of government regarding hazards.

2. Hazard Identification and Parish-Wide Risk Assessment

This section assesses the various hazard risks that Caddo Parish faces in order to identify a strategy for mitigation. Having identified the categories of hazards, emergencies, disasters, and catastrophes, this section details the major climatological and natural/human-influenced hazards by (1) defining them, (2) explaining how they are measured, (3) describing their geographic extent, (4) surveying their previous occurrences, and (5) evaluating their future likelihood of occurrences.

The table below provides an overview of the hazards that had been previously profiled in the Caddo Parish Hazard Mitigation Plan published in 2011, as well as the hazards that were identified in the state's 2014 Hazard Mitigation Plan that were considered to be of high or medium risk for the parish by the state. Those hazards identified as high or medium risk by the state or previously identified as a risk by the parish, have been determined to provide a risk to the parish and will be profiled in this section.

Table 2-1: Hazard Profile Summary

Hazard	Profiled in Last Plan	Considered Medium or High Risk in the State's HM Plan	Profiled in the 2016 Update
Subsidence/Coastal Land Loss			
Drought	X		X
Earthquakes	X		*
Expansive Soils			
Fog			
Flooding	X	X	X
Extreme Heat	X		X
Sinkholes			
Thunderstorms (Hail, Lightning, & Wind)	X	X	X
Tornadoes	X	X	X
Tropical Cyclones	X	X	X
Tsunamis			
Wildfires	X		X
Winter Storms	X		X
Dam Failure	X		+
Levee Failure	X		+

* Hazard was profiled but discounted

+ Data deficiency

Prevalent Hazards to the Community

While many of the hazards identified in *Table 2-1* occur in the parish, their occurrence was not merited for further study by the planning committee. The determination was made to focus attention and resources on the most prevalent hazards, which include the hazards previously profiled. Earthquakes were discounted due to the hazard having no impact on the parish. Dam and levee failure claim a data deficiency.

The following hazards have been selected to be included in this risk assessment:

a) Drought
b) Earthquakes
c) Extreme Heat
d) Flooding (backwater, riverine, localized stormwater event)
e) Thunderstorms (hail, lightning, wind)
f) Tornadoes
g) Tropical Cyclones (flooding and high winds)
h) Wildfires
i) Winter Storms
j) Dam Failure
k) Levee Failure

For analysis purposes, the impact of the critical and prevalent hazards is summarized as follows:

- Flooding from rivers and waterways, rain storms, tropical cyclones, and hurricanes in the following forms:
  a) Riverine
  b) Stormwater
  c) Surge
  d) Backwater flooding (as the result of river flooding and surge)
- High wind damage most commonly resulting from hurricanes, thunderstorms, and tornadoes
- Property and crop damage resulting from drought, extreme heat, and wildfires

The potential destructive power of tropical cyclones and flooding were determined to be the most prevalent hazards to the parish. Twelve of the sixteen Presidential Declarations Caddo Parish has received resulted from either tropical cyclones (5 declarations) or flooding (7 declarations), which validates these as the most significant hazards. Therefore, the issues of hurricanes and floods will both serve as the main focus during the mitigation planning process. Hurricanes present risks from the potential for flooding, primarily resulting from storm surge, and high wind speeds. While storm surge is considered the hazard with the most destructive potential, the risk assessment will also asses non-storm surge flooding as well. Flooding can also occur from non-hurricane events, as flash floods are a common occurrence due to heavy rainfall.

Hurricanes, tropical storms, and heavy storms are fairly common occurrences, and resultant wind damage is of utmost concern. Damage from high winds can include roof damage, destruction of homes and commercial buildings, downed trees and power lines, and damage and disruption to services caused by heavy debris. A wind map for Caddo Parish is included in the hurricane risk assessment.

Caddo Parish is also susceptible to tornadoes. Tornadoes can spawn from tropical cyclones or severe weather systems that pass through Caddo Parish. High winds produced by tornadoes have the potential to destroy residential and commercial buildings, as well as create wind-borne objects from the debris produced by the destruction of the natural and human environment, such as building materials and trees.

Previous Occurrences

Table 2-2 summarizes federal disaster declarations for Caddo Parish since 1965. Information includes names, dates, and types of disaster.

Table 2-2: Caddo Parish Major Disaster Declarations

Disaster Declaration Number	Date	Type of Disaster
3031	2/22/1977	Drought and Freezing
804	11/30/1987	Tornadoes and Flooding
829	5/20/1989	Severe Storms and Flooding
902	4/23/1991	Severe Storms and Flooding
904	5/3/1991	Severe Storms, Tornadoes, and Flooding
1012	2/28/1994	Severe Winter Ice Storm
1269	4/9/1999	Severe Storms, Tornadoes, and Flooding
1357	1/12/2001	Severe Winter Ice Storm
3172	2/1/2003	Loss of Space Shuttle Columbia
1548	9/15/2004	Tropical Cyclone – Hurricane Ivan
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Rita
1786	9/2/2008	Tropical Cyclone – Hurricane Gustav
4080	8/19/2012	Tropical Cyclone – Hurricane Isaac
4228	7/13/2015	Severe Storms and Flooding
4263	3/13/2016	Severe Storms and Flooding

Probability of Future Hazard Events

The probability of a hazard event occurring in Caddo Parish is estimated in the table on the following page. The percent chance of an event happening during any given year was calculated by posting past events and dividing by the time period. Unless otherwise indicated, the time period used to access probability followed the method used in the State of Louisiana's most current Hazard Mitigation Plan. The primary source for historical data used throughout the plan is the Spatial Hazards Events and Losses Database (SHELDUS), which provides historical hazard data from 1960 to 2014. In staying consistent with the state plan, the SHELDUS database was evaluated for the last twenty-five years (1990-2015) in order to determine future probability of a hazard occurring. While the 25-year record used by the State was adopted for the purpose of determining the overall probability, in order to assist with determining estimated losses, unless otherwise stated, the full 54-year record was used when Hazus-Multi-Hazard (MH) wasn't available to determine losses. This full record was used to provide a more extensive record to determine losses. All assessed damages were adjusted for inflation in order to reflect the equivalent amount of damages with the value of the U.S. dollar today. In addition, the National Climatic Data Center (NCDC) was also used to help identify hazard data specific to the municipalities. This was used due to it containing specific data for cities, whereas the data within SHELDUS is limited to parishes.

The following table shows the annual probability for each hazard occurring across the parish and in separate jurisdictions:

Table 2-3: Probability of Future Hazard Reoccurrence

Hazard	Probability					
	Caddo Parish (Unincorporated)	Belcher	Blanchard	Gilliam	Greenwood	Hosston
Drought	12%	12%	12%	12%	12%	12%
Earthquake	<1%	<1%	<1%	<1%	<1%	<1%
Extreme Heat	100%	100%	100%	100%	100%	100%
Flooding	100%	36%	32%	32%	48%	32%
Thunderstorms (Hail)	100%	100%	100%	100%	100%	100%
Thunderstorms (Lightning)	100%	100%	100%	100%	100%	100%
Thunderstorms (Wind)	100%	100%	100%	100%	100%	100%
Tornadoes	84%	84%	84%	84%	84%	84%
Tropical Cyclones	12%	12%	12%	12%	12%	12%
Wildfires	8%	8%	8%	8%	8%	8%
Winter Storms	40%	40%	40%	40%	40%	40%
Dam Failure	<1%	<1%	<1%	<1%	<1%	<1%
Levee Failure	<1%	<1%	<1%	<1%	<1%	<1%

Table 2-3: Probability of Future Hazard Reoccurrence (Continued)

Hazard	Probability					
	Ida	Mooringsport	Oil City	Rodessa	Shreveport	Vivian
Drought	12%	12%	12%	12%	12%	12%
Earthquake	<1%	<1%	<1%	<1%	<1%	<1%
Extreme Heat	100%	100%	100%	100%	100%	100%
Flooding	32%	44%	40%	36%	100%	48%
Thunderstorms (Hail)	100%	100%	100%	100%	100%	100%
Thunderstorms (Lightning)	100%	100%	100%	100%	100%	100%
Thunderstorms (Wind)	100%	100%	100%	100%	100%	100%
Tornadoes	84%	84%	84%	84%	84%	84%
Tropical Cyclones	12%	12%	12%	12%	12%	12%
Wildfires	8%	8%	8%	8%	8%	8%
Winter Storms	40%	40%	40%	40%	40%	40%
Dam Failure	<1%	<1%	<1%	<1%	<1%	<1%
Levee Failure	<1%	<1%	<1%	<1%	<1%	<1%

As shown in *Table 2-3*, thunderstorm winds, extreme heat, lightning, and hailstorms for the entire planning area along with flooding in the unincorporated areas of the parish and the incorporated area of Shreveport, have the highest annual chance of occurrence in the parish (100%). Flood events in the remaining incorporated areas have a slightly lower chance of occurring annually. Tornadoes have an 84% annual chance of reoccurrence, followed by winter storms (40%), tropical cyclones (12%), and drought (12%). Wildfires (8%) have the lowest annual chance of occurrence in Caddo Parish. Earthquakes were discounted since the annual chance of occurrence was calculated at less than 1%, and based on the available data, there will be no impact on Caddo Parish of any of its jurisdictions. Dam and levee failure claim a data deficiency.

Inventory of Assets for the Entire Parish

As part of the Risk Assessment, the planning team identified essential facilities throughout the parish. Several methods were used to assist in identifying all essential facilities, including field data collected by the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) on critical infrastructure from a previous hazard mitigation project.

Within the entire planning area, there is an estimated value of $44,010,377,000 in structures throughout the parish. The tables below provide the total estimated value for each type of structure by occupancy.

Table 2-4: Estimated Total of Potential Losses throughout Caddo Parish

Occupancy	Caddo Parish	Unincorporated Caddo	Belcher	Blanchard	Gilliam
Agricultural	$103,862,000	$35,840,000	$1,414,000	$1,356,000	$0
Commercial	$8,972,039,000	$662,640,000	$1,610,000	$23,946,000	$242,000
Government	$294,753,000	$30,120,000	$260,000	$172,000	$174,000
Industrial	$2,283,078,000	$401,807,000	$5,851,000	$12,786,000	$558,000
Religion	$1,389,862,000	$246,256,000	$3,368,000	$13,952,000	$882,000
Residential	$30,621,815,000	$5,061,107,000	$24,275,000	$308,897,000	$15,259,000
Education	$344,968,000	$27,870,000	$396,000	$7,378,000	$0
Total	$44,010,377,000	$6,465,640,000	$37,174,000	$368,487,000	$17,115,000

Table 2-4: Estimated Total of Potential Losses (Continued)

Occupancy	Greenwood	Hosston	Ida	Mooringsport
Agricultural	$536,000	$0	$154,000	$350,000
Commercial	$45,964,000	$2,642,000	$1,052,000	$2,816,000
Government	$5,062,000	$172,000	$346,000	$1,388,000
Industrial	$33,749,000	$3,259,000	$916,000	$2,246,000
Religion	$16,080,000	$5,716,000	$2,360,000	$7,082,000
Residential	$312,782,000	$32,148,000	$19,803,000	$84,807,000
Education	$0	$976,000	$396,000	$4,088,000
Total	$414,173,000	$44,913,000	$25,027,000	$102,777,000

Table 2-4: Estimated Total of Potential Losses (Continued)

Occupancy	Oil City	Rodessa	Shreveport	Vivian
Agricultural	$0	$0	$64,074,000	$138,000
Commercial	$22,010,000	$1,566,000	$8,125,557,000	$81,994,000
Government	$4,908,000	$864,000	$248,373,000	$2,914,000
Industrial	$34,066,000	$786,000	$1,741,994,000	$45,060,000
Religion	$6,940,000	$2,354,000	$1,062,372,000	$22,500,000
Residential	$86,314,000	$17,217,000	$24,306,150,000	$353,056,000
Education	$3,784,000	$458,000	$294,886,000	$4,736,000
Total	$158,022,000	$23,245,000	$35,843,406,000	$510,398,000

Essential Facilities of the Parish

The following figures show the locations and names of the essential facilities within the parish:

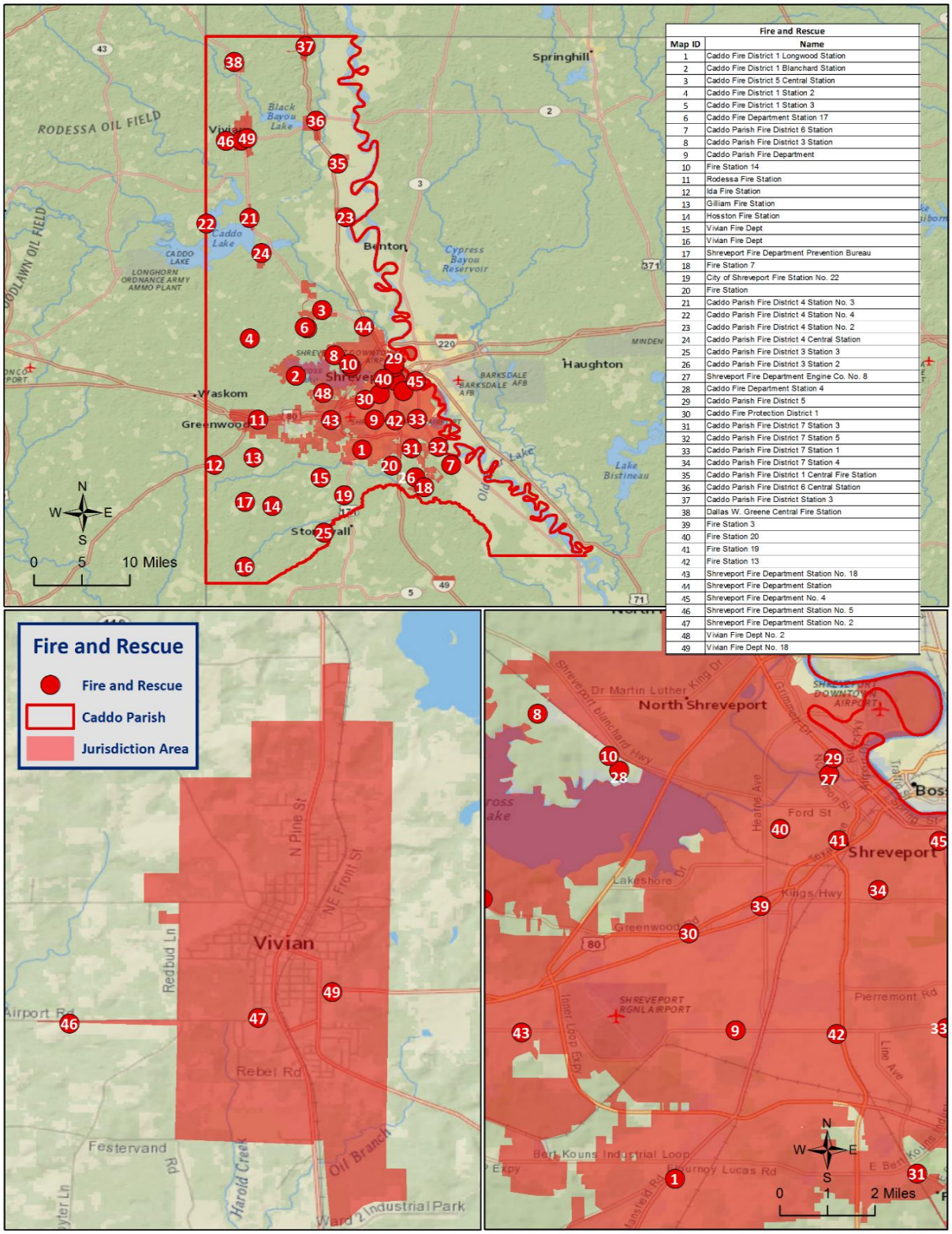

Figure 2-1: Fire and Rescue Facilities in Caddo Parish

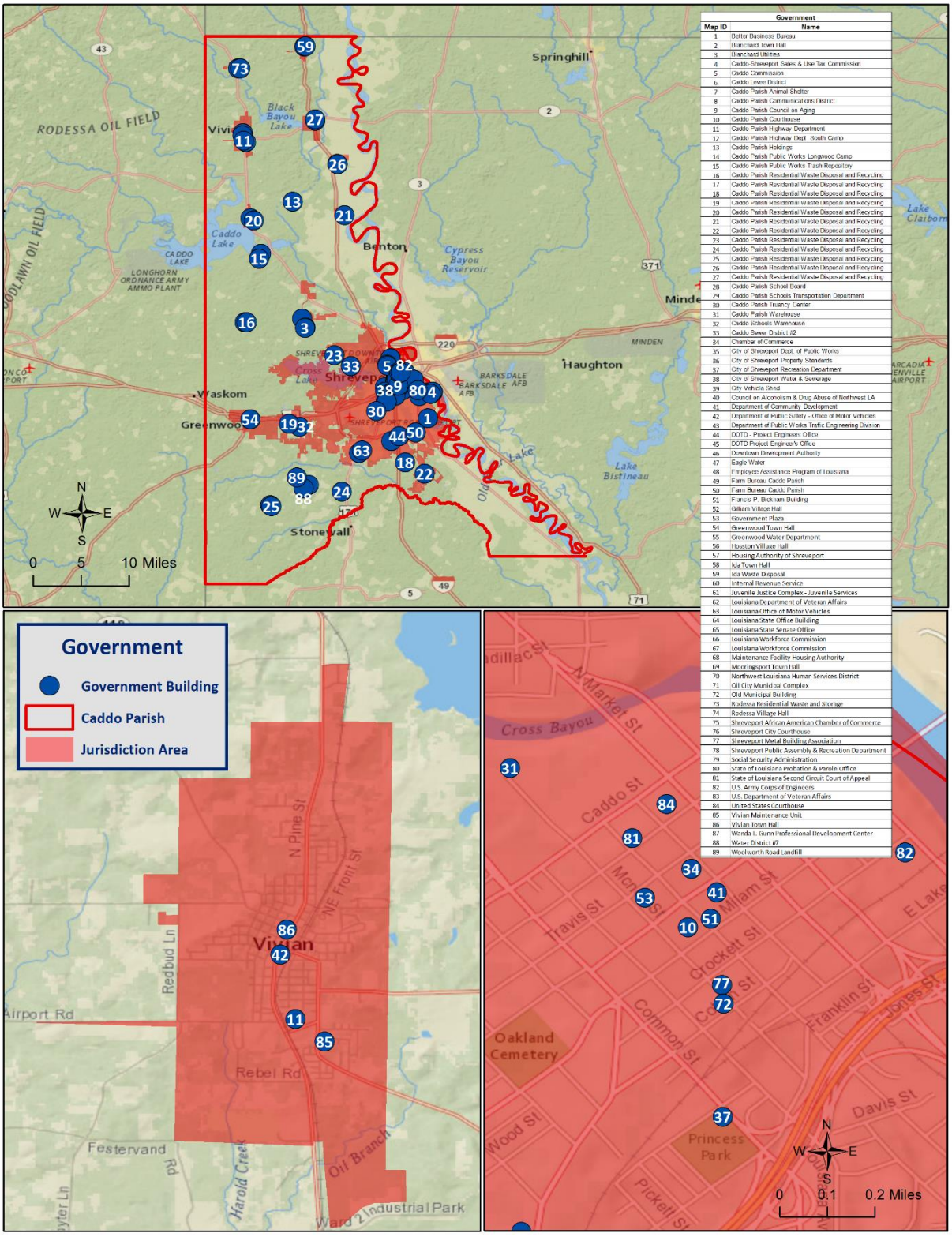

Figure 2-2: Government Facilities in Caddo Parish

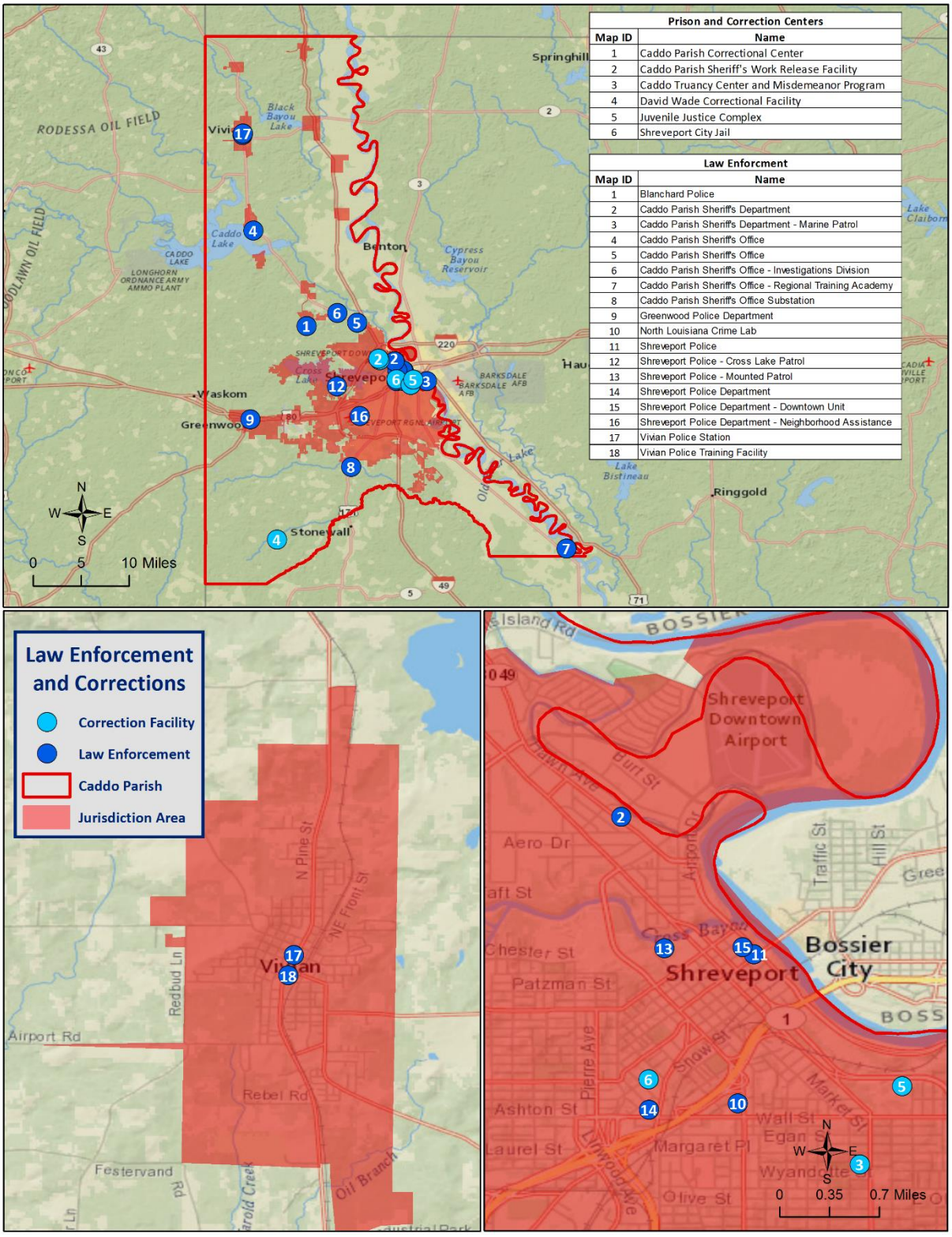

Figure 2-3: Law Enforcement and Correctional Facilities in Caddo Parish

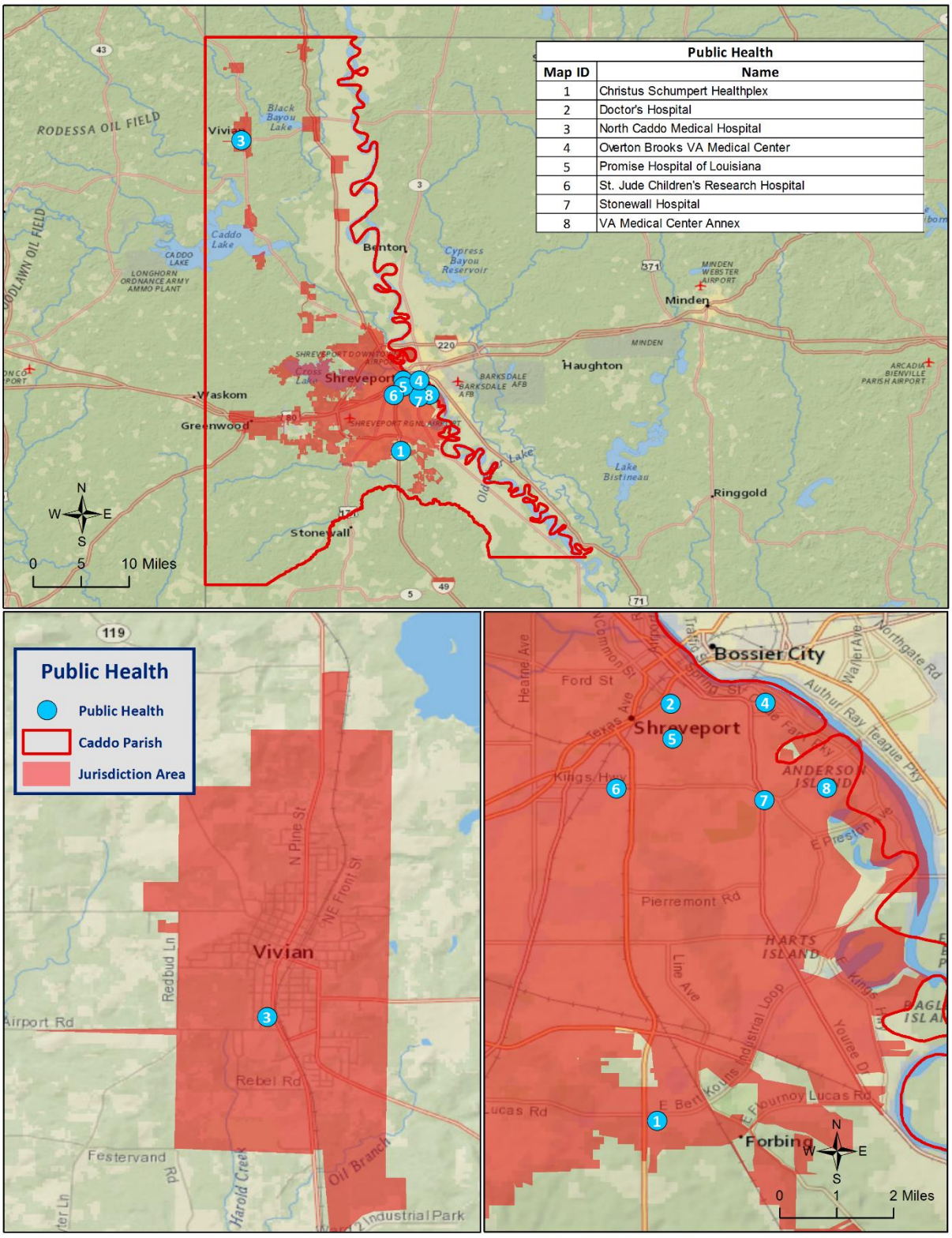

Figure 2-4: Public Health Facilities in Caddo Parish

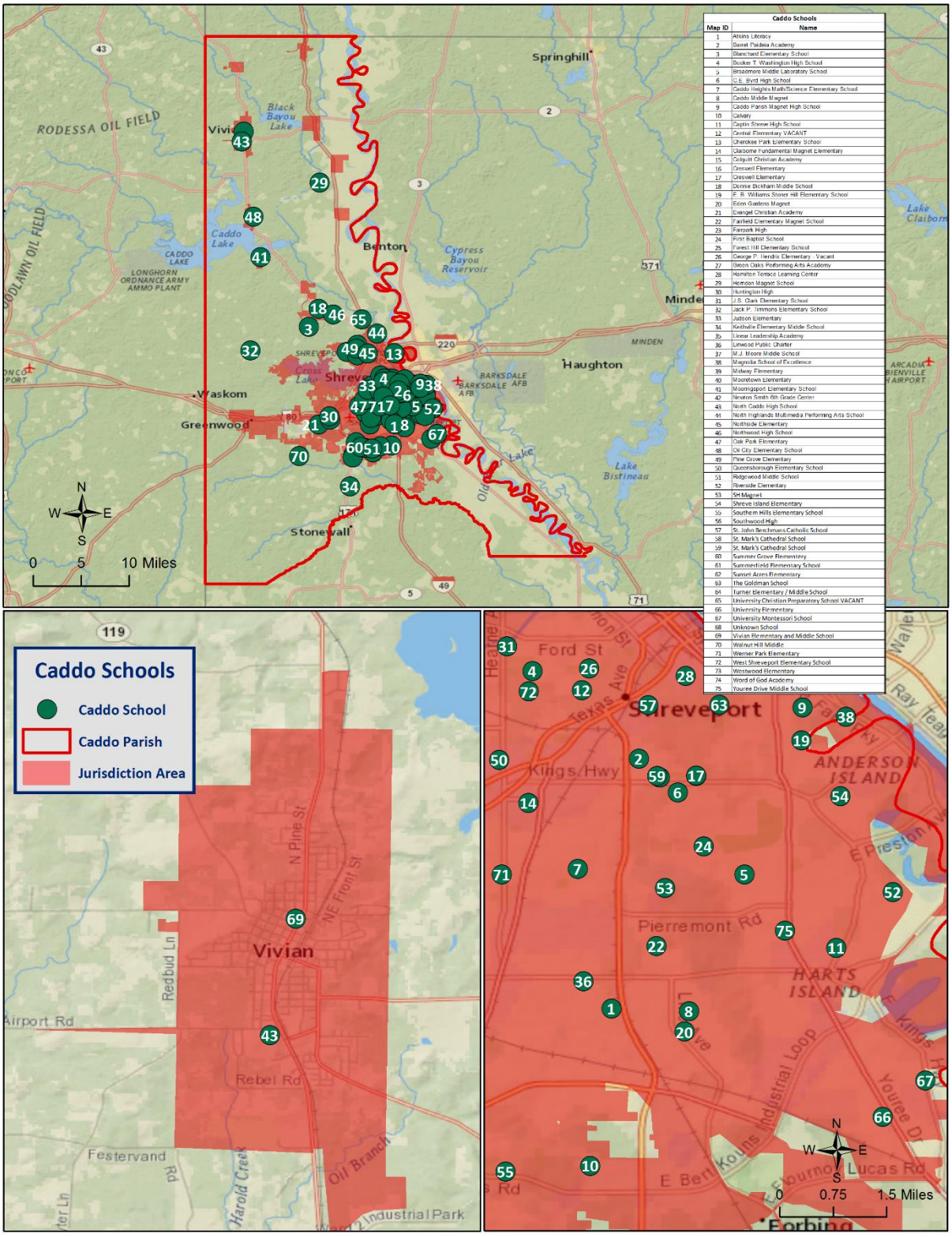

Figure 2-5: School Facilities in Caddo Parish

Future Development Trends

Caddo Parish experienced a small growth in population and housing between the years of 2000 and 2014, growing from a population of 250,990 with 108,296 housing units in 2000 to a population of 252,603 with 112,380 housing units in 2014. The population growth was largely in the incorporated areas of Blanchard and Greenwood from the years 2000 to 2010, and in the incorporated areas of Shreveport and Blanchard from 2010 to 2014. The incorporated areas of Belcher, Gilliam, Hosston, Ida, Mooringsport, Oil City, Rodessa, Shreveport, and Vivian experienced a decline in population from the years of 2000 to 2010. From 2010 to 2014, all areas of the parish experienced a decline in population except for the incorporated areas of Shreveport and Blanchard. The future population and number of buildings can be estimated using U.S. Census Bureau housing and population data. The following tables show population and housing unit estimates from 2000 to 2014:

Table 2-5: Population Growth Rate for Caddo Parish

Total Population	Caddo Parish	Caddo (Unincorporated)	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida
1-Apr-00	250,990	40,641	273	2,263	190	2,537	388	254
1-Apr-10	255,543	45,638	264	2,906	164	3,226	319	221
1-Jul-14	252,603	41,606	259	2,910	161	3,201	311	217
Population Growth between 2000 – 2010	1.8%	12.3%	-3.3%	28.4%	-13.7%	27.2%	-17.8%	-13.0%
Average Annual Growth Rate between 2000 – 2010	0.2%	1.2%	-0.3%	2.8%	-1.4%	2.7%	-1.8%	-1.3%
Population Growth between 2010 – 2014	-1.2%	-8.8%	-1.9%	0.1%	-1.8%	-0.8%	-2.5%	-1.8%
Average Annual Growth Rate between 2010 – 2014	-0.29%	-2.21%	-0.47%	0.03%	-0.46%	-0.19%	-0.63%	-0.45%

Table 2-5: Population Growth Rate for Caddo Parish (Continued)

Total Population	Mooringsport	Oil City	Rodessa	Shreveport	Vivian
1-Apr-00	829	1,193	345	198,055	4,022
1-Apr-10	795	1,010	271	197,050	3,679
1-Jul-14	789	1,001	265	198,242	3,641
Population Growth between 2000 – 2010	-4.1%	-15.3%	-21.4%	-0.5%	-8.5%
Average Annual Growth Rate between 2000 – 2010	-0.4%	-1.5%	-2.1%	-0.1%	-0.9%
Population Growth between 2010 – 2014	-0.8%	-0.9%	-2.2%	0.6%	-1.0%
Average Annual Growth Rate between 2010 – 2014	-0.19%	-0.22%	-0.55%	0.15%	-0.26%

Table 2-6: Housing Growth Rate for Caddo Parish

Total Housing Units	Caddo Parish	Caddo (Unincorporated)	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida
1-Apr-00	108,296	16,795	107	813	79	1,036	175	133
1-Apr-10	112,028	19,469	122	1,197	79	1,380	164	133
1-Jul-14	112,380	17,662	119	1,294	70	1,662	175	117
Housing Growth between 2000 – 2010	3.4%	15.9%	14.0%	47.2%	0.0%	33.2%	-6.3%	0.0%
Average Annual Growth Rate between 2000 – 2010	0.3%	1.6%	1.4%	4.7%	0.0%	3.3%	-0.6%	0.0%
Housing Growth between 2010 – 2014	0.3%	-9.3%	-2.5%	8.1%	-11.4%	20.4%	6.7%	-12.0%
Average Annual Growth Rate between 2010 – 2014	0.1%	-2.3%	-0.6%	2.0%	-2.8%	5.1%	1.7%	-3.0%

Table 2-6: Housing Growth Rate for Caddo Parish (Continued)

Total Housing Units	Mooringsport	Oil City	Rodessa	Shreveport	Vivian
1-Apr-00	108,296	16,795	107	813	79
1-Apr-10	112,028	19,469	122	1,197	79
1-Jul-14	112,380	17,662	119	1,294	70
Housing Growth between 2000 – 2010	3.4%	15.9%	14.0%	47.2%	0.0%
Average Annual Growth Rate between 2000 – 2010	0.3%	1.6%	1.4%	4.7%	0.0%
Housing Growth between 2010 – 2014	0.3%	-9.3%	-2.5%	8.1%	-11.4%
Average Annual Growth Rate between 2010 – 2014	0.1%	-2.3%	-0.6%	2.0%	-2.8%

As shown in the previous tables, Caddo Parish has experienced slight growth in both population and housing units. Housing growth rates grew at 0.3% annually from 2000 to 2010, and at 0.1% annually from 2010 to 2014. Population growth rates for the parish were slightly lower at 0.2% annually from 2000 to 2010, and they began to decline from 2010 to 2014 at -0.29% annually from 2010 to 2014. From 2000 to 2010, the incorporated area of Blanchard had the largest increase in population rate at 28.4%, followed by the incorporated area of Greenwood at 27.2%. The incorporated area of Rodessa had the largest decrease in population during this time period at -21.4%. From 2010 to 2014, the incorporated area of Shreveport experienced the largest growth in population at 0.6% followed by Blanchard at 0.1%.

The incorporated area of Shreveport and Blanchard experienced the largest increase in housing units from 2000 to 2010 at 47.2%. The only area in Caddo Parish to experience a decline in housing units during this time period was Hosston at -0.6%. From 2010 to 2014, the incorporated area of Greenwood experienced the largest increase in housing units at 20.4%, while the incorporated area of Ida experienced the largest decline in housing units at 12%.

Future Hazard Impacts

Hazard impacts were estimated for five years and ten years in the future (2019 and 2024). Yearly population and housing growth rates were applied to parish inventory assets for composite flood and tropical cyclones. Based on a review of available information, it is assumed that population will continue to decline within Caddo Parish from the present until 2024. A summary of estimated future impacts is shown in the table on the following page. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%. No changes in development have impacted the community's vulnerability since the plans last update.

Table 2-7: Estimated Future Impacts, 2019-2024
(Source: Hazus, US Census Bureau)

Hazard / Impact	Total in Parish (2014)	Hazard Area (2014)	Hazard Area (2019)	Hazard Area (2024)
Flood Damage				
Structures	112,468	30,200	30,319	30,414
Value of Structures	$44,494,206,408	$11,947,710,670	$12,619,047,606	$13,183,177,034
# of People	251,876	67,635	66,667	65,904
Tropical Cyclones				
Structures	112,468	112,468	112,911	113,266
Value of Structures	$44,494,206,408	$44,494,206,408	$46,994,317,522	$49,095,179,511
# of People	251,876	251,876	248,275	245,431

Land Use

The Caddo Parish Land Use table is provided below. Residential, commercial, and industrial areas account for only 18% of the parish's land use. Forested land is the largest category at 221,428 acres, accounting for 40% of parish land. At 106,276 acres, agricultural land accounts for 19% of parish lands, while 85,984 acres of wetland areas account for 16% of parish lands. The parish also consists of 34,790 acres of water areas, accounting for 6% of all parish lands.

Table 2-8: Caddo Parish Land Use
(Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	106,276	19%
Wetlands	85,984	16%
Forest Land (not including forested wetlands)	221,428	40%
Urban/Development	99,266	18%
Water	34,790	6%

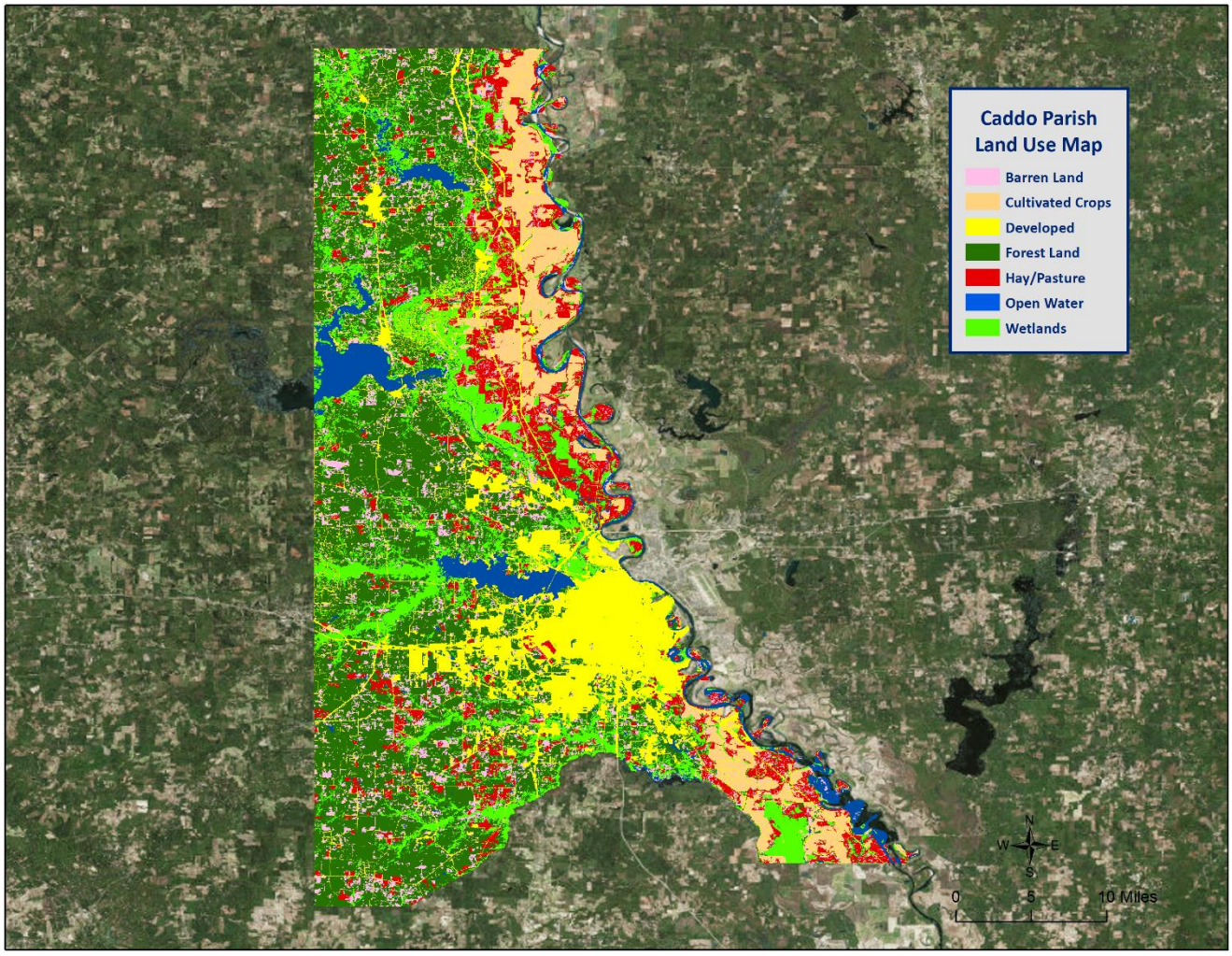

Figure 2-6: Caddo Parish Land Use Map

(Source: USGS Land Use Map)

Hazard Identification

Drought

A drought is a deficiency in water availability over an extended period of time, caused by precipitation totals and soil water storages that do not satisfy the environmental demand for water, either by evaporation or transpiration through plant leaves. It is important to note that the lack of precipitation alone does not constitute drought; the season during which the precipitation is lacking has a major impact on whether drought occurs. For example, a week of no precipitation in July, when the solar energy to evaporate water and vegetation's need for water to carry on photosynthesis are both high, may trigger a drought, while a week of no precipitation in January may not initiate a drought.

Drought is a unique and insidious hazard. Unlike other natural hazards, no specific threshold of "dryness" exists for declaring a drought. In addition, the definition of drought depends on stakeholder needs. For instance, the onset (and demise) of agricultural drought is quick, as crops need water every few days; once they get rainfall, they improve. But hydrologic drought sets in (and is alleviated) only over longer time periods. A few dry days will not drain a reservoir, but a few rain showers cannot replenish it either. Moreover, different geographical regions define drought differently based on the deviation from local, normal precipitation. Drought can occur anywhere, triggered by changes in the local-to-regional-scale atmospheric circulation over an area, or by broader-scale circulation variations such as the expansion of semi-permanent oceanic high-pressure systems or the stalling of an upper-level atmospheric ridge in place over a region. The severity of a drought depends upon the degree and duration of moisture deficiency, as well as the size of the affected area. Periods of drought also tend to be associated with other hazards, such as wildfires and/or heat waves. Lastly, drought is a slow onset event, causing less direct—but tremendous indirect—damage. Depletion of aquifers, crop loss, and livestock and wildlife mortality rates are examples of direct impacts. Since the groundwater found in aquifers is the source of about 38% of all county and city water supplied to households (and comprises 97% of the water for all rural populations that are not already supplied by cities and counties), droughts can potentially have direct, disastrous effects on human populations. The indirect consequences of drought, such as unemployment, reduced tax revenues, increased food prices, reduced outdoor recreation opportunities, higher energy costs as water levels in reservoirs decrease and consumption increases, and water rationing, are not often fully known. This complex web of impacts causes drought to affect people and economies well beyond the area physically experiencing the drought.

This hazard is often measured using the Palmer Drought Severity Index (PDSI, also known operationally as the Palmer Drought Index). The PDSI, first developed by Wayne Palmer in a 1965 paper for the U.S. Weather Bureau, measures drought through recent precipitation and temperature data with regard to a basic supply-and-demand model of soil moisture. It is most effective in long-term calculations. Three other indices used to measure drought are the Palmer Hydrologic Drought Index (PHDI), the Crop Moisture Index (CMI), which is derived from the PDSI, and the Keetch-Byram Drought Index (KBDI), created by John Keetch and George Byram in 1968 for the U.S. Forest Service. The KBDI is used mainly for predicting the likelihood of wildfire outbreaks. As a compromise, the PDSI is used most often for droughts since it is a medium-response drought indicator. The objective of the PDSI is to provide measurements of moisture conditions that are standardized so that comparisons using the index can be made between locations and between months. *Table 2-9* displays the range and Palmer classifications of the PDSI index. *Figure 2-7* displays the current drought monitor for the State of Louisiana and its parishes.

Table 2-9: Palmer Drought Severity Index Classification and Range

Range	Palmer Classifications
4.0 or more	Extremely Wet
3.0 to 3.9	Very Wet
2.0 to 2.9	Moderately Wet
1.0 to 1.99	Slightly Wet
0.5 to 0.99	Incipient Wet Spell
0.49 to -0.49	Near Normal
-0.5 to -0.99	Incipient Dry Spell
-1.0 to -1.99	Mild Drought
-2.0 to -2.99	Moderate Drought
-3.0 to -3.99	Severe Drought
-4.0 or less	Extreme Drought

The PDSI best measures the duration and intensity of drought-inducing circulation patterns at a somewhat long-term time scale, although not as long-term as the PHDI. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns in addition to the effects of cumulative patterns of previous months. Although weather patterns can change almost overnight from a long-term drought pattern to a long-term wet pattern, as a medium-response indicator, the PDSI responds relatively rapidly. Data compiled by the National Drought Mitigation Center indicates normal conditions exist in Caddo Parish at the time this plan went to publication (*Figure 2-7*).

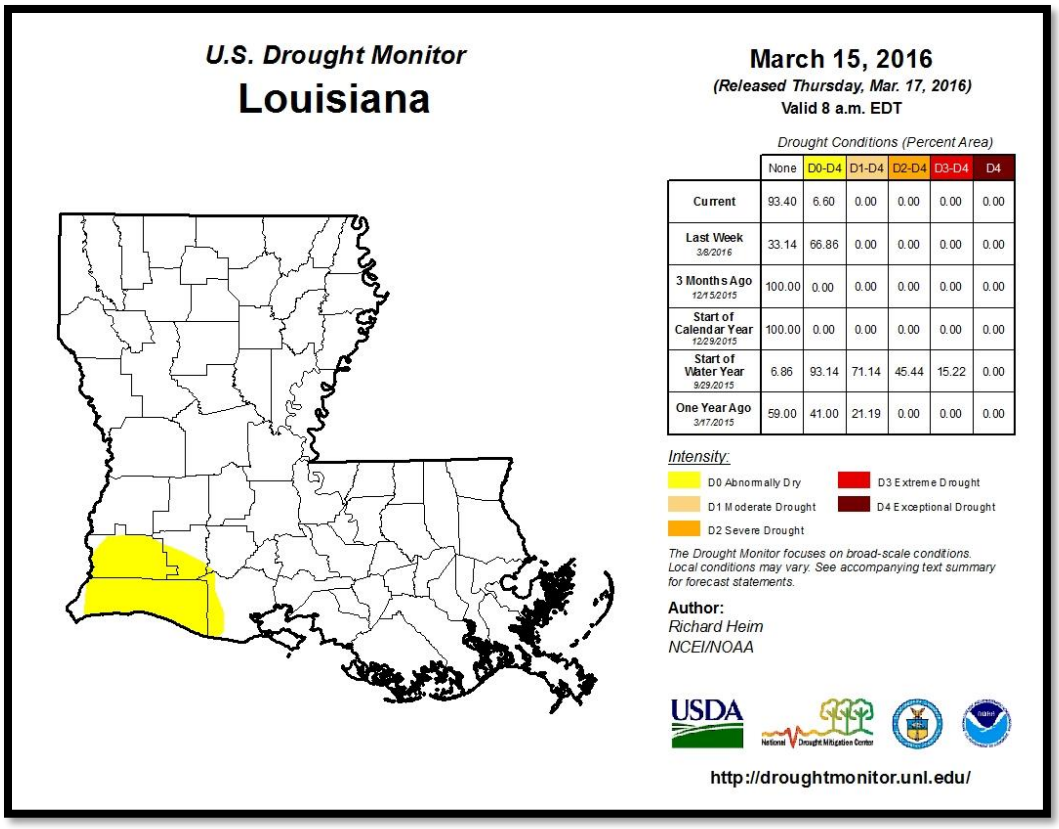

Figure 2-7: United States Drought Monitor for the State of Louisiana and its Parishes (Source: The National Drought Mitigation Center)

Location

Drought typically impacts a region and not one specific parish or jurisdiction. While the entire planning area can experience drought, the major impact of a drought event in Caddo Parish is on the agricultural community.

Previous Occurrences / Extents

The SHELDUS database reports a total of three drought events occurring within the boundaries of Caddo Parish between the years of 1990 to 2015. Below, *Table 2-10* identifies the date of occurrence, estimated crop damage, and severity of the events that have occurred in Caddo Parish. Based on previous occurrences, and in accordance with the Palmer Drought Index, the worst case scenario for drought in Caddo Parish would be an extreme drought event.

Table 2-10: Drought Events with Crop Damage Totals for Caddo Parish
(Source: SHELDUS)

Date	Crop Damage	Palmer Classification
May 1996	$1,508,834	Severe Drought
June 1998	$1,281,497	Severe Drought
August 2000	$137,477,352	Extreme Drought

Frequency / Probability

Based on previous occurrences of three drought events in 25 years, the probability of drought occurrence in the planning area in any given year is 12%.

Estimated Potential Losses

According to the SHELDUS database, there have been three drought events that have caused some level of crop damage. The total agricultural damage from these events is $140,267,682, with an average cost of $46,755,894 per drought event. When annualizing the total cost over the 25-year record, total annual losses based on drought is estimated to be $5,610,707. *Table 2-11* presents an analysis of agricultural exposure that is susceptible to drought by major crop type for Caddo Parish.

Table 2-11: Agricultural Exposure by Crop Type for Droughts in Caddo Parish
(Source: LSU Ag Center 2014 Parish Totals)

Agricultural Exposure by Type for Drought						
Corn	Forestry	Cotton	Soybeans	Squash	Wheat	Total
$17,177,657	$12,830,286	$11,944,110	$8,990,838	$1,992,600	$842,740	$53,778,231

There have been no reported injuries or deaths as a direct result to drought in Caddo Parish.

Earthquakes

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 which are known as seismic waves. Ground motion from seismic waves is expressed as peak ground acceleration (PGA), the fastest measured change in speed for a particle at ground level that is moving because of an earthquake. PGA is commonly measured as a percentage of acceleration due to Earth's gravity (%g). This measurement is relied upon to determine seismic load engineering design and construction requirements. Earthquakes are typically described in terms of magnitude and intensity. Magnitude is the measure of the amplitude of the seismic wave and is often expressed by the Richter scale, and intensity is a measure of how strong the shock was felt at a particular location, indexed by the Modified Mercalli Intensity (MMI) scale. The Richter scale is a logarithmic measurement whereby an increase in the scale by one whole number represents a tenfold increase in measured ground motion of the earthquake (and an increase in energy released of more than 30 times). An increase by two whole numbers represents a 102 (or 100-fold) increase in ground motion, and thus more than 302 (or 900) times the energy released. On the next page, *Table 2-12* shows the rough correlation between the Richter scale, PGA, and the MMI. The relationship between these is approximate and depends upon such specifics as the depth of the focus (the location of the actual rock movement) and distance from the epicenter (the location on the Earth's surface above the earthquake focus) of the earthquake.

Table 2-12: Comparison of Earthquake Magnitudes for PGA, Richter, and MMI
(Source: USGS Earthquake Hazards Program)

COMPARISON OF EARTHQUAKE METRICS			
PGA (%g)	**Magnitude (Richter)**	**Intensity (MMI)**	**Description (MMI)**
<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 motorcars 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 motorcars rock noticeably. **V**. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	**VI**. Felt by all. 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, and 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.

The system of subsidence faults in southern Louisiana developed due to accelerated land subsidence and rapid sediment deposition from the Mississippi River. The system stretches across the southern portion of the state from Beauregard Parish in the west to West Baton Rouge Parish in the east and it includes every parish south of this line. This system is thought to be responsible for many of the recorded earthquakes from 1843 to the present. All of the earthquakes that occurred over this period of time were of low magnitude, resulting mostly in limited property damage (such as broken windows, damaged chimneys, and cracked plaster). While faults throughout the northwestern parishes are thought to be inactive, the New Madrid seismic zone lies just to the north of Louisiana and originates in the region of New Madrid, Missouri. The magnitude of historic earthquakes originating in the New Madrid seismic zone is far greater than that generated by the subsidence fault system in coastal Louisiana. A significant seismic event from the New Madrid seismic zone is more likely to have a greater impact on Louisiana than a seismic event from the subsidence fault system.

Location

An earthquake event is a geological hazard that occurs along fault lines. Caddo Parish has one fault line that runs through the northern portion of the parish between the incorporated areas of Rodessa and Ida and Vivian and Hosston (*Figure 2-8*). Effects of an earthquake may be felt throughout the parish.

Previous Occurrences / Extents

Both the SHELDUS and National Climatic Data Center report no earthquake events occurring within the boundaries of Caddo Parish between the years of 1990 – 2015. The National Oceanic and Atmospheric Administration's National Geophysical Data Center reports three earthquake events occurring within the boundaries of Caddo Parish between the years 1811 – 2015. *Table 2-13* summarizes the earthquake events that occurred within Caddo Parish. *Figure 2-8* displays the location and intensity of each earthquake event in Caddo Parish and surrounding parishes. Based on the previous earthquake events presented in the following table, an earthquake with an intensity level of MMI 4 could occur within the planning area. This intensity of an earthquake would only be felt by a very few people outside, but many people who are indoors.

Table 2-13: Summary of Earthquakes in Caddo Parish

Date	Location	Intensity (MMI)
September 1, 1886	Shreveport	2
March 19, 1957	Mooringsport	4
April 24, 1964	Shreveport	2

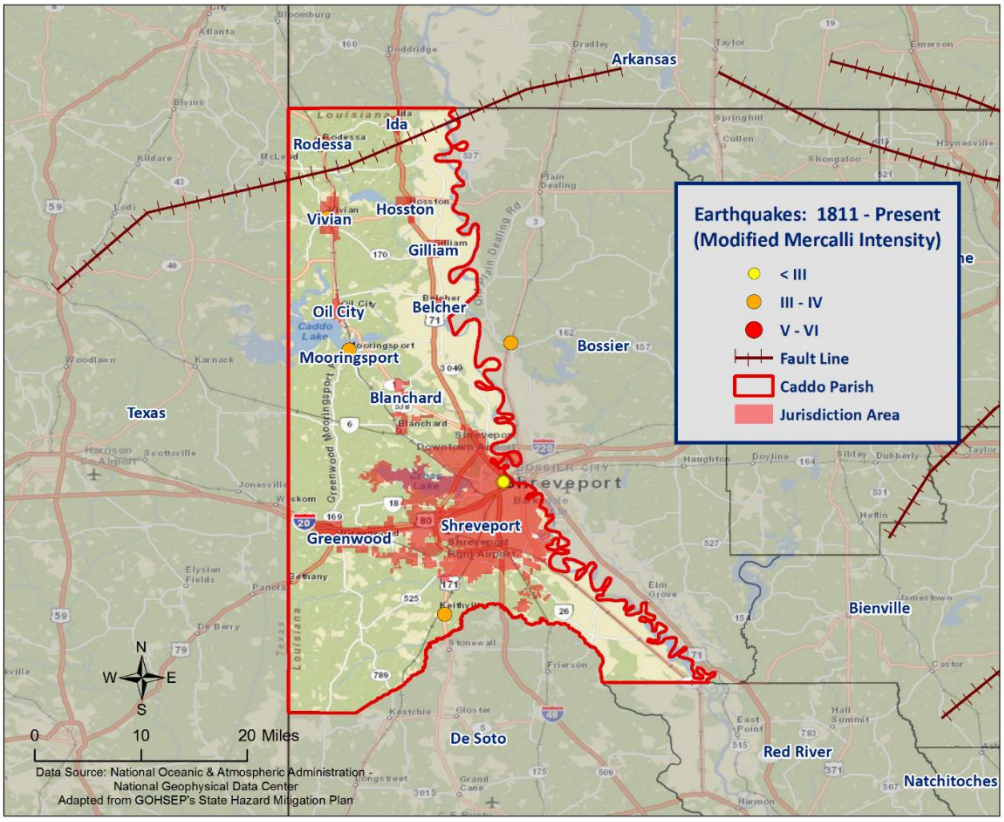

Figure 2-8: Location and Intensity (MMI) of Earthquakes in Caddo Parish

Frequency / Probability

Earthquakes are an extremely rare occurrence in the State of Louisiana and Caddo Parish, with three occurrences of an earthquake event within the boundaries of the parish from the years 1811 – 2014. Based on the available data, it is determined that there will be no impact on Caddo Parish or any of its jurisdictions, and is therefore discounted. As a result, earthquakes are not carried forward into risk assessment.

Extreme Heat

There is no operational definition for defining heat or a heat wave. Heat waves are the consequence of the same weather pattern as drought, and therefore both hazards often occur concurrently. A heat wave is an extended period of oppressive and above normal temperatures over a given period of time. The World Meteorological Organization recommends the declaration of a heat wave when the daily maximum temperature exceeds the average maximum temperatures by 9 °F and lasts for a period of at least five days.

However, temperature alone is insufficient to describe the stress placed on humans (as well as flora and fauna) in hot weather. It is crucial to consider the effect of relative humidity since it is essential to the body's ability to perspire and cool. Once air temperature reaches 95 °F, perspiration becomes a very significant biophysical mechanism to ensure heat loss. Perspiration is ineffective as a cooling mechanism if the water cannot evaporate (i.e., sweating in high relative humidity is reduced as compared to during dry conditions). To communicate this relationship between temperature and humidity, the National Weather Service (NWS) developed the Heat Index (HI), which provides a warning system based on a combination of air temperature and relative humidity. The HI is presented in *Table 2-14* and *Table 2-15* summarizes the HI risk levels and protective measures. The NWS devised the index for shady, light wind conditions, and thus advises that the HI value can be increased by as much as 15 °F if a person is in direct sunlight with strong, hot winds present.

Most heat disorders (e.g., sunburn, heat cramps, heat exhaustion, and heat stroke) occur because the victim has been overexposed to heat, or has over-exercised in relation to their age and physical condition. Other circumstances that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Seniors and children are most at risk from adverse heat effects.

Extreme heat can also damage roads, bridges, utilities, and railroads. Extreme heat can cause pavement to soften, creating the buckling of roads and highways, which can result in potholes and rutting. These damaged roads can create hazardous conditions, causing motorists to find alternate transportation routes. Old water and sewer lines can deteriorate, increasing the likelihood of line ruptures during extreme heat. The demands on water supplies can result in water rationing, shortages, and restrictions. Extreme heat can also cause strain on several power grids, causing people to minimize the consumption of power during the hottest parts of the day due to overheating. The overwhelming demand of excess electrical power usage can also cause a strain on power capacities, resulting in blackout and /or brown outs. vehicles can overheat, and tires will deteriorate. High temperatures can be partially responsible for the expansion, buckling, or deflection of rails requiring track repairs or speed restrictions to avoid derailments.

Extreme heat can also be detrimental to the agricultural community. Extreme heat stress can reduce plant photosynthetic and transpiration efficiencies and negatively impact plant root development, which collectively can negatively impact yield. Heat injury in plants includes scalding and scorching of leaves and stems, sunburn on fruits and stems, leaf drop, rapid leaf death, and reduction in growth and yield. Extreme heat is particularly impactful when extreme heat is accompanied by drought conditions. The reduced moisture in the soil further exacerbates the effects of extreme temperatures.

The agrarian issues associated with extreme heat are relevant throughout the state, but are particularly significant in rural and agricultural parishes. A reduction of crop yield will diminish the incomes of farmers and producers in the area. If the reduced crop yield lasts over an extended period of time, the resulting reduction in disposable income could have a negative impact on businesses in the affected communities. People wouldn't have any extra money to spend at local establishments, and businesses would be forced to close for good.

According to NOAA, extreme heat is the leading weather-related cause of death in the United States. And while heat-related deaths in Louisiana are not common, due in part to the consistency and predictability of high seasonal temperatures, they do occur and are still very intense and dangerous. Such deaths happen in a variety of circumstances, often in ways that are not easily categorized due to their unexpectedness. For instance, although exposure to heat is higher at the beach than usual, NOAA does not track heat-related deaths there because such deaths happen infrequently.

Table 2-14: Heat Index Advisor Based on Air Temperature (°F) and Relative Humidity (Source: National Weather Service)

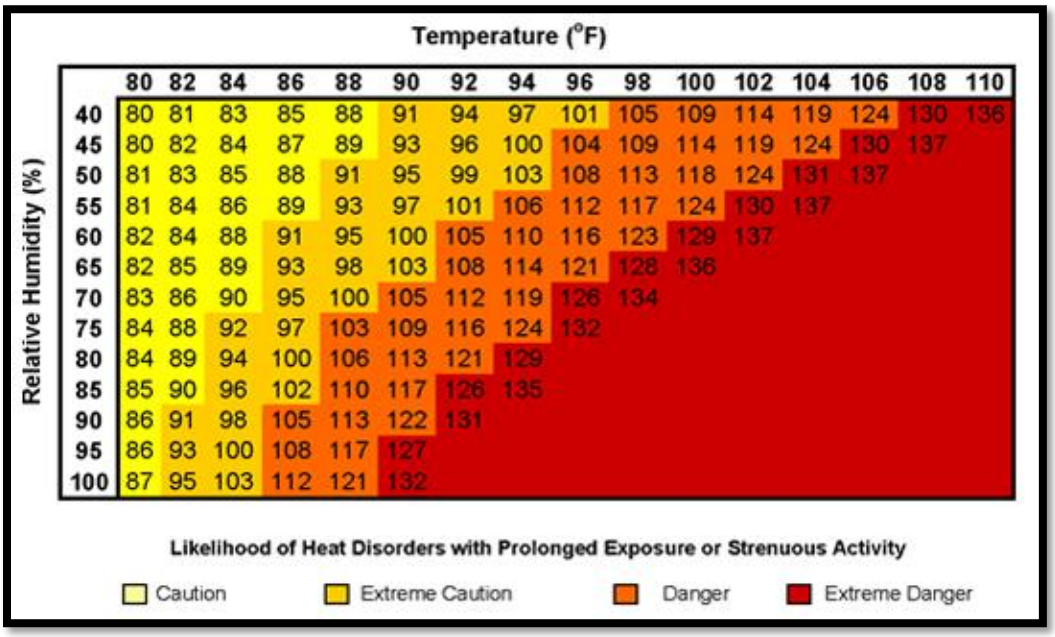

Table 2-15: Summary of Heat Index Risk Levels with Protective Measures (Source: National Weather Service)

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning.
91°F to 103°F	Moderate	Implement precautions and heighten awareness.
103°F to 115°F	High	Additional precautions to protect workers.
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures.

Location

Extreme heat typically impacts a region and not one specific parish or jurisdiction. Because extreme heat is a climatological based hazard and has the same probability of occurring in Caddo Parish as all of the adjacent parishes, the entire planning area for Caddo Parish is equally at risk for extreme heat.

Previous Occurrences / Extents

The SHELDUS database reports a total of 45 significant extreme heat events that have caused damage or loss of life within the boundaries of Caddo Parish between the years of 2010 to 2015. *Table 2-16* provides an

overview of extreme heat events that have impacted the Caddo Parish planning area since 2010. Based on historical data, the worst case scenario for Caddo Parish involving extreme heat would be a high risk level event on the HI scale with temperatures ranging from 103 °F to 115 °F.

Table 2-16: Previous Occurrences of Extreme Heat in Caddo Parish (Source: NOAA)

Date	Temperature (°F)
August 2, 2010	104
August 3, 2010	104
August 5, 2010	104
August 13, 2010	104
August 16, 2010	105
June 18, 2011	104
June 19, 2011	105
July 5, 2011	104
July 9, 2011	105
July 13, 2011	104
July 14, 2011	105
July 23, 2011	104
July 24, 2011	105
July 25, 2011	105
July 31, 2011	104
August 2, 2011	105
August 3, 2011	107
August 4, 2011	107
August 5, 2011	106
August 6, 2011	104
August 7, 2011	105
August 8, 2011	104
August 9, 2011	104
August 10, 2011	104
August 11, 2011	106
August 12, 2011	104
August 13, 2011	105
August 14, 2011	104
August 15, 2011	105
August 16, 2011	106
August 17, 2011	107
August 18, 2011	106
August 19, 2011	106
August 20, 2011	105
August 21, 2011	110
August 22, 2011	104
August 23, 2011	105
August 24, 2011	105
August 26, 2011	104
August 27, 2011	105
August 28, 2011	105

Date	Temperature (°F)
August 29, 2011	104
August 31, 2011	104
September 1, 2011	104
September 13, 2011	107
September 14, 2011	106
September 19, 2011	104
September 3, 2013	104
July 30, 2015	104
August 8, 2015	104
August 9, 2015	104
August 10, 2015	104
August 11, 2015	105

Frequency / Probability

Based on the geographical location of the State of Louisiana, and Caddo Parish in particular, extreme heat events occur frequently. The probability of a significant event that causes loss of life or damage is estimated at 100%.

Estimated Potential Losses

According to the SHELDUS database, crop damage due to extreme heat in Caddo Parish has totaled approximately $86,185 since 1990. To estimate the potential losses of an extreme heat event on an annual basis, the total damages recorded for an extreme event is divided by the total number of years of available extreme heat data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $3,447. The following table, based on the 2010 Land Use Land Classification Data, provides an estimate of potential crop losses for Caddo Parish:

Table 2-17: Estimated Annual Crop Losses in Caddo Parish from Extreme Heat

Estimated Annual Potential Losses from Extreme Heat for Caddo Parish					
Unincorporated Caddo Parish (82.75% of Land)	Belcher (0.13% of Land)	Blanchard (0.43% of Land)	Gilliam (0.18% of Land)	Greenwood (1.03% of Land)	Hosston (0.31% of Land)
$2,853	$4	$15	$6	$35	$11

Table 2-17: Estimated Annual Crop Losses in Caddo Parish from Extreme Heat (Continued)

Estimated Annual Potential Losses from Extreme Heat for Caddo Parish					
Ida (0.15% of Land)	Mooringsport (0.14% of Land)	Oil City (0.21% of Land)	Rodessa (0.15% of Land)	Shreveport (13.91% of Land)	Vivian (0.63% of Land)
$5	$5	$7	$5	$479	$22

There have been no reported injuries or deaths as a direct result of extreme heat in Caddo Parish.

Vulnerability

See Appendix C for parish and municipality agricultural exposure to extreme heat hazards.

Flooding

A flood is the overflow of water onto land that is usually not inundated. The National Flood Insurance Program defines a flood as:

> A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waves, unusual and rapid accumulation or runoff of surface waters from any source, mudflow, or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Factors influencing the type and severity of flooding include natural variables such as precipitation, topography, vegetation, soil texture, and seasonality, as well as anthropogenic factors such as urbanization (extent of impervious surfaces), land use (agricultural and forestry tend to remove native vegetation and accelerate soil erosion), and the presence of flood-control structures such as levees and dams.

Excess precipitation, produced from thunderstorms or hurricanes, is often the major initiating condition for flooding, and Louisiana can have high rainfall totals at any time of day or year. During the cooler months, slow-moving frontal weather systems produce heavy rainfalls, while the summer and autumn seasons produce major precipitation in isolated thunderstorm events (often on warm afternoons) that may lead to localized flooding. During these warmer seasons, floods are overwhelmingly of the flash flood variety, as opposed to the slower-developing river floods caused by heavy stream flow during the cooler months.

In cooler months, particularly in the spring, Louisiana is in peak season for severe thunderstorms. The fronts that cause these thunderstorms often stall while passing over the state, occasionally producing rainfall totals exceeding ten inches within a period of a few days. Since soil tends to be nearly saturated at this time (due to relatively low overall evaporation rates), spring typically becomes the period of maximum stream flow across the state. Together, these characteristics increase the potential for high water, with low-lying, poorly drained areas being particularly susceptible to flooding during these months.

In Louisiana, six specific types of flooding are of main concern: riverine, flash, ponding, backwater, urban, and coastal.

- **Riverine flooding** occurs along a river or smaller stream. It is the result of runoff from heavy rainfall or intensive snow or ice melt. The speed with which riverine flood levels rise and fall depends not only on the amount of rainfall, but even more on the capacity of the river itself, as well as the shape and land cover of its drainage basin. The smaller the river, the faster that water levels rise and fall. Thus, the Mississippi River levels rise and fall slowly due to its large capacity. Generally, elongated and intensely-developed drainage basins will reach faster peak discharges and faster falls than circular-shaped and forested basins of the same area.
- **Flash flooding** occurs when locally intense precipitation inundates an area in a short amount of time, resulting in local stream flow and drainage capacity being overwhelmed.
- **Ponding** occurs when concave areas (e.g., parking lots, roads, and clay-lined natural low areas) collect water and are unable to drain.
- **Backwater flooding** occurs when water slowly rises from a normally unexpected direction where protection has not been provided. A model example is the flooding that occurred in LaPlace during Hurricane Isaac in 2012. Although the town was protected by a levee on the side facing the

Mississippi River, floodwaters from Lake Maurepas and Lake Pontchartrain crept into the community on the side of town opposite the Mississippi River.

- **Urban flooding** is similar to flash flooding but is specific to urbanized areas. It takes place when storm water drainage systems cannot keep pace with heavy precipitation, and water accumulates on the surface. Most urban flooding is caused by slow-moving thunderstorms or torrential rainfall.
- **Coastal flooding** can appear similar to any of the other flood types, depending on its cause. It occurs when normally dry coastal land is flooded by seawater, but may be caused by direct inundation (when the sea level exceeds the elevation of the land), overtopping of a natural or artificial barrier, or the breaching of a natural or artificial barrier (i.e., when the barrier is broken down by the sea water). Coastal flooding is typically caused by storm surge, tsunamis, or gradual sea level rise.

For purposes of this assessment, ponding, flash flood, and urban flooding are considered to be flooding as a result of storm water from heavy precipitation thunderstorms

Based on stream gauge levels and precipitation forecasts, the National Weather Service (NWS) posts flood statements, watches, and warnings. The NWS issues the following weather statements with regard to flooding:

- **Flood Categories**
  - Minor Flooding: Minimal or no property damage, but possibly some public threat.
  - Moderate Flooding: Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
  - Major Flooding: Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
  - Record Flooding: Flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.

- **Flood Warning**
  - Issued along larger streams when there is a serious threat to life or property.

- **Flood Watch**
  - Issued when current and developing hydrometeorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.

Floods are measured mainly by probability of occurrence. A 10-year flood event, for example, is an event of small magnitude (in terms of stream flow or precipitation) but with a relatively high annual probability of recurrence (10%). A 100-year flood event is larger in magnitude, but it has a smaller chance of recurrence (1%). A 500-year flood is significantly larger than both a 100-year event and a 10-year event, but it has a lower probability than both to occur in any given year (0.2%). It is important to understand that an X-year flood event does not mean an event of that magnitude occurs only once in X years. Instead, it means that on average, we can expect a flood event of that magnitude to occur once every X years. Given that such statistical probability terms are inherently difficult for the general population to understand, the Association of State Floodplain Managers (ASFPM) promotes the use of more tangible expressions of flood probability. As such, the ASFPM also expresses the 100-year flood event as having a 25% chance of occurring over the life of a 30-year mortgage.

It is essential to understand that the magnitude of an X-year flood event for a particular area depends on the source of flooding and the area's location. The size of a specific flood event is defined through historic data of precipitation, flow, and discharge rates. Consequently, different 100-year flood events can have very different impacts. The 100-year flood event in two separate locations have the same likelihood to occur, but they do not necessarily have the same magnitude. For example, a 100-year event for the Mississippi River means something completely different in terms of discharge values (ft^3/s) than for the Amite River. Not only are the magnitudes of 100-year events different between rivers, they can be different along any given river. A 100-year event upstream is different from one downstream due to the variation of river characteristics (volume, discharge, and topography). As a result, the definition of what constitutes a 100-year flood event is specific to each location, river, and time, since floodplain and river characteristics temporally fluctuate. Finally, it is important to note that each flood event is unique. Two hypothetical events at the same location, given the same magnitude of stream flow, may still produce substantially different impacts if there were different antecedent moisture characteristics, different times of day of occurrence (which indicates the population's probable activities at the flood's onset), or other characteristic differences.

The 100-year flood event is of particular significance because it is the regulatory standard that determines the obligation (or lack thereof) to purchase flood insurance. Flood insurance premiums are set depending on the flood zone, as modeled by National Flood Insurance Program (NFIP) Rate Maps. The NFIP and FEMA suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in *Figure 2-9*.

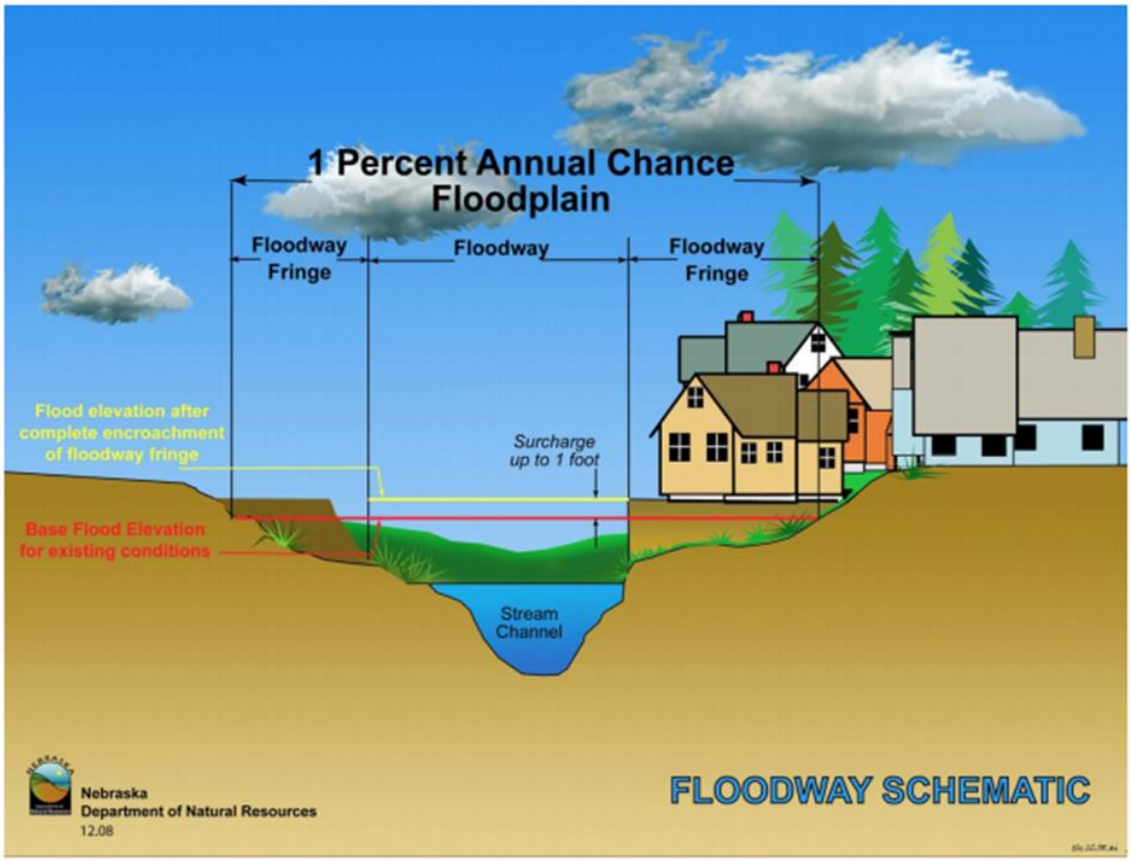

Figure 2-9: Schematic of 100-Year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.
(Source: Nebraska Department of Natural Resources)

A SFHA is the land area covered by the floodwaters of the base flood (red line in *Figure 2-9*), where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

Property Damage

The depth and velocity of flood waters are the major variables in determining property damage. Flood velocity is important because the faster water moves, the more pressure it puts on a structure and the more it will erode stream banks and scour the earth around a building's foundation. In some situations, deep and fast moving waters can push a building off its foundation. Structural damage can also be caused by the weight of standing water (hydrostatic pressure).

Another threat to property from a flood is called "soaking". When soaked, many materials change their composition or shape. Wet wood will swell, and if dried too quickly, will crack, split, or warp. Plywood can come apart and gypsum wallboard can deteriorate if it is bumped before it has time to completely dry. The longer these materials are saturated, the more moisture, sediment, and pollutants they absorb.

Soaking can also cause extensive damage to household goods. Wooden furniture may become warped, making it unusable, while other furnishings such as books, carpeting, mattresses, and upholstery are usually not salvageable. Electrical appliances and gasoline engines will flood, making them worthless until they are professionally dried and cleaned.

Many buildings that have succumbed to flood waters may look sound and unharmed after a flood, but water has the potential to cause severe property damage. Any structure that experiences a flood should be stripped, cleaned, and allowed to dry before being reconstructed. This can be an extremely expensive and time consuming effort.

Repetitive Loss Properties

Repetitive loss structures are structures covered by a contract for flood insurance made available under the NFIP that:

a. Have incurred flood-related damage on two occasions, in which the cost of the repair, on average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and
b. At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

Severe repetitive loss (SRL) is defined by the Flood Insurance Reform Act of 2004 and updated in the Biggert-Waters Flood Insurance Reform Act of 2012. For a property to be designated SRL, the following criteria must be met:

a. It is covered under a contract for flood insurance made available under the NFIP; and
b. It has incurred flood related damage –
    1) For which four or more separate claims payments have been made under flood insurance coverage with the amount of each claim exceeding $5,000 and with the cumulative amount of such claims payments exceeding $20,000; or
    2) For which at least two separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.

Figures regarding repetitive loss structures for Caddo Parish are provided in the table below:

Table 2-18: Repetitive Loss Structures for Caddo Parish

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
Caddo Parish (Unincorporated)	45	38	7	0	116	3,269,338	$28,184
Belcher	0	0	0	0	0	$0	$0
Blanchard	1	1	0	0	2	$12,387	$6,194
Gilliam	0	0	0	0	0	$0	$0
Greenwood	6	6	0	0	14	$592,981	$42,356
Hosston	0	0	0	0	0	$0	$0
Ida	0	0	0	0	0	$0	$0
Mooringsport	0	0	0	0	0	$0	$0
Oil City	0	0	0	0	0	$0	$0
Rodessa	0	0	0	0	0	$0	$0
Shreveport	163	148	15	0	501	$9,448,061	$18,858
Vivian	0	0	0	0	0	$0	$0
Total	215	193	22	0	633	$13,322,767	$21,047

All 215 repetitive loss structures were able to be geocoded in order to provide an overview of where the repetitive loss structures were located throughout the parish. *Figure 2-10* shows the approximate location of the 215 structures, while *Figure 2-11* shows where the highest concentration of repetitive loss structures are located. Through the repetitive loss map, it is clear that the primary concentrated area of repetitive loss structures is focused in and around the incorporated area of Shreveport.

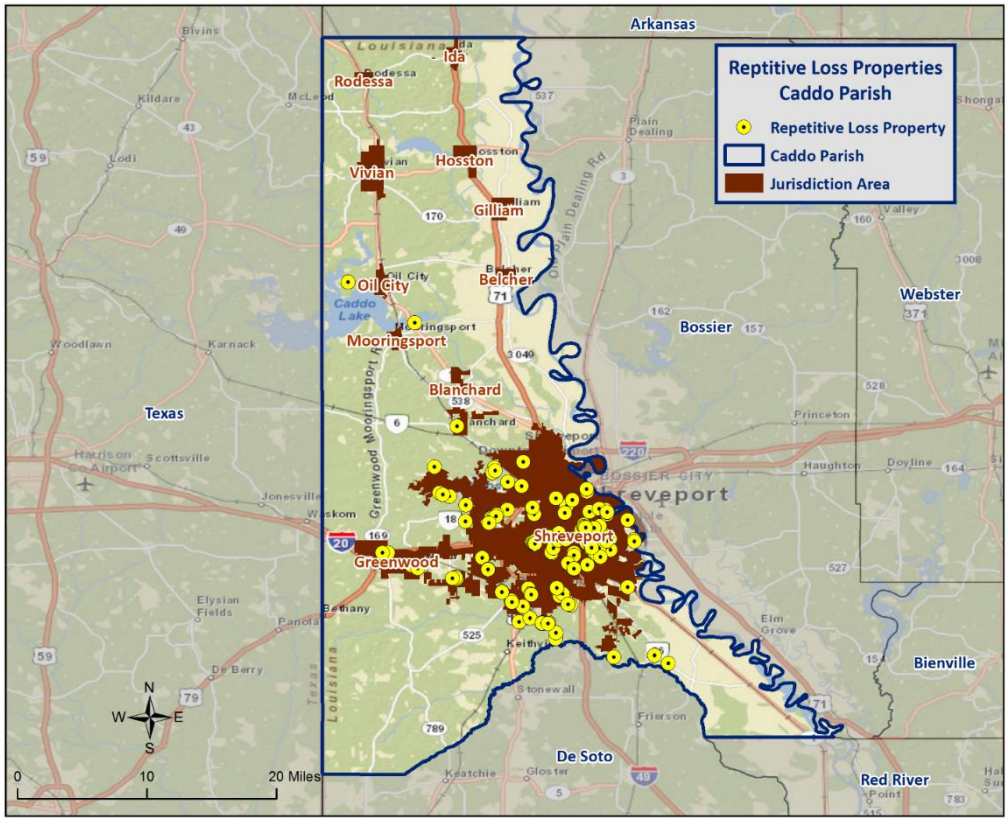

Figure 2-10: Repetitive Loss Properties in Caddo Parish

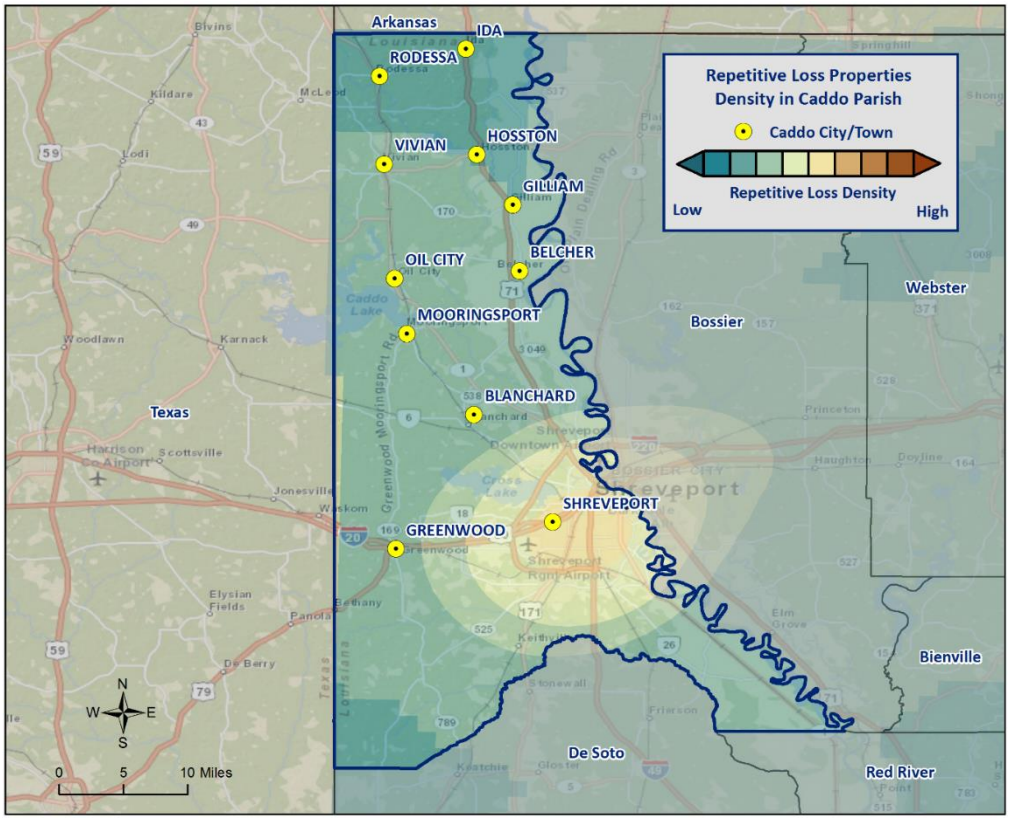

Figure 2-11: Repetitive Loss Property Densities in Caddo Parish

National Flood Insurance Program

Flood insurance statistics indicate that Caddo Parish has 5,353 flood insurance policies with the NFIP, with total annual premiums of $3,546,714. Caddo Parish and the incorporated areas of Shreveport, Blanchard, Greenwood, and Ida are all participants in the NFIP. The incorporated areas of Belcher, Gilliam, Hosston, Mooringsport, Oil City, Rodessa, and Vivian do not participate in the NFIP. Caddo Parish and each of the incorporated jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction Special Flood Hazard Areas, and will continue to monitor activities including local requests for new map updates. Flood insurance statistics and additional NFIP participation details for Caddo Parish are provided in the tables to follow.

Caddo Parish and the communities listed will continue their active participation in the NFIP through various education and outreach activities. These activities will include community outreach on the availability of flood insurance within the parish and incorporated municipalities, as well as flood safe building initiatives throughout the parish. The Parish Floodplain Manager will continue to work in coordination with each community to ensure floodplain management regulations are adopted and enforced. The Parish Floodplain Manager and community floodplain managers for Ida and Shreveport will continue to seek and attend floodplain management and NFIP continuing education.

Table 2-19: Summary of NFIP Policies for Caddo Parish

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
Caddo Parish (Unincorporated)	697	$168,828,400	$442,988	248	$5,027,758
Belcher	0	$0	$0	0	$0
Blanchard	10	$1,520,500	$4,987	0	$0
Gilliam	0	$0	$0	0	$0
Greenwood	26	$6,022,200	$19,430	13	$562,394
Hosston	0	$0	$0	0	$0
Ida	0	$0	$0	0	$0
Mooringsport	0	$0	$0	0	$0
Oil City	0	$0	$0	0	$0
Rodessa	0	$0	$0	0	$0
Shreveport	4,620	$1,022,927,900	$3,079,309	1,773	$22,815,155
Vivian	0	$0	$0	0	$0
Total	5,353	$1,199,299,000	$3,546,714	2,034	$28,405,307

*While the Village of Belcher, the Village of Gilliam, the Village of Hosston, Town of Mooringsport, Town of Oil City, Village of Rodessa, and Town of Vivian do not participate in the NFIP, and the Town of Ida does not have any active NFIP policies, the parish will continue to promote NFIP participation through education and outreach.

Table 2-20: Summary of Community Flood Maps for Caddo Parish

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
220315#	Blanchard	9/19/1975	4/6/2000	5/19/2014	1/23/2012	No
220361#	Caddo Parish	3/7/1978	9/5/1990	5/19/2014	9/5/1990	No
220292#	Greenwood	4/23/1976	8/3/1998	5/19/2014	8/3/1998	No
220276#	Ida	8/15/1975	4/6/2000	5/19/2014	2/29/2012	No
220036#	Shreveport	1/3/1975	1/18/1984	5/19/2014	1/18/1984	No
220374#	Belcher	6/27/78	4/6/00	5/19/14	Not in NFIP	No
220289#	Gilliam	9/19/75	4/6/00	5/19/14	Not in NFIP	No
220295#	Hosston	7/25/75	4/6/00	5/19/14	Not in NFIP	No
220339#	Mooringsport	6/25/76	5/17/04	5/19/14	Not in NFIP	No
220262#	Oil City	12/27/74	7/16/80	5/19/14	Not in NFIP (Suspended)	No
220308#	Rodessa	7/18/75	4/6/00	5/19/14	Not in NFIP (Suspended)	No
220351#	Vivian	3/26/76	4/6/00	5/19/14	Not in NFIP	No

According to the Community Rating System (CRS) list of eligible communities, Caddo Parish and the city of Shreveport participate in the CRS, while the incorporated areas of Belcher, Blanchard, Gilliam, Greenwood, Hosston, Ida, Mooringsport, Oil City, Rodessa, and Vivian, do not participate.

Table 2-21: List of Areas within Caddo Parish that Participate in the Community Rating System

Community Number	Name	CRS Entry Date	Current Effective Date	Current Class	% Discount for SFHA	% Discount for Non-SFHA	Status
220361	Caddo Parish	10/1/1995	10/1/2007	8	10	5	C
220036	Shreveport	10/1/1991	5/1/2008	7	15	5	C

Threat to People

Just as with property damage, depth and velocity are major factors in determining the threat posed to people by flooding. It takes very little depth or velocity for flood waters to become dangerous. A car will float in less than two feet of moving water, and can be swept downstream into deeper waters, trapping passengers within the vehicle. Victims of flooding have often put themselves in perilous situations by entering flood waters that they believe to be safe, or by ignoring travel advisories.

Major health concerns are also associated with floods. Flood waters can transport materials such as dirt, oil, animal waste, and chemicals (e.g., farm, lawn, and industrial) that may cause illnesses of various degrees when coming in contact with humans. Flood waters can also infiltrate sewer lines and inundate wastewater treatment plants, causing sewage to backup and creating a breeding ground for dangerous bacteria. This infiltration may also cause water supplies to become contaminated and undrinkable.

Flooding in Caddo Parish

By definition, flooding is caused when an area receives more water than the drainage system can convey. The following is a synopsis of the types of flooding that Caddo Parish experiences.

Flash Flooding: Flash flooding is characterized by a rapid rise in water level, high velocity, and large amounts of debris. It is capable of uprooting trees, undermining buildings and bridges, and scouring new channels. Major factors in flash flooding are the high intensity and short duration of rainfall, as well as the steepness of watershed and stream gradients.

Local Drainage or High Groundwater Levels: Locally heavy precipitation may produce flooding in areas other than delineated floodplains or along recognizable drainage channels. If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems.

Backwater Flooding: Backwater flooding is normally associated with riverine flooding and connotes minimal velocity. All low lying areas are at risk. A heavy rainfall event coupled with a swollen river, canal, bayou, or marsh hinders drainage outflow, causing backwater flooding to the same areas susceptible to storm surge.

Riverine Flooding: Riverine flooding is, by definition, river-based. Most of the riverine flooding problems occur when the Red River crests at flood stage levels, causing extensive flooding in low-lying areas.

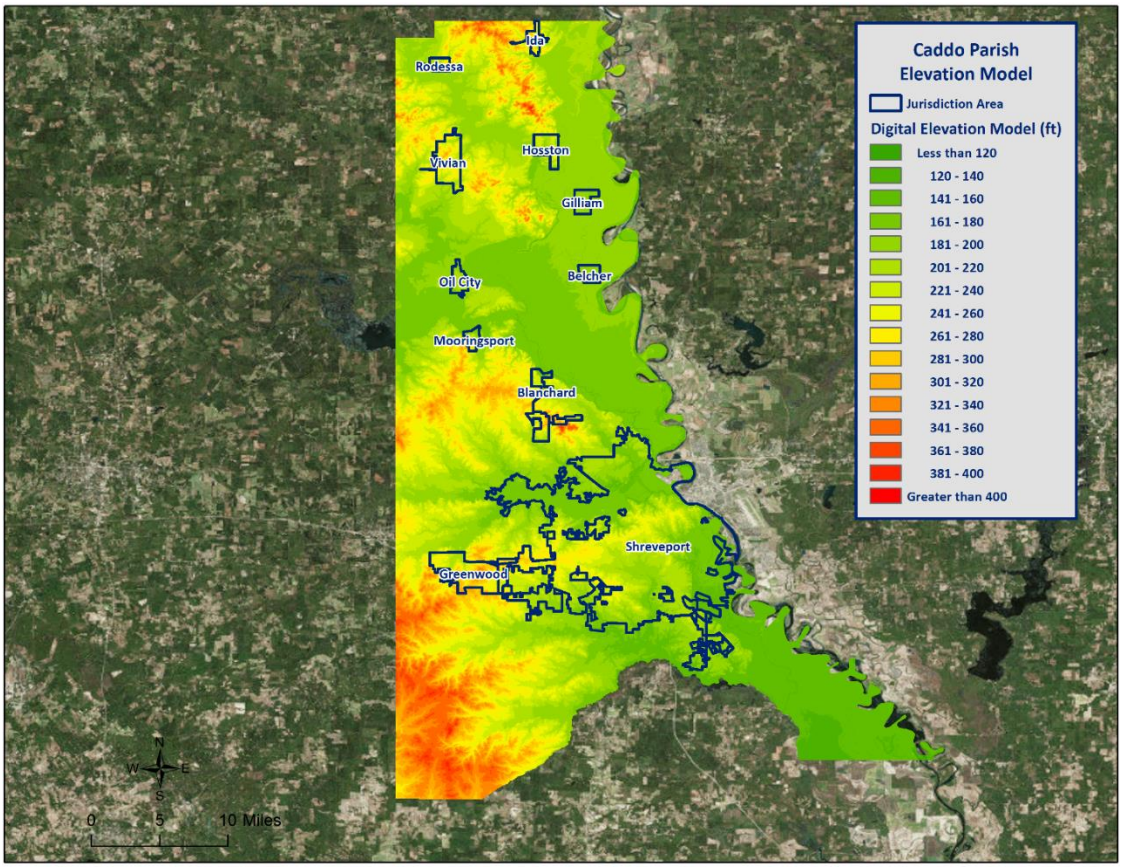

Figure 2-12: Elevation throughout Caddo Parish

Looking at the digital elevation model (DEM) in the figure for Caddo Parish is instructive in visualizing where the low lying and high risk areas are for the parish. Elevations in the parish range from less than 120 feet to over 400 feet. The highest elevations in the parish are approximately 400 feet, located in the unincorporated areas of the parish. The incorporated areas range in elevation from 144 to 272 feet, with Shreveport averaging 144 feet, Belcher averaging 187 feet, Gilliam averaging 190 feet, Oil City averaging 203 feet, Hosston averaging 220 feet, Blanchard averaging 223 feet, Mooringsport averaging 226 feet, Rodessa averaging 230 feet, Greenwood averaging 249 feet, Vivian averaging 256 feet, and Ida averaging 272 feet.

Location

Caddo Parish has experienced significant flooding in its history and can expect more in the future. Many parts of the parish are located in the 100-year floodplain. The low-lying area of Caddo Parish are subject to periodic headwater flooding caused by the inability of streams to handle heavy localized rainfalls of short duration. Backwater flooding on the Red River and its tributaries mainly affects areas located in the City of Shreveport. Caddo Parish lies wholly within the Red River Drainage Basin. Eventually, nearly all runoff in Caddo Parish runs into the Red River with most, if not all of it, indirectly. Caddo Parish is crossed by many bayous and streams which aid draining and serve to move runoff to the secondary drainage basins which drain the various parts of the parish.

The following are enlarged maps of the incorporated areas showing the areas within each jurisdiction that are at risk of flooding:

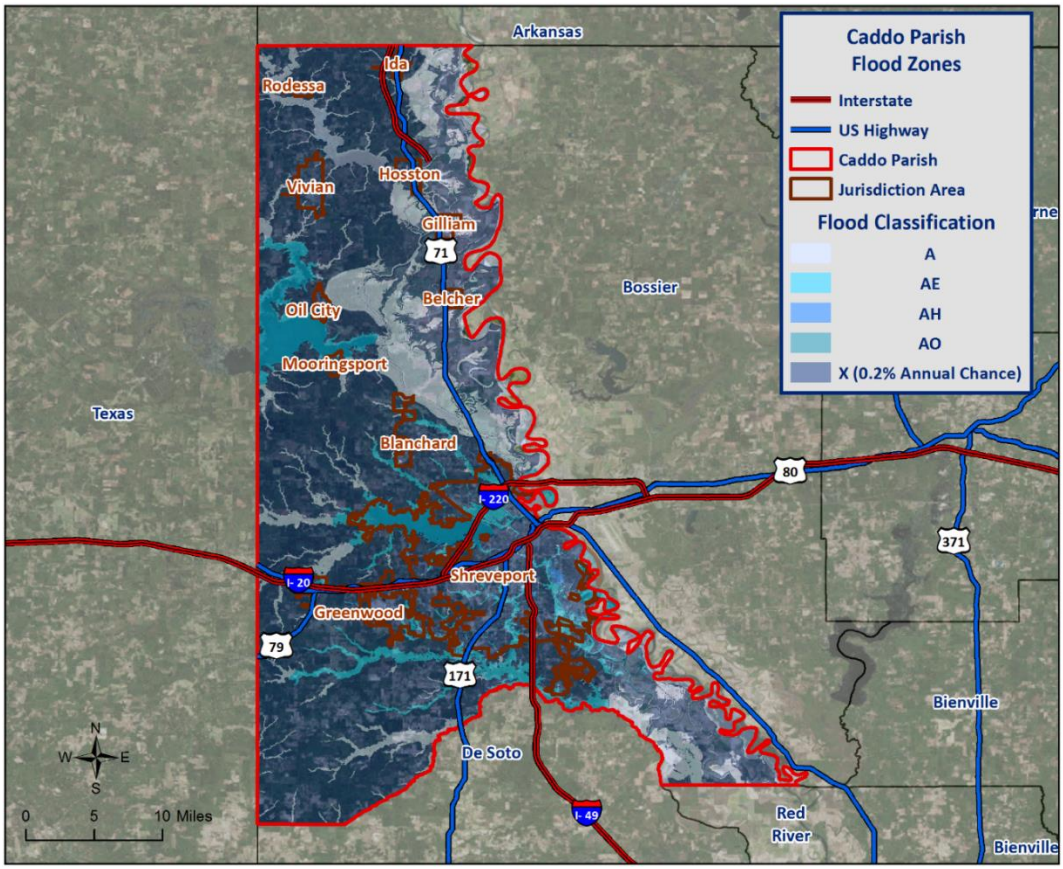

Figure 2-13: Caddo Parish Areas within the Flood Zones

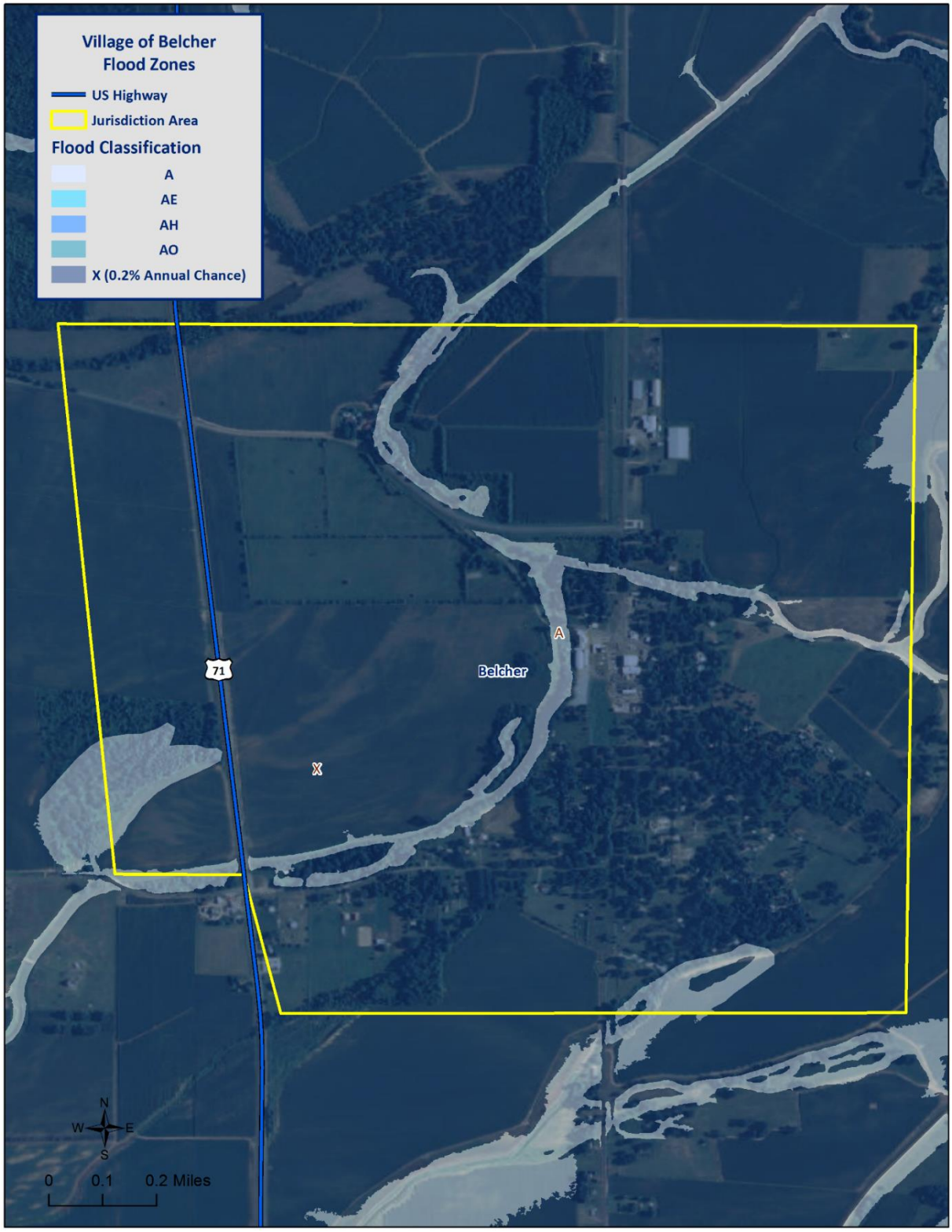

Figure 2-14: Village of Belcher Areas within the Flood Zones

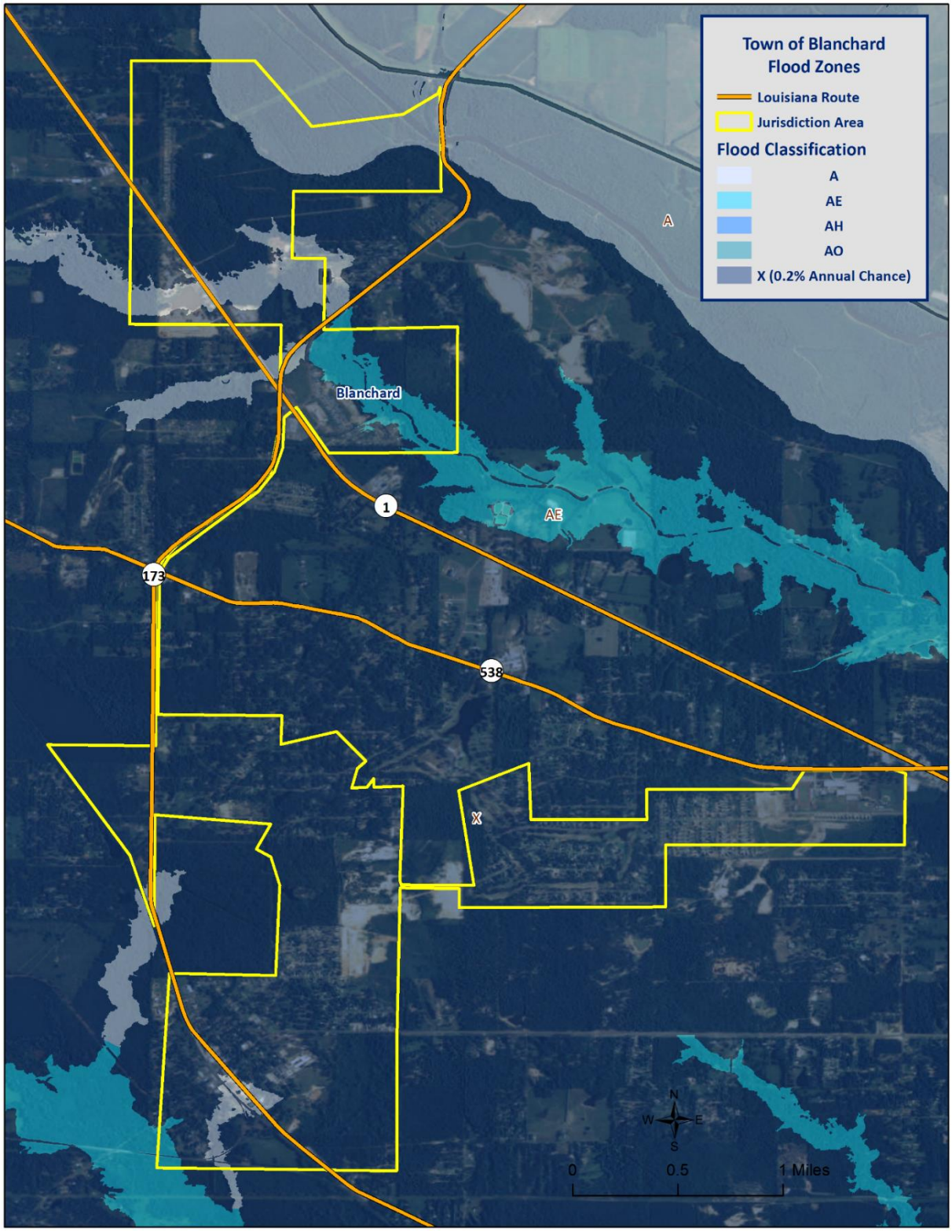

Figure 2-15: Town of Blanchard Areas within the Flood Zones

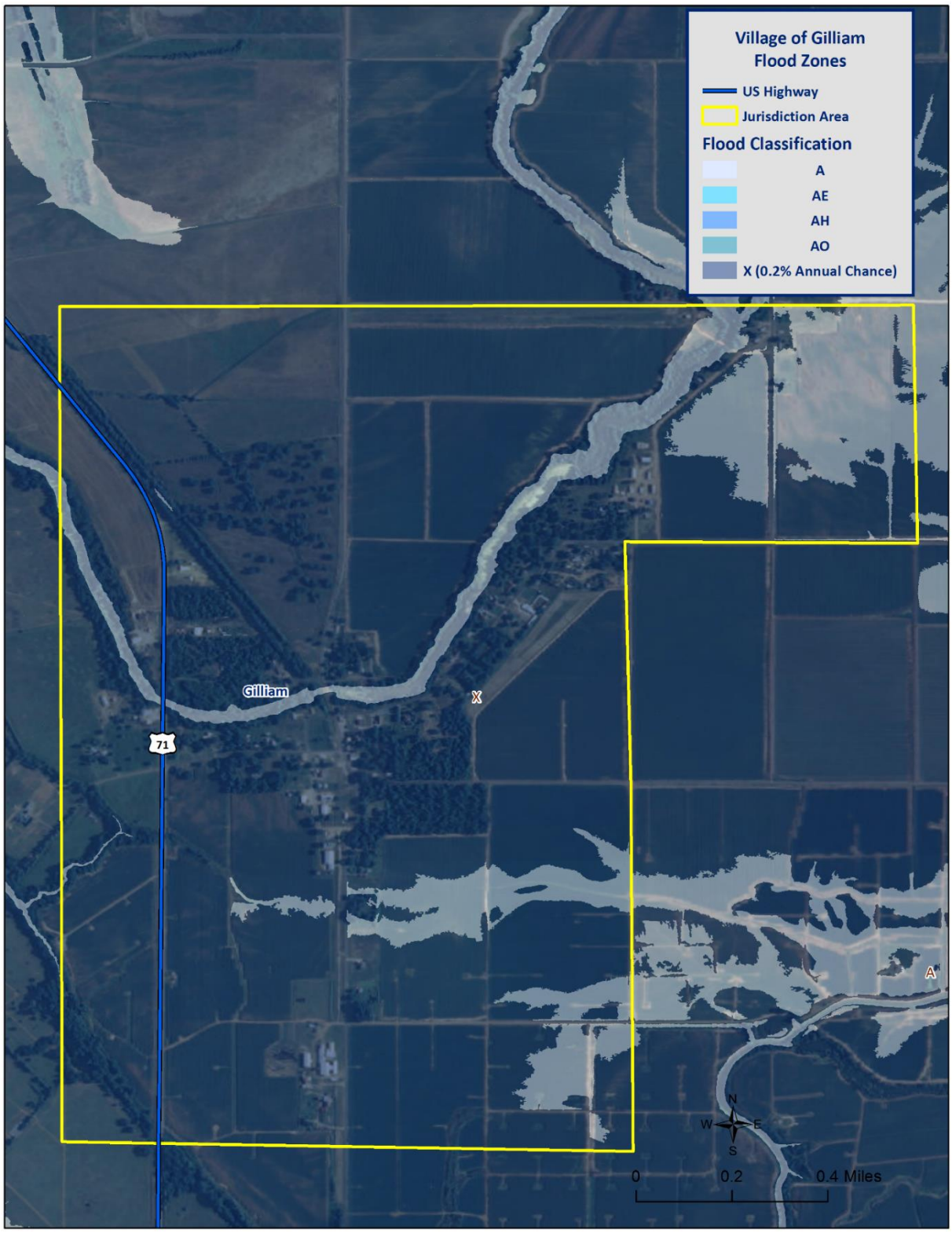

Figure 2-16: Village of Gilliam Areas within the Flood Zones

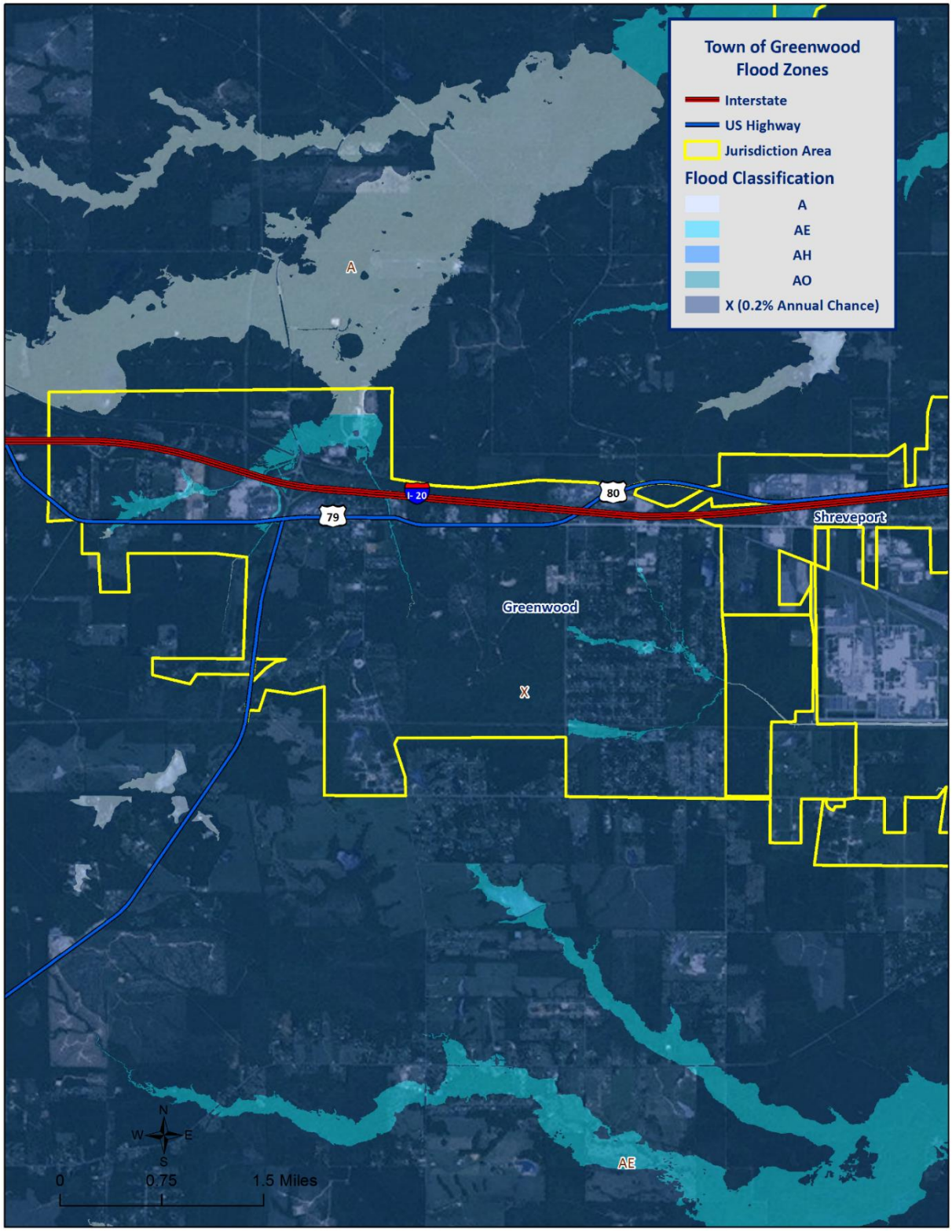

Figure 2-17: Town of Greenwood Areas within the Flood Zones

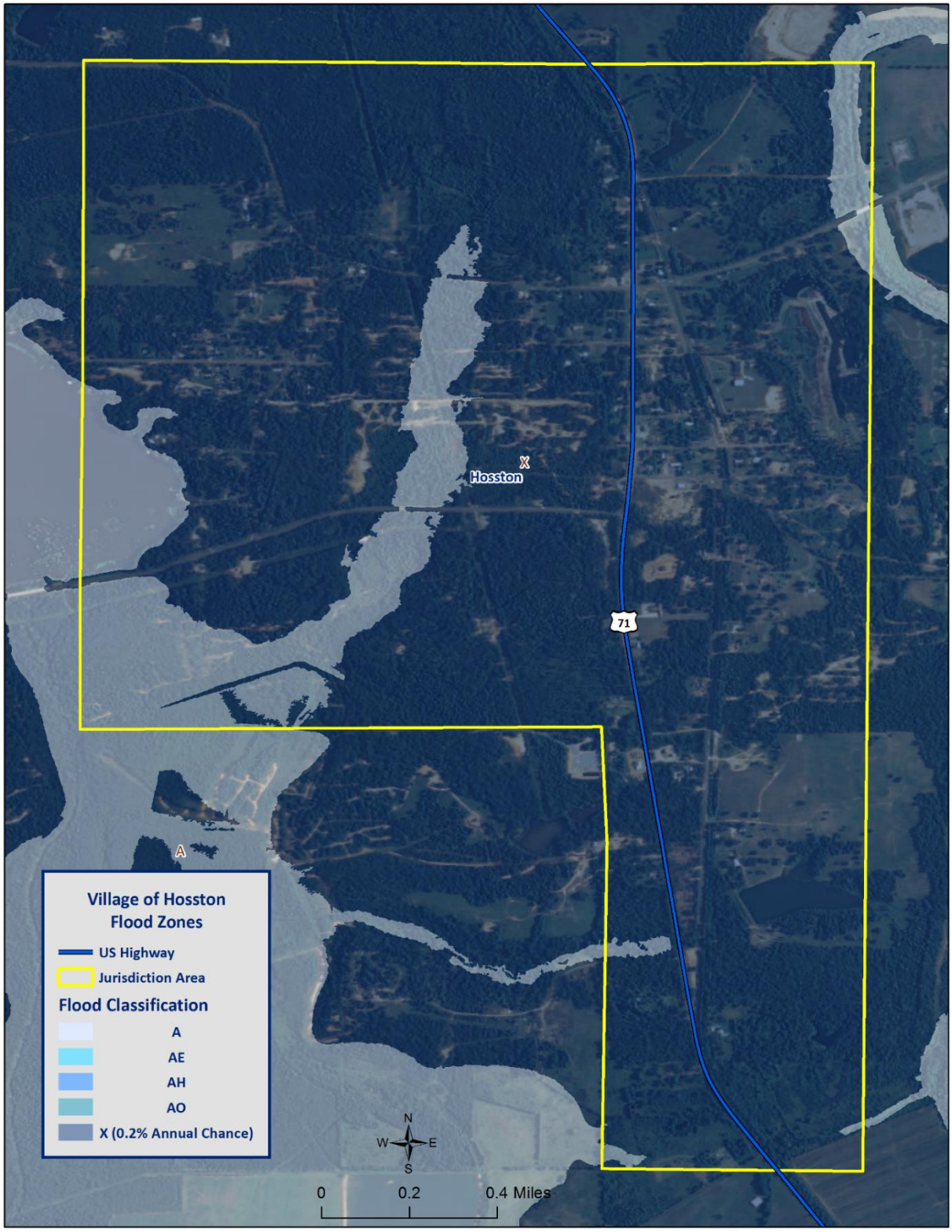

Figure 2-18: Village of Hosston Areas within the Flood Zones

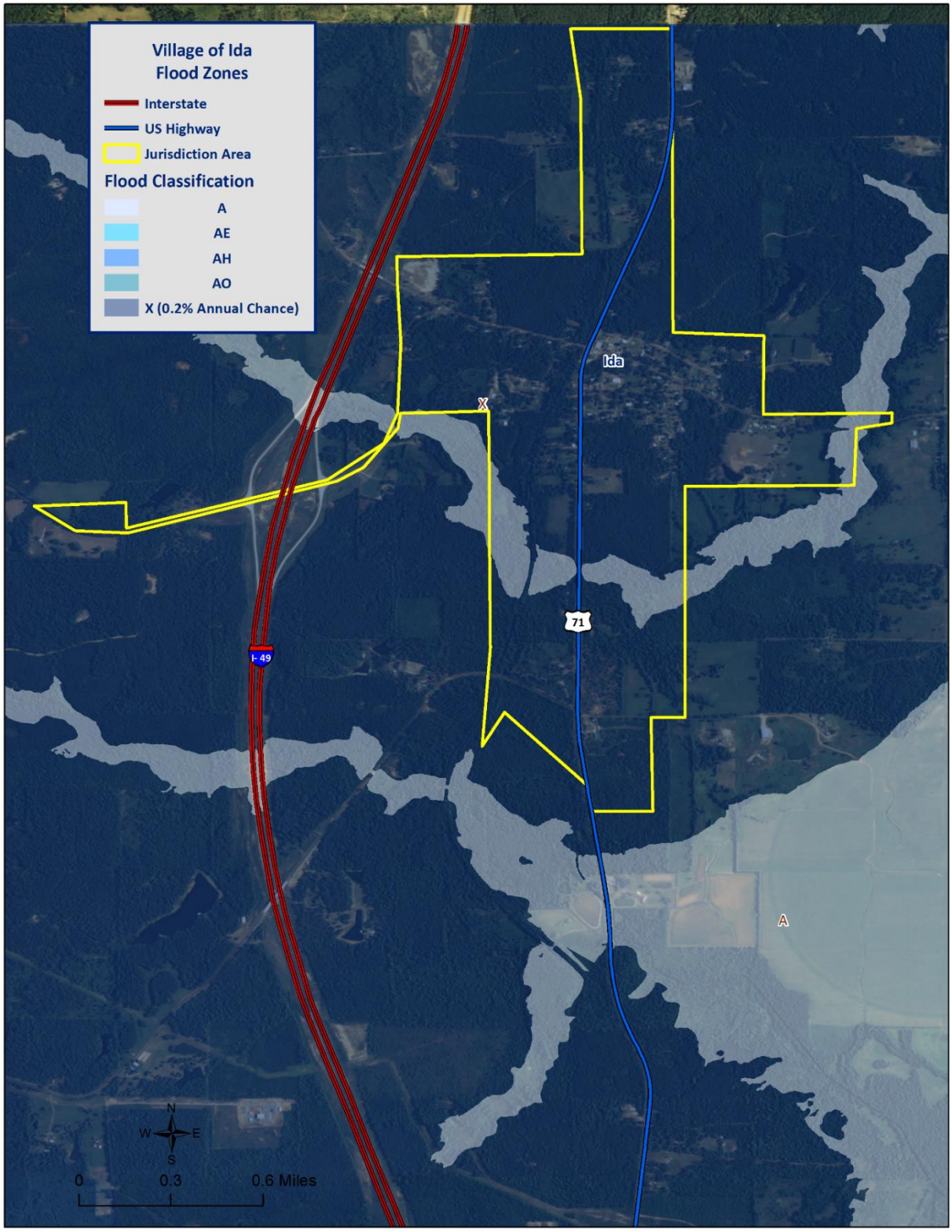

Figure 2-19: Village of Ida Areas within the Flood Zones

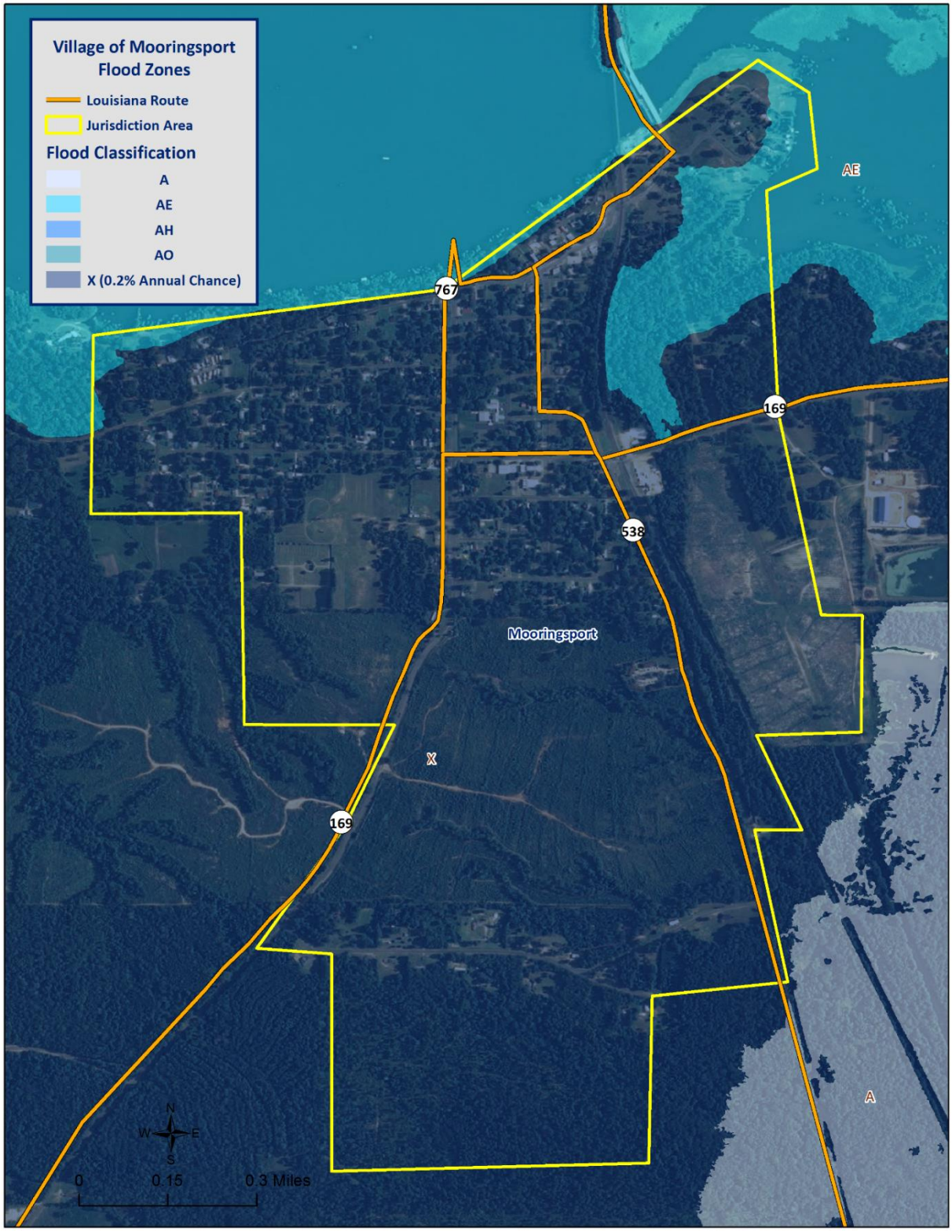

Figure 2-20: Village of Mooringsport Areas within the Flood Zones

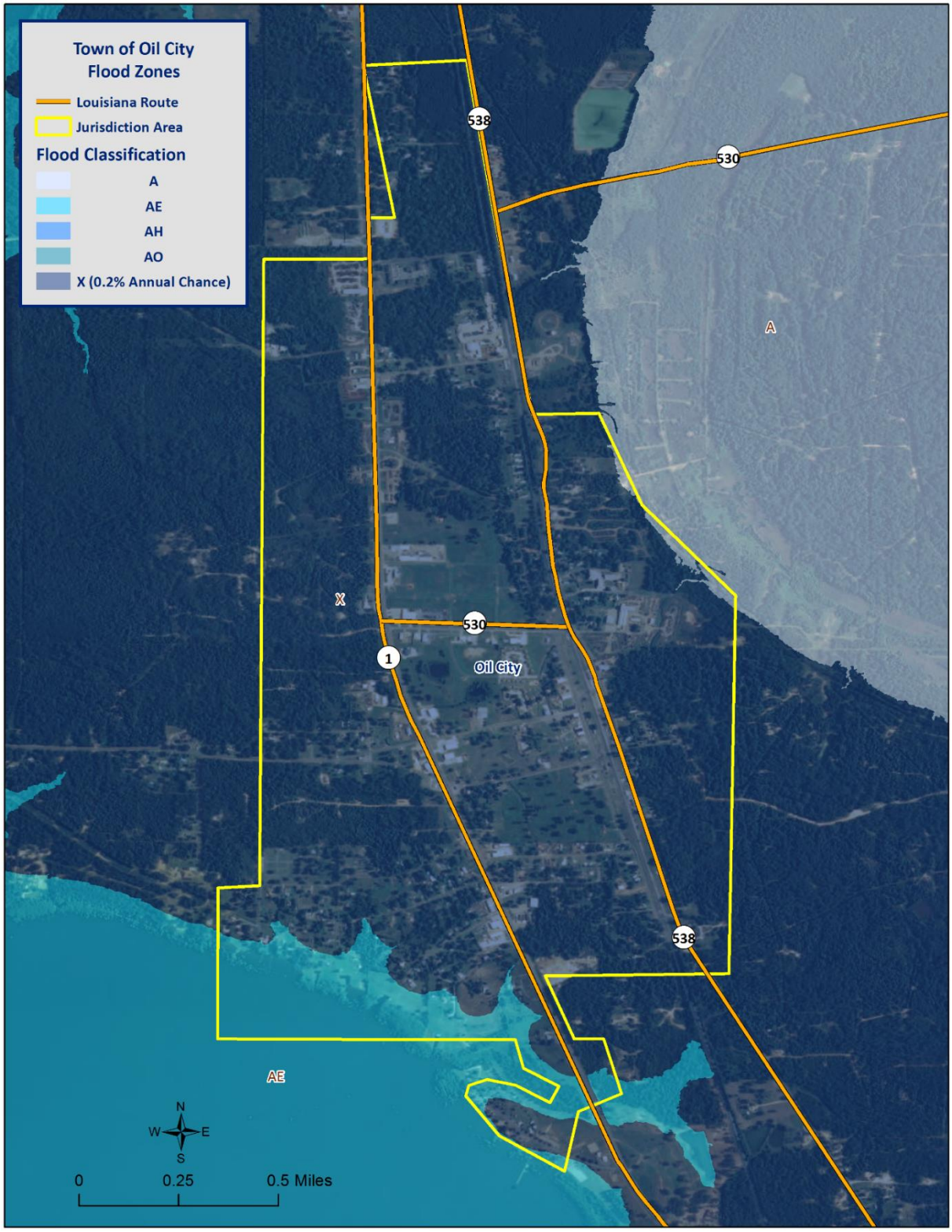

Figure 2-21: Town of Oil City Areas within the Flood Zones

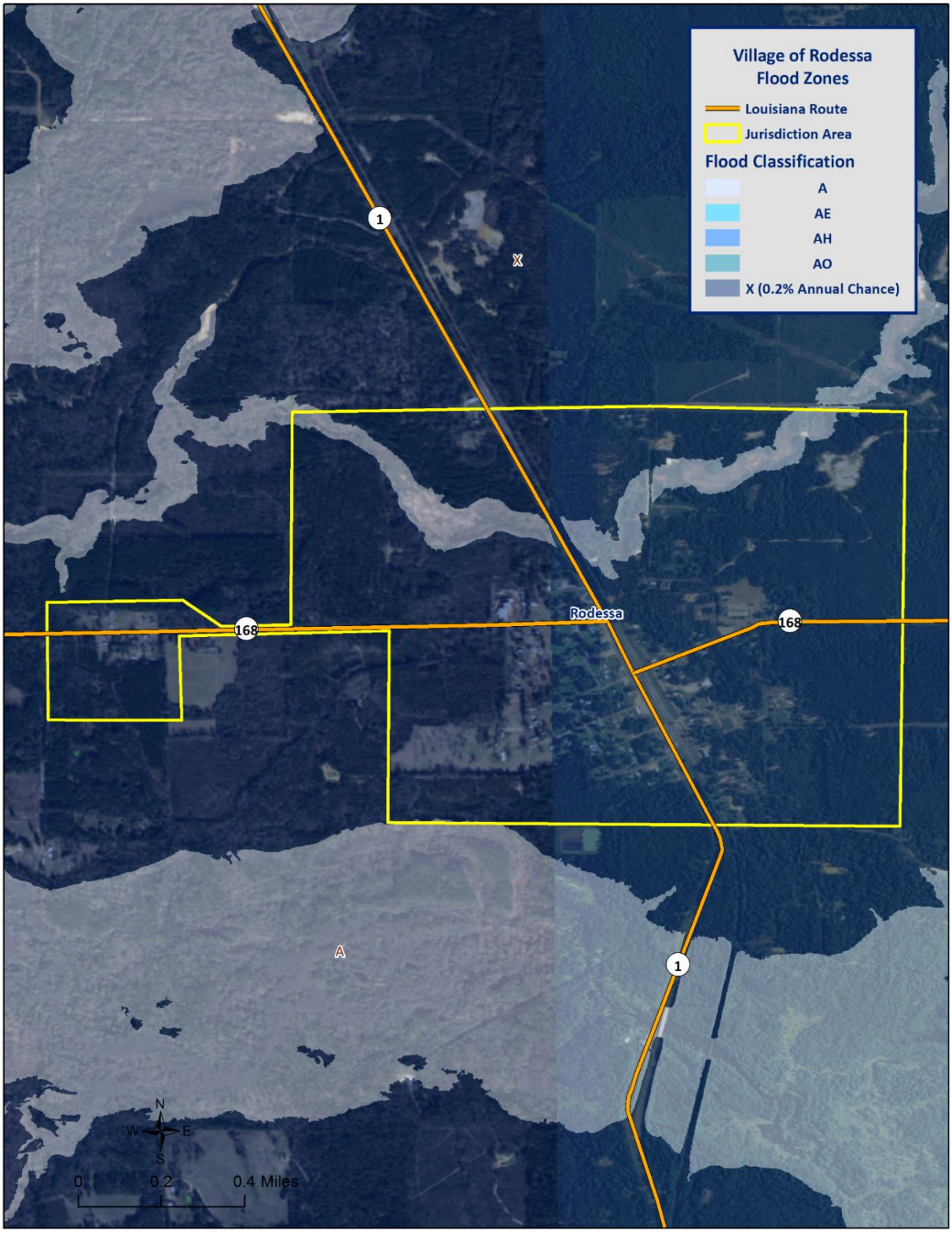

Figure 2-22: Village of Rodessa Areas within the Flood Zones

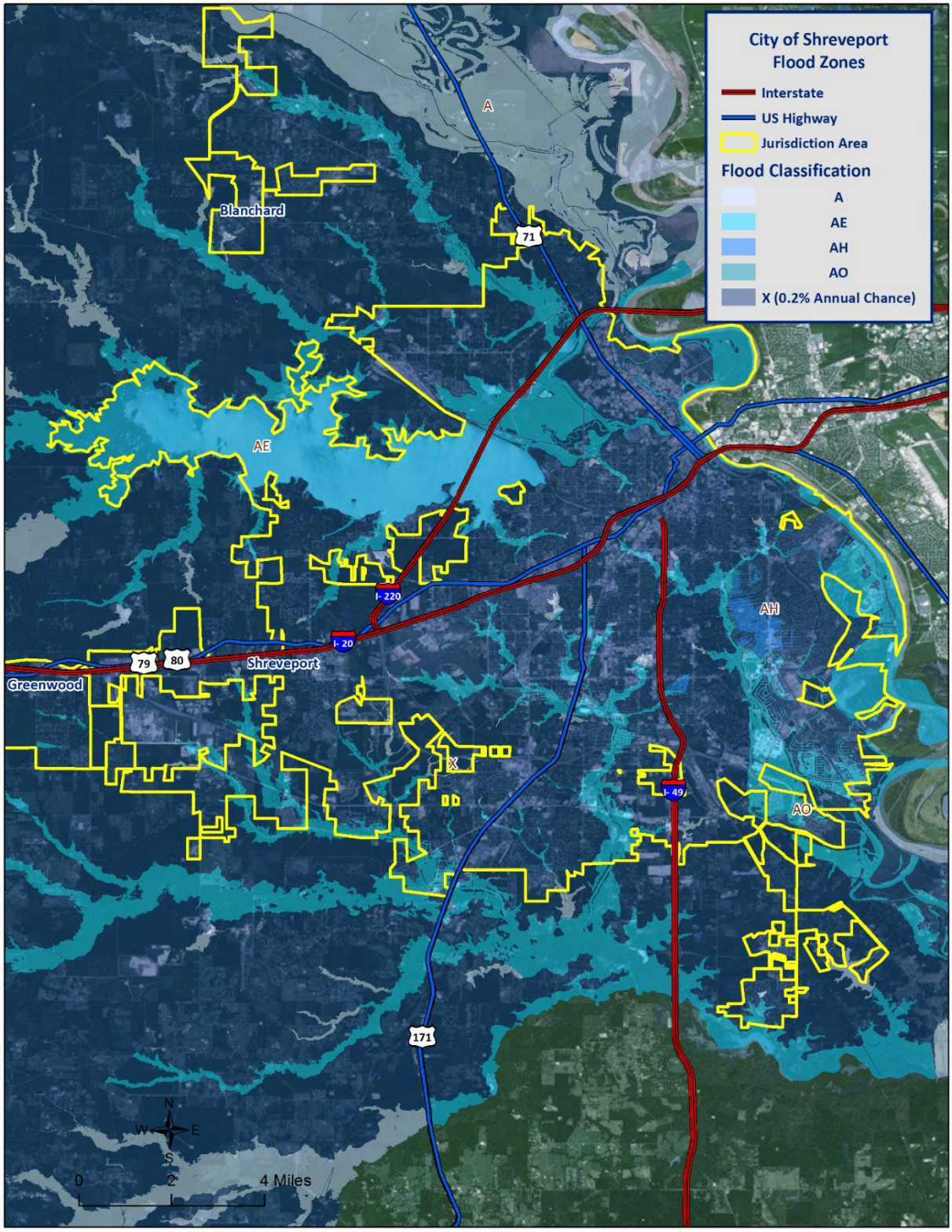

Figure 2-23: City of Shreveport Areas within the Flood Zones

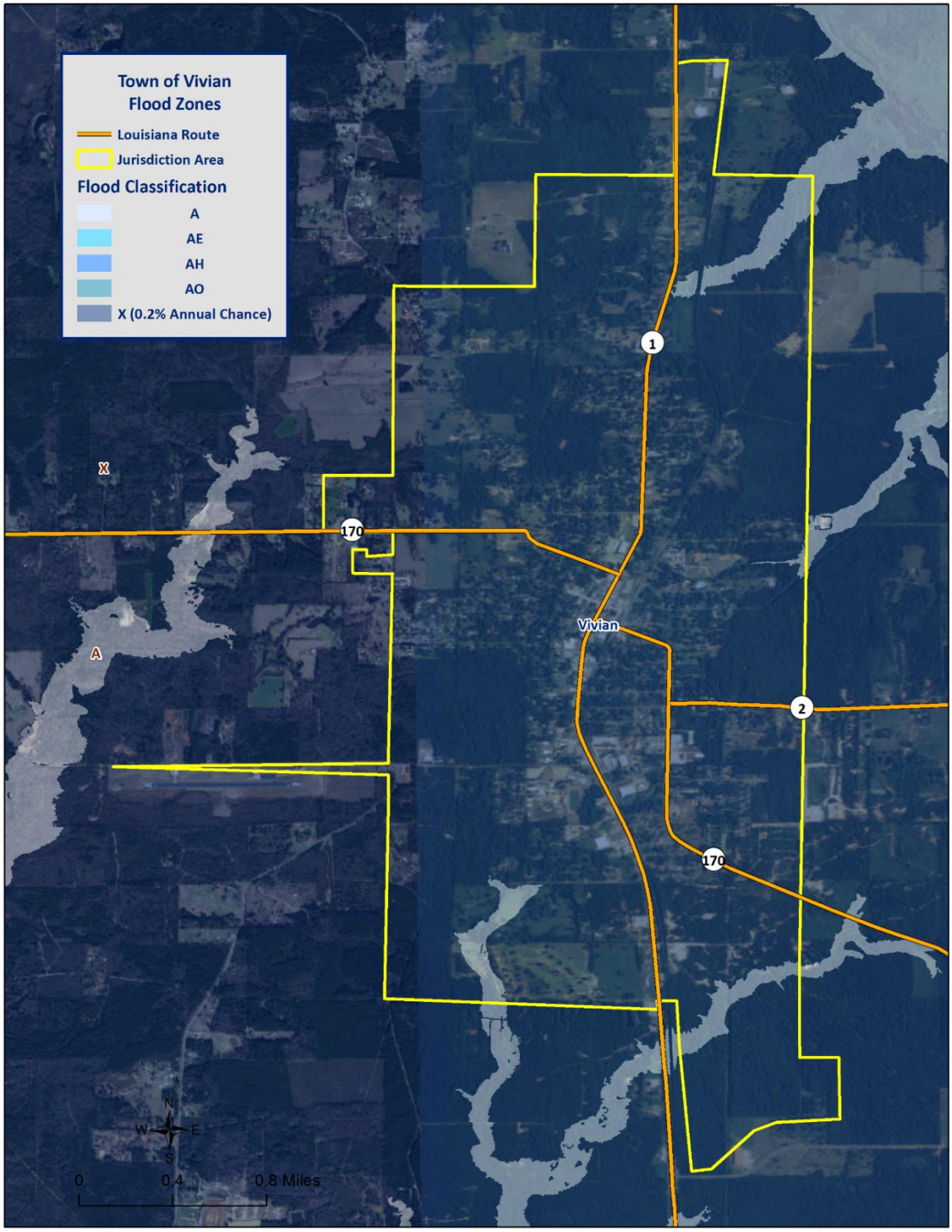

Figure 2-24: Town of Vivian Areas within the Flood Zones

Previous Occurrences / Extents

Historically, there have been 138 flooding events that have created significant flooding in Caddo Parish between 1990 and 2015. Below is a brief synopsis of the 14 flooding events that have occurred since 2010, including flooding events that have occurred since the parish's last planning update.

Table 2-22: Historical Floods in Caddo Parish with Locations from 2010 - 2015

Date	Extents	Type of Flooding	Estimated Damages	Location
July 17, 2010	A woman was trapped in her car on Highway 3036 in northern Shreveport when water quickly rose and covered most of her vehicle. The woman had to be rescued by boat.	Flash Flood	$10,000	SHREVEPORT
August 17, 2012	Numerous streets were flooded all across Shreveport and several were closed. High water rescues were needed for stalled vehicles on Southern Avenue as well as Caddo and Common Streets. Two feet of water entered the cafeteria at Fair Park High School.	Flash Flood	$100,000	JEWELLA
June 6, 2013	Cars were stalled out in flood waters at Pines Road and West 70th Street as well as Fox Chase Circle and the inter of Hollywood and Jewella Avenue.	Flash Flood	$15,000	NICHOLS
June 18, 2013	Up to four feet of water flooded roadways across Shreveport. Several inches of water entered one house.	Flash Flood	$20,000	SHREVEPORT
September 20, 2013	High water was reported on Roma Drive near Youree Drive in Southeast Shreveport.	Flash Flood	$0	DIXIE GARDENS
March 12, 2015	Several city streets were flooded with several cars stranded due to high water. A drainage ditch completely caved in from flood waters prompting voluntary evacuations from the Normandy Village neighborhood.	Flash Flood	$110,000	SHREVEPORT and SPRING RIDGE

Date	Extents	Type of Flooding	Estimated Damages	Location
May 18, 2015	High water was reported on streets around the parish. Several cars were stalled due to the high water. Several homes were flooded as well.	Flash Flood	$55,000	SHREVEPORT and UNINCORPORATED AREAS
May 30, 2015	Excessive heavy rainfall resulted in reports of high water.	Flash Flood	$0	SHREVEPORT and DIXIE GARDENS
May 30, 2015	Excessive heavy rainfall resulted in very high river levels on the Red River.	Flood	$0	MISSIONARY
June 1, 2015	The Red River crested at 37.14 feet marking the highest crest in the Shreveport area since the flood of 1945. Over 5,000 acres of farmland and pastureland were inundated. Several bridges over the Red River were closed. Approximately 150 dwellings were affected with 40 homes completely inundated.	Flood	$8,200,000	MISSIONARY
June 18, 2015	The remnants of Tropical Storm Bill brought excessive heavy rainfall to the area, prompting road closures.	Flash Flood	$0	SHREVEPORT and UNINCORPORATED AREAS
June 30, 2015	Flash flooding resulted in a completely submerged vehicle at the intersection of Knight and Shreveport/Barksdale Highway in Shreveport.	Flash Flood	$0	DIXIE GARDENS
August 19, 2015	Multiple roads were flooded in and around the Greenwood community.	Flash Flood	$0	GREENWOOD
November 17, 2015	Flournoy Lucas Road west of Ellerbe Road was flooded and closed. High water was also reported in the Rosenwald Subdivision.	Flash Flood	$0	FORBING and LAKE VIEW

Since 2010, there have been no significant flooding events in the incorporated areas of Belcher, Blanchard, Gilliam, Hosston, Ida, Mooringsport, Oil City, Rodessa, and Vivian. The worst-case scenarios are based on several different types of flooding events. Storm water excesses and riverine flooding primarily affect the low-lying areas of the parish, and flood depths of up to six feet can be expected in the unincorporated areas of the parish and the incorporated area of Shreveport. The incorporated areas of Blanchard, Belcher, Gilliam, Greenwood, and Rodessa can expect flood depths from two to five feet, while the incorporated areas of Mooringsport, Hosston, and Vivian can expect flooding levels of approximately two feet. The incorporated areas of Ida and Oil City can expect flood levels of approximately one to two feet.

Frequency / Probability

While other parts of this plan, along with the State's Hazard Mitigation Plan, have relied on the SHELDUS database to provide the annual probability, due to Caddo Parish having multiple jurisdictions, it was necessary to assess the historical data found in the National Climatic Data Center for Caddo Parish and its jurisdictions to properly determine probability for future flood events. The table below shows the probability and return frequency for each jurisdiction.

Table 2-23: Annual Flood Probabilities for Caddo Parish

Jurisdiction	Annual Probability	Return Frequency
Caddo Parish (Unincorporated)	100%	Less than once a year
Belcher	36%	2 – 3 years
Blanchard	32%	3 – 4 years
Gilliam	32%	3 – 4 years
Greenwood	48%	2 – 3 years
Hosston	32%	3 – 4 years
Ida	32%	3 – 4 years
Mooringsport	44%	2 – 3 years
Oil City	40%	2 – 3 years
Rodessa	36%	2 – 3 years
Shreveport	100%	Less than once a year
Vivian	48%	2 – 3 years

Based on historical record, the overall flooding probability for the entire Caddo Parish planning area is 100%, with 138 events occurring over a 25-year period.

Estimated Potential Losses

Using the Hazus 2.2 Flood Model, along with the Parish DFIRM, the 100-year flood scenario was analyzed to determine losses from this worst-case scenario. On the next page, *Table 2-24* shows the total economic losses that would result from this occurrence.

Table 2-24: Estimated Losses in Caddo Parish from a 100-Year Flood Event (Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Flood Event
Caddo Parish (Unincorporated)	$208,629,000
Belcher	$213,000
Blanchard	$5,621,000
Gilliam	$503,000
Greenwood	$2,746,000
Hosston	$47,000
Ida	$0
Mooringsport	$1,115,000
Oil City	$0
Rodessa	$174,000
Shreveport	$534,817,000
Vivian	$1,000
Total	$753,866,000

The Hazus 2.2 Flood Model also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the following tables. These sectors are comprised of privately owned structures/facilities, as well as locally, state, and federally owned structures/facilities.

Table 2-25: Estimated 100-Year Flood Losses for Unincorporated Caddo Parish by Sector (Source: Hazus 2.2)

Caddo Parish (Unincorporated)	Estimated Total Losses from 100-Year Flood Event
Agricultural	$1,149,000
Commercial	$27,981,000
Government	$1,164,000
Industrial	$23,294,000
Religious / Non-Profit	$14,120,000
Residential	$139,858,000
Schools	$1,063,000
Total	$208,629,000

Table 2-26: Estimated 100-Year Flood Losses for Belcher by Sector (Source: Hazus 2.2)

Belcher	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$62,000
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$151,000
Schools	$0
Total	$213,000

Table 2-27: Estimated 100-Year Flood Losses for Blanchard by Sector (Source: Hazus 2.2)

Blanchard	Estimated Total Losses from 100-Year Flood Event
Agricultural	$3,000
Commercial	$134,000
Government	$0
Industrial	$165,000
Religious / Non-Profit	$7,000
Residential	$5,223,000
Schools	$89,000
Total	$5,621,000

Table 2-28: Estimated 100-Year Flood Losses for Gilliam by Sector (Source: Hazus 2.2)

Gilliam	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$145,000
Religious / Non-Profit	$0
Residential	$358,000
Schools	$0
Total	$503,000

Table 2-29: Estimated 100-Year Flood Losses for Greenwood by Sector (Source: Hazus 2.2)

Greenwood	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$1,373,000
Government	$194,000
Industrial	$322,000
Religious / Non-Profit	$167,000
Residential	$690,000
Schools	$0
Total	$2,746,000

Table 2-30: Estimated 100-Year Flood Losses for Hosston by Sector (Source: Hazus 2.2)

Hosston	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$10,000
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$37,000
Schools	$0
Total	$47,000

Table 2-31: Estimated 100-Year Flood Losses for Mooringsport by Sector (Source: Hazus 2.2)

Mooringsport	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$1,068,000
Schools	$47,000
Total	$1,115,000

Table 2-32: Estimated 100-Year Flood Losses for Rodessa by Sector (Source: Hazus 2.2)

Rodessa	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$60,000
Government	$0
Industrial	$47,000
Religious / Non-Profit	$30,000
Residential	$37,000
Schools	$0
Total	$174,000

Table 2-33: Estimated 100-Year Flood Losses for Shreveport by Sector (Source: Hazus 2.2)

Shreveport	Estimated Total Losses from 100-Year Flood Event
Agricultural	$2,335,000
Commercial	$175,515,000
Government	$1,037,000
Industrial	$48,900,000
Religious / Non-Profit	$11,577,000
Residential	$292,443,000
Schools	$3,010,000
Total	$534,817,000

Table 2-34: Estimated 100-Year Flood Losses for Vivian by Sector (Source: Hazus 2.2)

Vivian	Estimated Total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$0
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$1,000
Schools	$0
Total	$1,000

Threat to People

The total population within the parish that is susceptible to a flood hazard is shown in the table below:

Table 2-35: Vulnerable Populations Susceptible to a 100-Year Flood Event (Source: Hazus 2.2)

Number of People Exposed to Flood Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
Caddo Parish (Unincorporated)	**42,832**	**25,705**	**60.0%**
Belcher	**263**	**38**	**692.1%**
Blanchard	**2,899**	**496**	**17.1%**
Gilliam	**164**	**88**	**53.7%**
Greenwood	**3,219**	**760**	**23.6%**
Hosston	**318**	**24**	**7.5%**
Ida	**221**	**0**	**0.0%**
Mooringsport	**793**	**48**	**6.1%**
Oil City	**1,008**	**0**	**0.0%**
Rodessa	**270**	**8**	**3.0%**
Shreveport	**199,311**	**41,243**	**20.7%**
Vivian	**3,671**	**55**	**1.5%**
Total	**254,969**	**68,465**	**26.9%**

The Hazus 2.2 Flood Model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions in the following tables:

Table 2-36: Vulnerable Populations Susceptible to a 100-Year Flood Event in Unincorporated Caddo Parish (Source: Hazus 2.2)

Caddo Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	25,705	60.0%
Persons Under 5 Years	1,799	7.0%
Persons Under 18 Years	6,323	24.6%
Persons 65 Years and Over	3,496	13.6%
White	12,467	48.5%
Minority	13,238	51.5%

Table 2-37: Vulnerable Populations Susceptible to a 100-Year Flood Event in Belcher (Source: Hazus 2.2)

Belcher		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	38	692.1%
Persons Under 5 Years	3	6.8%
Persons Under 18 Years	6	14.8%
Persons 65 Years and Over	8	20.2%
White	26	68.8%
Minority	12	31.2%

Table 2-38: Vulnerable Populations Susceptible to a 100-Year Flood Event in Blanchard (Source: Hazus 2.2)

Blanchard		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	496	17.1%
Persons Under 5 Years	37	7.5%
Persons Under 18 Years	85	17.2%
Persons 65 Years and Over	58	11.7%
White	442	89.1%
Minority	54	10.9%

Table 2-39: Vulnerable Populations Susceptible to a 100-Year Flood Event in Gilliam (Source: Hazus 2.2)

Gilliam		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	88	53.7%
Persons Under 5 Years	4	4.9%
Persons Under 18 Years	13	15.2%
Persons 65 Years and Over	13	15.2%
White	52	58.5%
Minority	36	41.5%

Table 2-40: Vulnerable Populations Susceptible to a 100-Year Flood Event in Greenwood (Source: Hazus 2.2)

Greenwood		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	760	23.6%
Persons Under 5 Years	42	5.5%
Persons Under 18 Years	116	15.2%
Persons 65 Years and Over	105	13.8%
White	539	70.9%
Minority	221	29.1%

Table 2-41: Vulnerable Populations Susceptible to a 100-Year Flood Event in Hosston (Source: Hazus 2.2)

Hosston		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	24	7.5%
Persons Under 5 Years	1	4.1%
Persons Under 18 Years	4	16.0%
Persons 65 Years and Over	4	17.3%
White	17	72.3%
Minority	7	27.7%

Table 2-42: Vulnerable Populations Susceptible to a 100-Year Flood Event in Mooringsport (Source: Hazus 2.2)

Mooringsport		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	48	6.1%
Persons Under 5 Years	3	6.8%
Persons Under 18 Years	9	18.7%
Persons 65 Years and Over	8	16.8%
White	40	83.7%
Minority	8	16.3%

Table 2-43: Vulnerable Populations Susceptible to a 100-Year Flood Event in Rodessa (Source: Hazus 2.2)

Rodessa		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	8	3.0%
Persons Under 5 Years	1	6.3%
Persons Under 18 Years	2	20.7%
Persons 65 Years and Over	1	14.1%
White	5	64.8%
Minority	3	35.2%

Table 2-44: Vulnerable Populations Susceptible to a 100-Year Flood Event in Shreveport (Source: Hazus 2.2)

Shreveport		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	41,243	20.7%
Persons Under 5 Years	2,994	7.3%
Persons Under 18 Years	7,321	17.8%
Persons 65 Years and Over	5,428	13.2%
White	16,976	41.2%
Minority	24,267	58.8%

Table 2-45: Vulnerable Populations Susceptible to a 100-Year Flood Event in Vivian (Source: Hazus 2.2)

Vivian		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	55	1.5%
Persons Under 5 Years	4	7.6%
Persons Under 18 Years	11	19.3%
Persons 65 Years and Over	9	16.3%
White	31	55.8%
Minority	24	44.2%

Vulnerability

See Appendix C for parish and municipality buildings that are susceptible to flooding due to proximity within the 100-year floodplain.

Thunderstorms

The term "thunderstorm" is usually used as a catch-all term for several kinds of storms. Here, "thunderstorm" is defined to include any precipitation event in which thunder is heard or lightning is seen. Thunderstorms are often accompanied by heavy rain and strong winds, and depending on conditions, occasionally by hail or snow. Thunderstorms form when humid air masses are heated, which causes them to become convectively unstable. Consequently, the air masses rise. Upon rising, the air masses' water vapor condenses into liquid water and/or deposits directly into ice when they rise sufficiently to cool to the dew-point temperature.

Thunderstorms are classified into four main types (single-cell, multi-cell, squall line, and supercell), depending on the degree of atmospheric instability, the change in wind speed with height (called wind shear), and the degree to which the storm's internal dynamics are coordinated with those of adjacent storms. There is no such interaction for single-cell thunderstorms, but there is significant interaction with clusters of adjacent thunderstorms in multi-cell thunderstorms, and with a linear "chain" of adjacent storms in squall line thunderstorms. Though supercell storms have no significant interactions with other storms, they have very well-organized and self-sustaining internal dynamics, which allows them to be the longest-lived and most severe of all thunderstorms.

The life of a thunderstorm proceeds through three stages: the developing (or cumulus) stage, the mature stage, and the dissipation stage. During the developing stage, the unstable air mass is lifted as an updraft into the atmosphere. This sudden lift rapidly cools the moisture in the air mass, releasing latent heat as condensation and/or deposition occurs, which warms the surrounding environment, thus making it less dense than the surrounding air. This process intensifies the updraft and creates a localized lateral rush of air from all directions into the area beneath the thunderstorm to feed continued updrafts. At the mature stage, the rising air is accompanied by downdrafts caused by the shear of falling rain (if melted completely), or hail, freezing rain, sleet, or snow (if not melted completely). The dissipation stage is characterized by the dominating presence of the downdraft as the hot surface that gave the updrafts their buoyancy is cooled by precipitation. During the dissipation stage, the moisture in the air mass largely empties out.

The Storm Prediction Center, in conjunction with the National Weather Service (NWS), has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued, along with definitions of each:

- *Severe Thunderstorm Watch*: Issued to alert people to the possibility of a severe thunderstorm developing in the area. Expected time frame for these storms is three to six hours.

- *Severe Thunderstorm Warning*: Issued when severe thunderstorms are imminent. This warning is highly localized and covers parts of one to several parishes (counties).

A variety of hazards might be produced by thunderstorms, including lightning, hail, tornadoes or waterspouts, flash flooding, and high-speed winds called downbursts. Nevertheless, given the criteria, the National Oceanic and Atmospheric Administration (NOAA) characterizes a thunderstorm as severe when it produces one or more of the following:

- Hail of one inch in diameter or larger
- Wind gusts to 58 mph or greater
- One or more tornadoes

Tornadoes and flooding hazards have been profiled within this report; therefore, for the purpose of thunderstorms, the sub-hazards of hail, high winds, and lightning will be profiled.

Thunderstorms occur throughout Louisiana at all times of the year, although the types and severity of those storms vary greatly depending on a wide variety of atmospheric conditions. Thunderstorms generally occur more frequently during the late spring and early summer when extreme variations exist between ground surface temperatures and upper atmospheric temperatures.

Hazard Description

Hailstorms

Hailstorms are severe thunderstorms in which balls or chunks of ice fall along with rain. Hail initially develops in the upper atmosphere as ice crystals that are bounced about by high-velocity updraft winds. The ice crystals grow through deposition of water vapor onto their surface. They then fall partially to a level in the cloud where the temperature exceeds the freezing point, melt partially, and then get caught in another updraft whereupon re-freezing and deposition grows another concentric layer of ice. After several trips up and down the cloud, they develop enough weight to fall. The size of hailstones varies depending on the severity and size of the thunderstorm. Higher surface temperatures generally mean stronger updrafts, which allow more massive hailstones to be supported by updrafts, leaving them suspended longer. This longer suspension time results in larger hailstone sizes. The tables on the next page display the TORRO Hailstorm Intensity Scale, along with a spectrum of hailstone diameters and their everyday equivalents.

Table 2-46: TORRO Hailstorm Intensity Scale

Intensity Category		Hail Diameter (mm)	Probable Kinetic Energy	Typical Damage Impacts
H0	Hard Hail	5	0 - 20	No damage
H1	Potentially Damaging	5 - 15	>20	Slight general damage to plant, crops
H2	Significant	10 - 20	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20 - 30	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25 - 40	>500	Widespread glass damage, vehicle body work
H5	Destructive	30 - 50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40 - 60		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50 - 75		Severe roof damage, risk of serious injuries
H8	Destructive	60 - 90		Severe damage to aircraft bodywork
H9	Super Hailstorms	75 - 100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Table 2-47: Spectrum of Hailstone Diameters and their Everyday Description (Source: National Weather Service)

Spectrum of Hailstone Diameters	
Hail Diameter Size	**Description**
1/4”	Pea
1/2”	Plain M&M
3/4”	Penny
7/8”	Nickle
1” (severe)	Quarter
1 1/4”	Half Dollar
1 1/2”	Ping Pong Ball / Walnut
1 3/4”	Golf Ball
2”	Hen Egg / Lime
2 1/2"	Tennis Ball
2 3/4"	Baseball
3”	Teacup / Large Apple
4”	Softball
4 1/2"	Grapefruit
4 3/4” – 5”	Computer CD-DVD

Hailstorms can cause widespread damage to structures, automobiles, and crops. While the damage to individual structures or vehicles is often minor, the cumulative cost to communities, especially across large metropolitan areas, can be quite significant. Hailstorms can also be devastating to crops. Thus, the severity of hailstorms depends on the size of the hailstones, the length of time the storm lasts, and where it occurs.

Hail rarely causes loss of life, although large hailstones can cause bodily injury.

High Winds

In general, high winds can occur in a number of different ways, within and without thunderstorms. The Federal Emergency Management Agency (FEMA) distinguishes these as shown in the following table.

Table 2-48: High Winds Categorized by Source, Frequency, and Duration (Source: Making Critical Facilities Safe from High Wind, FEMA)

High Winds Categories			
High Wind Type	**Description**	**Relative Frequency in Louisiana**	**Relative Maximum Duration in Louisiana**
Straight-line Winds	Wind blowing in straight line; usually associated with intense low-pressure area	High	Few minutes – 1 day
Downslope Winds	Wind blowing down the slope of a mountain; associated with temperature and pressure gradients	N/A	N/A
Thunderstorm Winds	Wind blowing due to thunderstorms, and thus associated with temperature and pressure gradients	High (especially in the spring and summer	Few minutes – several hours
Downbursts	Sudden wind blowing down due to downdraft in a thunderstorm; spreads out horizontally at the ground, possibly forming horizontal vortex rings around the downdraft	Medium-to-High(~5% of all thunderstorms)	~15 – 20 minutes
Northeaster (nor'easter) Winds	Wind blowing due to cyclonic storm off the east coast of North America; associated with temperature and pressure gradients between the Atlantic and land	N/A	N/A
Hurricane Winds	Wind blowing in spirals, converging with increasing speed toward eye; associated with temperature and pressure gradients between the Atlantic and Gulf and land	Low-to-Medium	Several days
Tornado Winds	Violently rotating column of air from base of a thunderstorm to the ground with rapidly decreasing winds at greater distances from center; associated with extreme temperature gradient	Low-to-Medium	Few minutes – few hours

The only high winds of present concern are thunderstorm winds and downbursts. Straight-line winds are common but are a relatively insignificant hazard (on land) compared to other high winds. Downslope winds are common but relatively insignificant in the hilly areas of Louisiana where they occur. Nor'easters are cyclonic events that have at most a peripheral effect on Louisiana, and none associated with high winds. Winds associated with hurricanes and tornadoes will be considered in their respective sections.

The following table presents the Beaufort Wind Scale, first developed in 1805 by Sir Francis Beaufort, which aids in determining relative force and wind speed based on the appearance of wind effects.

Table 2-49: Beaufort Wind Scale
(Source: NOAA's SPC)

Beaufort Wind Scale			
Force	**Wind (MPH)**	**WMO Classification**	**Appearance of Wind Effects on Land**
			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	13-17	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	18-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-30	Strong Breeze	Larger tree branches moving, whistling in wires
7	31-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Twigs breaking off trees, generally impedes progress
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	54-73	Violent Storm	N/A
12	74+	Hurricane	N/A

Major damage directly caused by thunderstorm winds is relatively rare, while minor damage is common and pervasive, and most noticeable when it contributes to power outages. These power outages can have major negative impacts such as increased tendency for traffic accidents, loss of revenue for businesses, increased vulnerability to fire, food spoilage, and other losses that might be sustained by a loss of power. Power outages may pose a health risk for those requiring electric medical equipment and/or air conditioning.

Lightning

Lightning is a natural electrical discharge in the atmosphere that is a by-product of thunderstorms. Every thunderstorm produces lightning. There are three primary types of lightning: intra-cloud, cloud-to-ground, and cloud-to-cloud. Cloud-to-ground lightning has the potential to cause the most damage to property and crops, while also posing as a health risk to the populace in the area of the strike.

Damage caused by lightning is usually to homes or businesses. These strikes have the ability to damage electrical equipment inside the home or business, and can also ignite a fire that could destroy homes or crops.

Lightning continues to be one of the top three storm-related killers in the United States per FEMA, but it also has the ability to cause negative long-term health effects to the individual that is struck. The following table outlines the lightning activity level that is a measurement of lightning activity.

Table 2-50: Lightning Activity Level (LAL) Grids

LAL	Cloud and Storm Development	Lightning Strikes/15 Min
1	No thunderstorms.	-
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent.	>25
6	Similar to LAL 3 except thunderstorms are dry	

Hazard Profile

Hailstorms

Location

Because hailstorms are a climatological based hazard, the entire planning area for Caddo Parish is equally at risk for hailstorms.

Previous Occurrences / Extents

The SHELDUS database reports 124 significant hailstorm events occurring within the boundaries of Caddo Parish between the years of 1990-2015. According to the National Climatic Data Center, hailstorm diameters experienced in Caddo Parish have ranged from 0.5 inches to 4.5 inches since 1990. The most frequently recorded hail size has been 0.75 inch diameters. *Figure 2-25* displays the density of hailstorms in Caddo Parish and adjacent parishes. Based on the National Climatic Data Center dataset, *Table 2-51* provides an overview of hailstorms that have impacted the Caddo Parish planning area since 2010. Caddo Parish can expect to experience hail up to 4.5 inches in diameter for future events.

Table 2-51: Previous Occurrences of Hailstorms in Caddo Parish (Source: NCDC)

Date	Recorded Hail Size (inches)	Location
January 20, 2010	0.88	MOORINGSPORT
January 20, 2010	1	JEWELLA
January 20, 2010	1.25	BLANCHARD

Date	Recorded Hail Size (inches)	Location
January 20, 2010	1.75	JEWELLA
January 20, 2010	1	BLANCHARD
March 10, 2010	1	JEWELLA
March 10, 2010	1	JEWELLA
March 10, 2010	0.75	HOSSTON
March 10, 2010	0.88	JEWELLA
March 10, 2010	0.75	RODESSA
March 10, 2010	0.88	KEITHVILLE
March 10, 2010	0.75	JEWELLA
March 10, 2010	1	SHREVEPORT
March 10, 2010	0.88	NICHOLS
March 10, 2010	1.25	JEWELLA
March 10, 2010	0.88	JEWELLA
April 24, 2010	1.25	JEWELLA
April 24, 2010	1	JEWELLA
April 24, 2010	1	LUCAS
May 14, 2010	0.88	BLANCHARD
May 20, 2010	1.75	SPRING RIDGE
May 20, 2010	1	KEITHVILLE ARPT
May 20, 2010	1	KEITHVILLE ARPT
May 20, 2010	1.25	GAYLES
June 7, 2010	1	GREENWOOD
October 24, 2010	1.75	JEWELLA
October 24, 2010	1	JEWELLA
November 1, 2010	1	BLANCHARD
November 1, 2010	0.75	SPRING RIDGE
November 1, 2010	0.88	STAPLES
March 29, 2011	1	JEWELLA
April 26, 2011	1.5	LA ROSEN
May 21, 2011	0.75	CONN
May 25, 2011	0.75	BLANCHARD
May 25, 2011	0.75	JEWELLA
May 25, 2011	0.75	BLANCHARD
April 2, 2012	0.75	FORBING
April 3, 2012	0.75	JEWELLA
April 3, 2012	1	JEWELLA
April 3, 2012	1.75	JEWELLA
April 3, 2012	1.5	JEWELLA
April 3, 2012	1	REISOR
April 5, 2012	0.75	JEWELLA
June 15, 2012	1	JEWELLA
June 15, 2012	1	SHREVEPORT
June 15, 2012	1	JEWELLA
June 15, 2012	1.75	SHREVEPORT
June 15, 2012	1.75	JEWELLA
June 15, 2012	1.75	JEWELLA

Date	Recorded Hail Size (inches)	Location
February 18, 2013	1.75	VIVIAN
February 18, 2013	1	MOORINGSPORT
February 18, 2013	1.75	CADDO
March 30, 2013	1.25	STAPLES
April 10, 2013	0.88	SHREVEPORT
April 10, 2013	0.75	SHREVEPORT
May 16, 2013	1.25	JEWELLA
May 16, 2013	0.88	REISOR
May 16, 2013	0.88	JEWELLA
May 16, 2013	1.25	KEITHVILLE
May 16, 2013	1	JEWELLA
May 16, 2013	1.75	JEWELLA
May 16, 2013	1.5	SHREVEPORT
May 16, 2013	1	JEWELLA
March 23, 2014	0.75	(SHV)SHREVEPORT RGNL
March 28, 2014	1.75	GREENWOOD
March 28, 2014	1.5	GREENWOOD
March 28, 2014	1	JEWELLA
March 28, 2014	2	(SHV)SHREVEPORT RGNL
March 28, 2014	1.75	(SHV)SHREVEPORT RGNL
March 28, 2014	1.75	JEWELLA
April 14, 2014	0.88	CADDO
April 24, 2014	0.88	JEWELLA
May 9, 2014	1.75	MOORINGSPORT
May 9, 2014	1	JEWELLA
May 9, 2014	1	SHREVEPORT
May 9, 2014	1	CADDO
October 6, 2014	1	JEWELLA
October 6, 2014	1.75	DIXIE GARDENS
October 6, 2014	1	JEWELLA
October 6, 2014	1	JEWELLA
April 19, 2015	1	CUTOFF JCT
April 19, 2015	0.75	JEWELLA
April 24, 2015	1.75	VIVIAN
May 26, 2015	0.75	GREENWOOD
May 26, 2015	1	JEWELLA
May 26, 2015	1	JEWELLA
May 26, 2015	1.75	JEWELLA
June 29, 2015	1.25	BLANCHARD
June 29, 2015	1.25	SHIPP
June 29, 2015	1.25	BLANCHARD
June 30, 2015	0.75	SHREVEPORT

Since 2010, there have been no significant hailstorm events in the incorporated areas of Belcher, Gilliam, Ida, or Oil City.

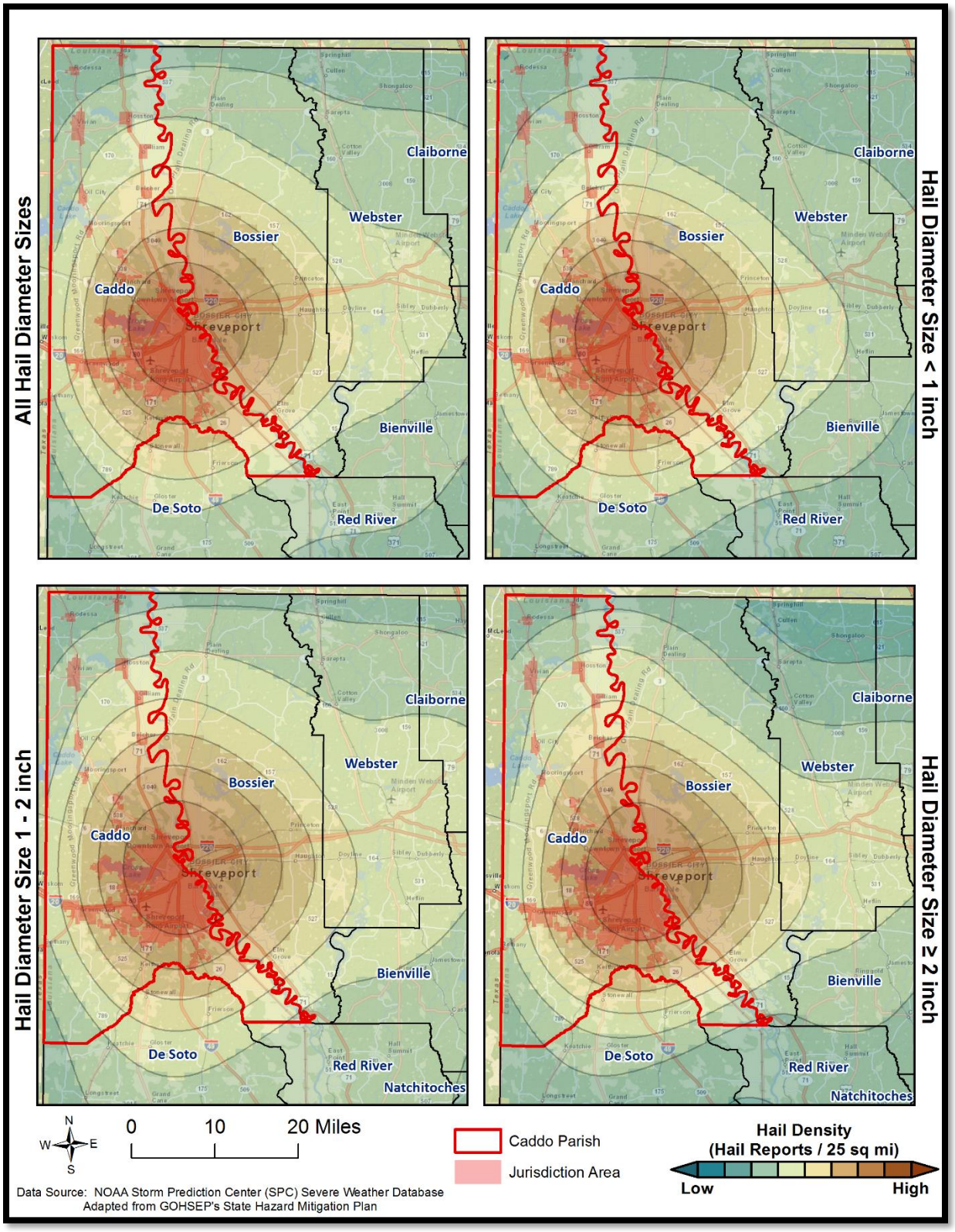

Figure 2-25: Density of Hailstorms by Diameter from 1950-2012
(Source: State of Louisiana Hazard Mitigation Plan 2014)

Frequency

Based on historical data from SHELDUS for the past 25 years, it is estimated the probability of occurrence for a significant hailstorm event is approximately 100%.

Estimated Potential Losses

According to the SHELDUS database, property damage due to hailstorms in Caddo Parish have totaled approximately $13,591,054 since 1990. To estimate the potential losses of a hail event on an annual basis, the total damages recorded for hail events was divided by the total number of years of available hail data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $543,642. *Table 2-52* provides an estimate of potential property losses for Caddo Parish.

Table 2-52: Estimated Annual Property Losses in Caddo Parish from Hailstorms

Estimated Annual Potential Losses from Hailstorms for Caddo Parish					
Unincorporated Caddo Parish (16.8% of Population)	**Belcher (0.1% of Population)**	**Blanchard (1.1% of Population)**	**Gilliam (0.1% of Population)**	**Greenwood (1.3% of Population)**	**Hosston (0.1% of Population)**
$91,326	$561	$6,181	$350	$6,864	$678

Table 2-52: Estimated Annual Property Losses in Caddo Parish from Hailstorms (Continued)

Estimated Annual Potential Losses from Hailstorms for Caddo Parish					
Ida (0.1% of Population)	**Mooringsport (0.3% of Population)**	**Oil City (0.4% of Population)**	**Rodessa (0.1% of Population)**	**Shreveport (78.2% of Population)**	**Vivian (1.4% of Population)**
$471	$1,691	$2,149	$576	$424,969	$7,827

There have been no deaths or injuries due to hailstorms from 1990 – 2015 in Caddo Parish.

Vulnerability

See Appendix C for parish and municipality buildings that are susceptible to hailstorms.

High Winds

Location

Because high winds are a climatological based hazard, the entire planning area for Caddo Parish is equally at risk for high winds.

Previous Occurrences / Extents

The SHELDUS database reports a total of 158 thunderstorm wind events occurring within the boundaries of Caddo Parish between the years of 1990 to 2015. The significant thunderstorm wind events experienced in Caddo Parish have ranged in wind speed from 40 mph to 115 mph. Caddo Parish can expect to receive thunderstorm winds up to 115 mph for future high wind events. The table on the next page provides an overview of significant high wind events over the last five years.

Table 2-53: Previous Occurrences for Thunderstorm High Wind Events

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
BELCHER	March 10, 2010	60	$15,000	$0
JEWELLA	March 25, 2010	64	$0	$0
MOORINGSPORT	May 20, 2010	62	$20,000	$0
SPRING RIDGE	May 20, 2010	64	$0	$0
GAYLES	May 20, 2010	63	$0	$0
JEWELLA	May 26, 2010	61	$0	$0
MET CALF	June 8, 2010	59	$0	$0
JEWELLA	June 8, 2010	58	$0	$0
CASH PT	June 8, 2010	59	$0	$0
VIVIAN	June 9, 2010	60	$0	$0
(SHV)SHREVEPORT RGNL	June 20, 2010	58	$0	$0
SHREVEPORT	August 16, 2010	59	$0	$0
SHIPP	August 16, 2010	59	$0	$0
JEWELLA	February 1, 2011	60	$0	$0
HOSSTON	February 24, 2011	66	$10,000	$0
CROSS LAKE	February 24, 2011	62	$40,000	$0
BLANCHARD	April 15, 2011	60	$0	$0
JEWELLA	June 5, 2011	63	$0	$0
BLANCHARD	June 7, 2011	70	$50,000	$0
BLANCHARD	June 7, 2011	70	$15,000	$0
SPRING RIDGE	August 18, 2011	62	$0	$0
REISOR	August 23, 2011	69	$100,000	$0
MT OLIVE	August 23, 2011	69	$0	$0
NORTON	August 23, 2011	67	$2,000	$0
JEWELLA	August 24, 2011	58	$100,000	$0
MT OLIVE	August 24, 2011	61	$0	$0
JEWELLA	August 24, 2011	61	$0	$0
BLANCHARD	September 18, 2011	61	$0	$0
GAYLES	January 25, 2012	60	$5,000	$0
(SHV)SHREVEPORT RGNL	April 2, 2012	60	$60,000	$0
JEWELLA	April 2, 2012	60	$20,000	$0
FORBING	April 2, 2012	60	$0	$0
JEWELLA	April 2, 2012	61	$10,000	$0
JEWELLA	April 2, 2012	60	$0	$0
VIVIAN	April 2, 2012	60	$0	$0

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
JEWELLA	June 12, 2012	60	$0	$0
JEWELLA	June 13, 2012	59	$0	$0
JEWELLA	June 15, 2012	60	$4,000	$0
JEWELLA	August 5, 2012	61	$20,000	$0
SHREVEPORT	August 5, 2012	60	$0	$0
JEWELLA	August 17, 2012	60	$10,000	$0
BELCHER	November 11, 2012	60	$0	$0
GILLIAM	December 20, 2012	75	$100,000	$0
JEWELLA	December 20, 2012	62	$0	$0
JEWELLA	December 20, 2012	62	$30,000	$0
JEWELLA	December 20, 2012	62	$70,000	$0
JEWELLA	January 29, 2013	60	$10,000	$0
JEWELLA	January 29, 2013	60	$0	$0
LONGWOOD	March 30, 2013	64	$0	$0
(SHV)SHREVEPORT RGNL	March 30, 2013	63	$0	$0
JEWELLA	March 30, 2013	66	$0	$0
SHREVEPORT	March 30, 2013	66	$50,000	$0
SUMMER GROVE	March 30, 2013	64	$100,000	$0
JEWELLA	March 30, 2013	66	$0	$0
NICHOLS	March 30, 2013	66	$0	$0
JEWELLA	March 30, 2013	66	$0	$0
STAPLES	March 30, 2013	66	$40,000	$0
STAPLES	March 30, 2013	60	$0	$0
CONN	March 31, 2013	64	$0	$0
JEWELLA	March 31, 2013	70	$0	$0
JEWELLA	March 31, 2013	64	$15,000	$0
JEWELLA	March 31, 2013	64	$300,000	$0
JEWELLA	March 31, 2013	59	$0	$0
JEWELLA	May 16, 2013	70	$200,000	$0
REISOR	May 16, 2013	70	$400,000	$0
KEITHVILLE	May 16, 2013	105	$500,000	$0
JEWELLA	May 16, 2013	70	$40,000	$0
JEWELLA	May 16, 2013	70	$0	$0
LA ROSEN	May 21, 2013	62	$0	$0
JEWELLA	May 21, 2013	61	$25,000	$0
JEWELLA	May 21, 2013	60	$0	$0
SHREVEPORT	June 6, 2013	61	$0	$0
SHREVEPORT	June 6, 2013	61	$10,000	$0

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
JEWELLA	June 6, 2013	61	$5,000	$0
SHREVEPORT	June 6, 2013	61	$0	$0
JEWELLA	June 18, 2013	60	$0	$0
SHREVEPORT	June 18, 2013	61	$0	$0
JEWELLA	June 18, 2013	61	$0	$0
JEWELLA	July 11, 2013	63	$0	$0
JEWELLA	July 11, 2013	63	$0	$0
(SHV)SHREVEPORT RGNL	March 28, 2014	60	$0	$0
JEWELLA	March 28, 2014	60	$0	$0
JEWELLA	April 4, 2014	58	$0	$0
JEWELLA	April 14, 2014	60	$0	$0
JEWELLA	May 9, 2014	62	$100,000	$0
JEWELLA	July 23, 2014	59	$10,000	$0
JEWELLA	July 23, 2014	61	$0	$0
SHREVEPORT	July 23, 2014	61	$30,000	$0
JEWELLA	October 2, 2014	63	$0	$0
VIVIAN	October 2, 2014	62	$0	$0
JEWELLA	October 2, 2014	61	$15,000	$0
JEWELLA	October 2, 2014	61	$10,000	$0
MOORINGSPORT	October 12, 2014	61	$0	$0
SHIPP	October 12, 2014	62	$0	$0
OIL CITY ARPT	October 13, 2014	62	$0	$0
REISOR	January 3, 2015	60	$0	$0
SHREVEPORT	January 3, 2015	61	$20,000	$0
JEWELLA	January 3, 2015	61	$0	$0
MOORINGSPORT	April 24, 2015	63	$0	$0
JEWELLA	May 25, 2015	70	$0	$0
JEWELLA	May 25, 2015	69	$20,000	$0
LA ROSEN	May 25, 2015	75	$0	$0
JEWELLA	May 25, 2015	69	$0	$0
FORBING	May 25, 2015	64	$0	$0
JEWELLA	May 25, 2015	69	$50,000	$0
KEITHVILLE	May 30, 2015	61	$0	$0
JEWELLA	May 30, 2015	60	$5,000	$0
BLANCHARD	May 30, 2015	60	$0	$0
BLANCHARD	June 17, 2015	60	$0	$0
JEWELLA	June 18, 2015	60	$0	$0
BLANCHARD	June 30, 2015	60	$2,000	$0

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
JEWELLA	August 19, 2015	64	$10,000	$0
JEWELLA	November 17, 2015	60	$0	$0

Since 2010, there have been no significant wind events in the incorporated areas of Greenwood, Ida, and Rodessa.

Frequency

High winds are a fairly common occurrence within Caddo Parish, with an annual chance of occurrence calculated at 100%.

Estimated Potential Losses

Since 1990, there have been 158 significant wind events that have resulted in property damages according to the SHELDUS database. The total property damages associated with those storms have totaled $20,948,895. To estimate the potential losses of a wind event on an annual basis, the total damages recorded for wind events was divided by the total number of years of available wind data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $837,956. The following table provides an estimate of potential property losses for Caddo Parish:

Table 2-54: Estimated Annual Property Losses in Caddo Parish from Winds

Estimated Annual Potential Losses from Winds for Caddo Parish					
Unincorporated Caddo Parish (16.8% of Population)	Belcher (0.1% of Population)	Blanchard (1.1% of Population)	Gilliam (0.1% of Population)	Greenwood (1.3% of Population)	Hosston (0.1% of Population)
$10,767	$864	$9,528	$539	$10,579	$1,045

Table 2-54: Estimated Annual Property Losses in Caddo Parish from Winds (Continued)

Estimated Annual Potential Losses from Winds for Caddo Parish					
Ida (0.1% of Population)	Mooringsport (0.3% of Population)	Oil City (0.4% of Population)	Rodessa (0.1% of Population)	Shreveport (78.2% of Population)	Vivian (1.4% of Population)
$726	$2,606	$3,313	$887	$655,036	$12,065

There has been one reported injury and one fatality as a result of a thunderstorm wind event over the 25-year record.

Vulnerability

See Appendix C for parish and municipality buildings that are susceptible to high winds.

Lightning

Location

Like hail and high winds, lightning is a climatological based hazard and has the same probability of occurring throughout the entire planning area for Caddo Parish.

Previous Occurrences / Extents

The SHELDUS database reports a total of 33 lightning events occurring within the boundaries of Caddo Parish between the years of 1990-2015. The SHELDUS database only records lightning events that cause death, injuries, crop damage, and/or property damage, so these numbers do not accurately reflect the number of lightning events in Caddo Parish, which occur on a nearly monthly basis. The planning area can expect to have a lightning density of 11-12 flashes per sq. mile per year. The table below provides an overview of significant lightning strikes over the last five years:

Table 2-55: Previous Occurrences of Significant Lightning Strikes in Caddo Parish from 2010 – 2015 (Source: NCDC and SHELDUS)

Location	Date	Summary	Property Damage
GREENWOOD	June 28, 2010	Lightning struck a home in the community of Greenwood. The homeowners were in the house when the lightning strike occurred. There were no injuries but the lightning resulted in a large house fire and the house was deemed a total loss.	$434,266
NORTON	August 6, 2010	Lightning hit a home in southeast Shreveport. The lightning strike resulted in a fire that took about one half hour to contain.	$21,713
KEITHVILLE	April 26, 2011	A house was caught on fire by a lightning strike. There was no report of any injuries.	$15,787
LA ROSEN	June 7, 2011	A 49 year old male was killed when a lightning bolt struck nearby where he was standing at East Ridge Country Club on the golf course. Coroner reports that the strike did not directly hit the man but was close enough to cause cardiac arrhythmia.	$0
GREENWOOD	July 4, 2011	A lightning strike touched off a fire that killed an elderly couple at their home in Greenwood.	$52,622
JEWELLA	August 10, 2012	Lightning struck a metal vent on a home in far southeast Shreveport. This resulted in a small fire that started in the attic. The home suffered minor fire and water damage. The family inside escaped with no injuries reported.	$20,622

Since 2010, there have been no lightning events that have caused property damage or loss of life in the incorporated areas of Belcher, Blanchard, Gilliam, Hosston, Ida, Mooringsport, Oil City, Rodessa, Shreveport, or Vivian.

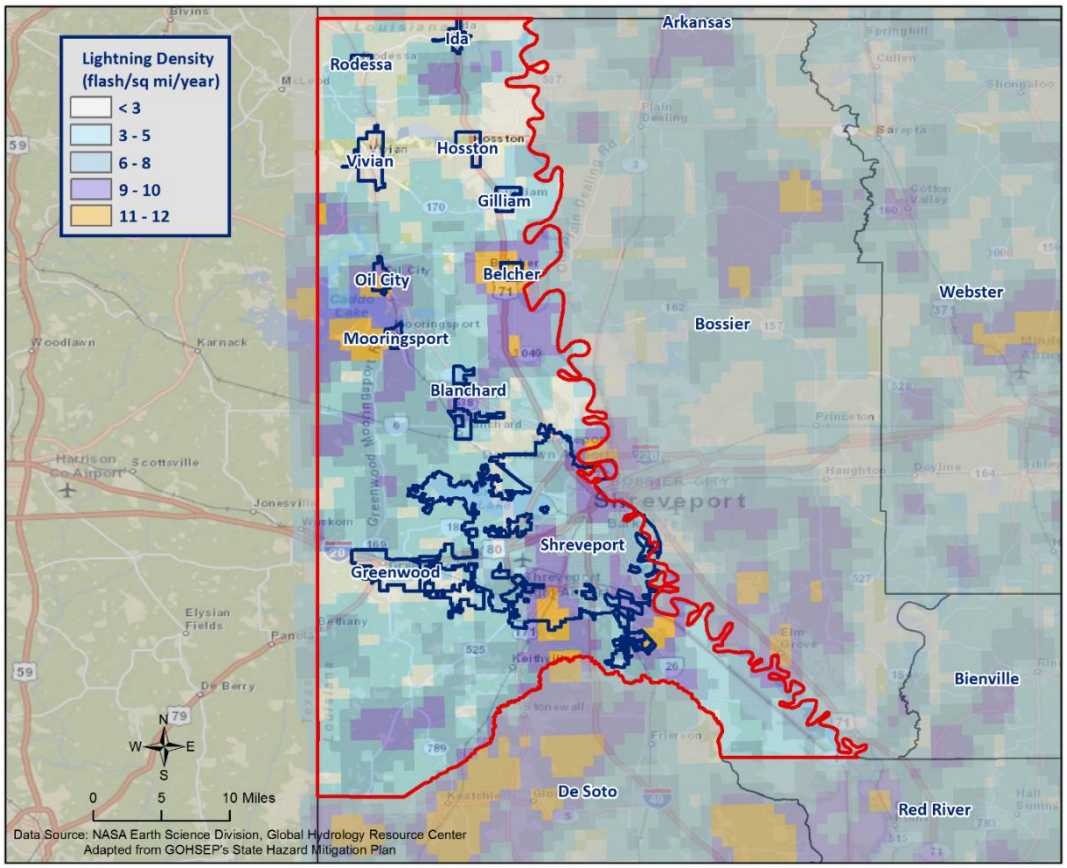

Figure 2-26: Lightning Density Reports for Caddo Parish

Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in Caddo Parish is high. However, lightning that meets the definition that is used by SHELDUS and the NCDC that actually results in damages to property and injury or death is a less likely event. According to SHELDUS, there have been 33 lightning events that have caused property damages or injuries over the last 25 years, establishing an annual probability of 100%.

Estimated Potential Losses

Since 1990, there have been 33 significant lightning events that have resulted in property damages according to the SHELDUS database. The total property damages associated with lightning events totaled $1,099,685. To estimate the potential losses of a lightning event on an annual basis, the total damages recorded for lightning events was divided by the total number of years of available major lightning strike data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $43,987. The tables on the next page provide an estimate of potential property losses for Caddo Parish.

Table 2-56: Estimated Annual Property Losses in Caddo Parish from Lightning

Estimated Annual Potential Losses from Lightning for Caddo Parish					
Unincorporated Caddo Parish (16.8% of Population)	Belcher (0.1% of Population)	Blanchard (1.1% of Population)	Gilliam (0.1% of Population)	Greenwood (1.3% of Population)	Hosston (0.1% of Population)
$7,389	$45	$500	$28	$555	$55

Table 2-56: Estimated Annual Property Losses in Caddo Parish from Lightning (Continued)

Estimated Annual Potential Losses from Lightning for Caddo Parish					
Ida (0.1% of Population)	Mooringsport (0.3% of Population)	Oil City (0.4% of Population)	Rodessa (0.1% of Population)	Shreveport (78.2% of Population)	Vivian (1.4% of Population)
$38	$137	$174	$47	$34,385	$633

There have been seven reported injuries and three fatalities in Caddo Parish as a result of a lightning strikes over the 25-year record.

Vulnerability

See Appendix C for parish and municipality building exposure to lightning hazards.

Tornadoes

Tornadoes (also called twisters or cyclones) are rapidly rotating funnels of wind extending between storm clouds and the ground. For their size, tornadoes are the most severe storms, and 70% of the world's reported tornadoes occur within the continental United States, making them one of the most significant hazards Americans face. Tornadoes and waterspouts form during severe weather events, such as thunderstorms and hurricanes, when cold air overrides a layer of warm air, causing the warm air to rise rapidly. This usually results in a counterclockwise rotation in the northern hemisphere. The updraft of air in tornadoes always rotates because of wind shear (differing speeds of moving air at various heights), and it can rotate in either a clockwise or counterclockwise direction; clockwise rotations (in the northern hemisphere) will sustain the system, at least until other forces cause it to die seconds to minutes later.

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. *Table 2-57* shows the EF scale in comparison with the old Fujita (F) Scale, which was used prior to February 1, 2007. When discussing past tornadoes, the scale used at the time of the hazard is used. Damage and adjustment between scales can be made using the following tables.

Table 2-57: Comparison of the Enhanced Fujita (EF) Scale to the Fujita (F) Scale

	Enhanced Fujita Scale					
	EF0	**EF1**	**EF2**	**EF3**	**EF4**	**EF5**
Wind Speed (mph)	65-85	86-110	111-135	136-165	166-200	>200
	Fujita Scale					
	F0	**F1**	**F2**	**F3**	**F4**	**F5**
	<73	73-112	113-157	158-206	207-260	>261

Table 2-58: Fujita and Enhanced Fujita Tornado Damage Scale

Scale	Typical Damage
F0/EF0	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1/EF1	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2/EF2	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; light-object missiles generated; cars lifted off ground.
F3/EF3	Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4/EF4	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5/EF5	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

The National Weather Service (NWS) has the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued, along with definitions of each:

- *Tornado Watch*: Issued to alert people to the possibility of a tornado developing in the area. A tornado has not been spotted but the conditions are favorable for tornadoes to occur.

- *Tornado Warning*: Issued when a tornado has been spotted or when radar identifies a distinctive "hook-shaped" area within a thunderstorm line.

Structures within the direct path of a tornado vortex are often reduced to rubble. Structures adjacent to the tornado's path are often severely damaged by high winds flowing into the tornado vortex, known as inflow winds. It is here, adjacent to the tornado's path, that the building type and construction techniques are critical to the structure's survival. Although tornadoes strike at random, making all buildings vulnerable, mobile homes, homes with crawlspaces, and buildings with large spans are more likely to suffer damage.

The major health hazard from tornadoes is physical injury from flying debris, or being in a collapsed building or mobile home. Within a building, flying debris or projectiles are generally stopped by interior walls. However, if a building has no partitions, any glass, brick, or other debris blown into the interior is life threatening. Following a tornado, damaged buildings are a potential health hazard due to instability, electrical system damage, and gas leaks. Sewage and water lines may also be damaged.

Peak tornado activity in Louisiana occurs during the spring, as it does in the rest of the United States. Nearly one-third of observed tornadoes in the United States occur during April. About half of those in Louisiana, including many of the strongest, occur between March and June. Fall and winter tornadoes are less frequent, but the distribution of tornadoes throughout the year is more uniform in Louisiana than in locations farther north.

Location

While there is a significant tornado record in Caddo Parish with actual locations, tornadoes in general are a climatological based hazard and have the same approximate probability of occurring in Caddo Parish as all of its jurisdictions. Because a tornado has a similar probability of striking anywhere within the planning area for Caddo Parish, all jurisdictions are equally at risk for tornadoes.

Previous Occurrences / Extents

SHELDUS reports a total of 21 tornadoes or waterspouts occurring within the boundaries of Caddo Parish between the years of 1990-2015. The tornadoes experienced in Caddo Parish have from ranged EF0 to EF3 on the EF scale, and ranged from F0 to F4 on the F scale. The worst case scenario Caddo Parish can expect in the future is an EF3 tornado.

The tornado that caused the most damage to property occurred on April 23, 2000. The F1 tornado caused roof and frame damage in nearly 100 homes. The bus terminal downtown sustained major damage to windows and roofing material. Several downtown buildings had glass blown out and roof damage. Numerous trees were completely blown down or snapped.

Table 2-59: Historical Tornadoes in Caddo Parish with Locations from 1990 - 2015

Date	Impacts	Property Damage	Location	Magnitude
April 27, 1990	0.3 mile path with a width of 30 yards. A total of ten house roofs and a church roof were heavily damaged.	$906	BLANCHARD	F1
April 27, 1990	0.5 mile path with a width of 30 yards. A total of ten house roofs and a church roof were heavily damaged.	$0	LONGWOOD	F1
May 30, 1990	0.25 mile path with a width of 25 yards. Several families were evacuated from low-lying areas due to flooding.	$906	SHREVEPORT	F1
May 30, 1990	0.25 mile path with a width of 25 yards. Several families were evacuated from low-lying areas due to flooding.	$0	OIL CITY	F1
December 20, 1990	2.0 mile path with a width of 150 yards. A barn was destroyed by a tornado 15 miles southwest of Shreveport	$598	SHREVEPORT	F1
December 21, 1990	1.0 mile path with a width of 150 yards. Damaged was confined to trees and power lines.	$398	CASPIANA	F1
February 18, 1991	1.0 mile path with a width of 200 yards. Damage was confined to downed timber.	$87	SHREVEPORT	F1
November 3, 1992	1.0 mile path with a width of 40 yards. Destroyed three hangars and heavily damaged three other hangars at the Shreveport Downtown Airport. Also damaged 21 airplanes.	$843,678	UNINCORPORATED AREA	F1
January 23, 1996	7 mile path with a width of 400 yards. Several retirement homes and numerous housing subdivisions were severely damaged. Thirty utility poles were destroyed leaving 10,000 customers without power.	$7,544,168	SHREVEPORT	F2
January 1, 1999	3.2 mile path with a width of 33 yards. Numerous roofs were partially blown off, several structures collapsed, a building with a brick wall blew down, several cars were blown off the road and overturned, and numerous trees snapped or fell.	$1,420,984	SHREVEPORT RGNL ARPT	F2
April 3, 1999	6.7 mile path with a width of 200 yards. Numerous homes suffered minor to moderate roof damage. An 18 wheel truck bed overturned. A steel framed hardware store was leveled.	$1,847,280	SHREVEPORT RGNL ARPT	F4

Date	Impacts	Property Damage	Location	Magnitude
April 23, 2000	8 mile path with a width of 500 yards. Tree damage was noted up to two miles on either side of the track. Approximately 25 to 40 residence were damaged by fallen trees.	$1,374,773	VIVIAN	F1
April 23, 2000	25 mile path with a width of 500 yards. Portable storage building businesses were destroyed and two mobile homes were demolished.	$6,873,868	GREENWOOD	F3
April 23, 2000	6.4 mile path with a width of 150 yards. Nearly 100 homes suffered roof and frame damage. A bus terminal downtown sustained major damage to windows and its roof. Several buildings had glass blown out or roofs damaged.	$13,747,735	SHREVEPORT	F1
April 9, 2009	19.43 mile path with a width of 500 yards. Twelve empty railroad cars were blown off track. Two people were injured when a tree fell on an automobile.	$11,034,740	LONGWOOD	EF2
July 30, 2009	0.96 mile path with a width of 75 yards. A storage building at a home was destroyed with portions of the metal roof scattered for several hundred yards. Another small shed was completely collapsed. A third small shed was overturned.	$38,622	GAYLES	EF0
October 29, 2009	3.43 mile path with a width of 600 yards. Took the steeple off the top of the First United Methodist Church and deposited it on an automobile parked in front of the church, injuring the man inside. Also did damage to the Shreveport Convention Center and other downtown businesses.	$1,103,474	SHREVEPORT DOWNTOWN	EF2
October 29, 2009	0.47 mile path with a width of 75 yards. Several trees were uprooted in the wooded areas along the highway. An indirect fatality occurred when a motorist hit a downed tree that fell across Highway 170.	$27,587	SUPERIOR	EF0
April 3, 2012	3.08 mile path with a width of 50 yards. Two large trees were uprooted with one falling on a building along Rodessa Church Road.	$5,156	RODESSA	EF0
January 12, 2013	1.9 mile path with a width of 300 yards. Caused substantial damage to two vehicles and two travel trailers at the Petro Hawk Natural Gas Site off Highway 1. Two people in a travel trailer sustained injuries.	$71,136	LA CHUTE	EF1

Date	Impacts	Property Damage	Location	Magnitude
May 16, 2013	5.23 mile path with a width of 1400 yards. Several residential and mobile home communities had structural damage from fallen trees.	$254,055	GREENWOOD	EF1
April 28, 2014	3.48 mile path with a width of 550 yards. Numerous trees were uprooted and snapped. One home received minor damage.	$20,000	HOSSTON	EF2
May 25, 2015	0.43 mile path with a width of 91 yards. Upwards of five homes had trees on them. Some of these homes suffered major damage.	$500,000	LA ROSEN	EF1

The incorporated areas of Belcher, Blanchard, Gilliam, Ida, Mooringsport, Oil City, Shreveport, and Vivian have not experienced a tornado event from 2010 to the present. Since 2010, the year in which the last update to this hazard mitigation plan was written, Caddo Parish has had five tornadoes touch down in Greenwood, Hosston, and the unincorporated areas of the parish. The following is a brief synopsis of these events:

April 3, 2012 – EF0 Tornado in Rodessa

The tornado first touched down 1 mile ESE of Rodessa along Pitts Road where an outbuilding was damaged and trees were snapped. The tornado traveled east. Two large trees were uprooted with one falling on a building along Rodessa Church Road. The tornado remained south of Tyson Road/PR 172 and crossed Adcock Road where more trees were snapped. The tornado lifted before reaching Atlanta Mira Road. Maximum winds are estimated at 65-75 mph.

January 12, 2013 – EF1 Tornado in La Chute

A tornado moved out of Red River Parish and into Caddo Parish. The tornado continued northeast and crossed Highway 1 southeast of Caspiana causing more substantial damage to two vehicles and two travel trailers at the Petro Hawk Natural Gas site off of Highway 1. Two people were located in the travel trailer and sustained injuries during this tornadic event. The tornado finally dissipated as it approached the Red River. Tree trunks were commonly snapped along the entire tornado track. Winds were estimated to be near 110 mph.

May 16, 2013 – EF1 Tornado in Greenwood

This tornado touched down just north of I-20 in Greenwood near the Old Kelly Truck Stop. It crossed I-20 near the Highway 80 intersection on the east side of Greenwood. The tornado uprooted and snapped trees as it moved southeast toward the old General Motors Plant. Several residential and mobile home communities had structural damage from fallen trees in the path. One injury occurred at the Blue Ridge Mobile Home Community near Buncome Road and Bert Kouns Industrial Loop. The tornado lifted about 0.4 miles southeast of the intersection of Bert Kouns and Buncombe Road.

April 28, 2014 – EF2 Tornado in Hosston

The tornado was rated an EF2 in intensity with winds estimated near 115 mph. Numerous trees were uprooted and snapped along its path. One home in Hosston, Louisiana received minor damage.

May 25, 2015 – EF1 Tornado in La Rosen

An EF1 tornado touched down in south Shreveport uprooting and or snapping trees along its brief track. Damage was extensive on Boxwood, Poinsetta, Kroetz, Oleander and Primrose Streets where upwards of 5 homes had trees on them. Some of these homes suffered major damage. There were no injuries reported.

Frequency / Probability

Tornadoes are a sporadic occurrence within Caddo Parish, with an annual chance of occurrence calculated at 84% based on the records for the past 25 years (1990-2015). The figure on the next page displays the density of tornado touch downs in Caddo Parish and neighboring parishes.

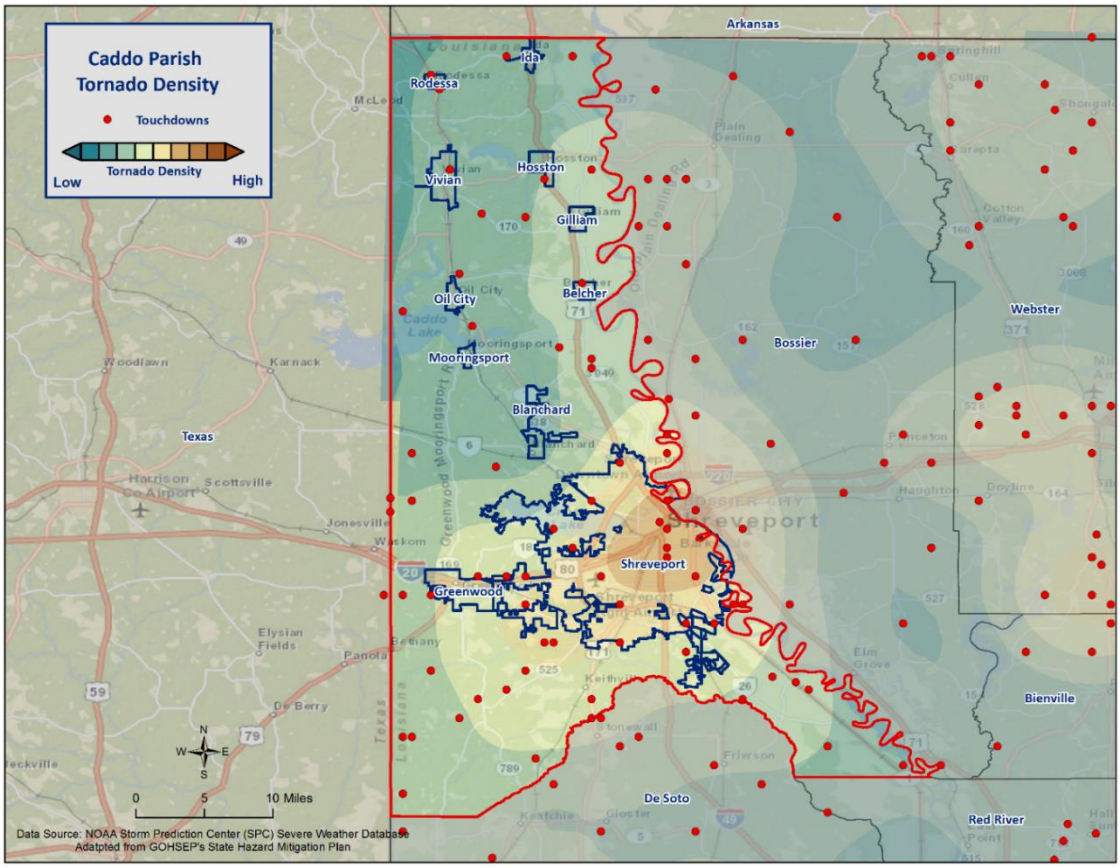

Figure 2-27: Location and Density of Tornadoes to Touch Down in Caddo Parish (Source: NOAA/SPC Severe Weather Database)

Estimated Potential Losses

According to the SHELDUS database, there have been 21 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is $46,218,841, with an average cost of $2,200,897 per tornado strike. When annualizing the total cost over the 25-year record, total annual loses based on tornadoes are estimated to be $1,848,754. To provide an estimated annual potential loss per jurisdiction, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. Based on the 2010 Census data, the following tables provide an annual estimate of potential losses for Caddo Parish.

Table 2-60: Estimated Annual Property Losses in Caddo Parish from Tornadoes

Estimated Annual Potential Losses from Tornadoes for Caddo Parish					
Unincorporated Caddo Parish (16.8% of Population)	Belcher (0.1% of Population)	Blanchard (1.1% of Population)	Gilliam (0.1% of Population)	Greenwood (1.3% of Population)	Hosston (0.1% of Population)
$310,570	$1,907	$21,020	$1,189	$23,341	$2,306

Table 2-60: Estimated Annual Property Losses in Caddo Parish from Tornadoes (Continued)

Estimated Annual Potential Losses from Tornadoes for Caddo Parish					
Ida (0.1% of Population)	Mooringsport (0.3% of Population)	Oil City (0.4% of Population)	Rodessa (0.1% of Population)	Shreveport (78.2% of Population)	Vivian (1.4% of Population)
$1,602	$5,750	$7,309	$1,958	$1,445,183	$26,618

Table 2-61 presents an analysis of building exposure that is susceptible to tornadoes by general occupancy type for Caddo Parish, along with the percentage of building stock that are mobile homes.

Table 2-61: Building Exposure by General Occupancy Type for Tornadoes in Caddo Parish (Source: FEMA's Hazus 2.2)

Building Exposure by General Occupancy Type for Tornadoes Exposure Types ($1,000)							
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education	Mobile Homes (%)
30,621,815	8,972,039	2,283,078	103,862	1,389,862	294,753	344,968	10.7%

The parish has suffered through a total of nine days in which tornadoes or waterspouts have accounted for 58 injuries and no fatalities during this 25-year period (*Table 2-62*). The average number of injuries per event for Caddo Parish is 2.76 per tornado, with an average of 2.32 per year for the 25-year period.

Table 2-62: Tornadoes in Caddo Parish by Magnitude that Caused Injuries or Deaths

Date	Magnitude	Deaths	Injuries
January 23, 1996	F2	0	30
January 1, 1999	F2	0	1
April 3, 1999	F4	0	12
April 23, 2000	F3	0	3
April 23, 2000	F1	0	6
April 9, 2009	EF2	0	2
October 29, 2009	EF2	0	1
January 12, 2013	EF1	0	2
May 16, 2013	EF0	0	1

In assessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 10.7% of all housing in Caddo Parish consists of manufactured housing. Based on location data collected in a previous hazard mitigation project, there are 47 known locations where manufactured housing is concentrated. Each of those 47 locations have an overall number of manufactured houses ranging from four to 174. The location and density of manufactured houses can be seen in *Figure 2-28*.

Manufactured housing is more likely to sustain damage from a tornado than any other residential structure. The highest concentration of manufactured home parks is located in the unincorporated area of Caddo Parish (*Table 2-63*). However, this does not influence the risk associated with a tornado event since they strike at random, making all structures and population within the planning area equally vulnerable.

Table 2-63: Manufactured Home Distribution throughout Caddo Parish

Location	Number of Manufactured Home Parks	% of Manufactured Home Parks
Unincorporated Area	25	53.2%
Belcher	0	0.0%
Blanchard	2	4.3%
Gilliam	0	0.0%
Greenwood	2	4.3%
Hosston	0	0.0%
Ida	0	0.0%
Mooringsport	1	2.1%
Oil City	0	0.0%
Rodessa	0	0.0%
Shreveport	17	36.2%
Vivian	0	0.0%

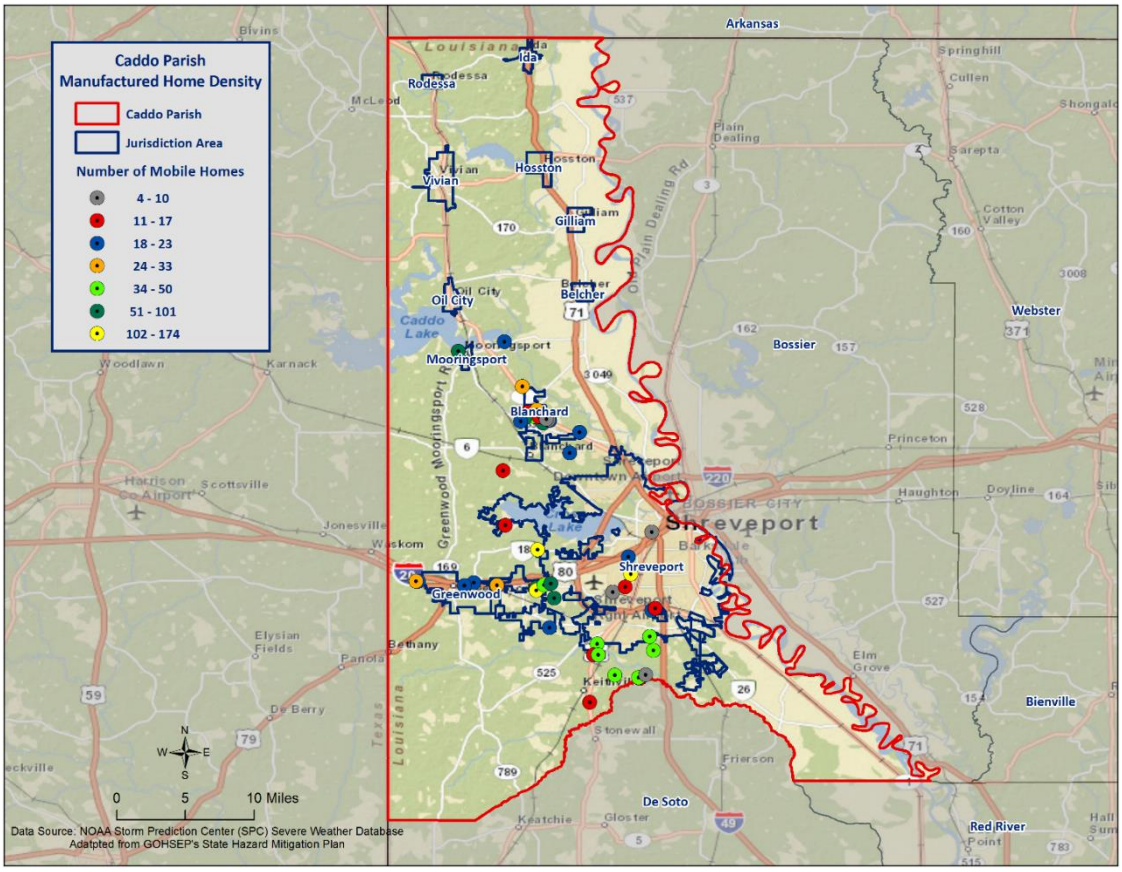

Figure 2-28: Location and Approximate Number of Units in Manufactured Housing Locations throughout Caddo Parish.

Vulnerability

See Appendix C for parish and municipality building exposure to tornado hazards.

Tropical Cyclones

Tropical cyclones are among the worst hazards Louisiana faces. These spinning, low-pressure air masses draw surface air into their centers and attain strength ranging from weak tropical waves to the most intense hurricanes. Usually, these storms begin as clusters of oceanic thunderstorms off the western coast of Africa, moving westward in the trade wind flow. The spinning of these thunderstorm clusters begins because of the formation of low pressure in a perturbation in the westerly motion of the storms associated with differential impacts of the Earth's rotation. The west-moving, counterclockwise-spinning collection of storms, now called a tropical disturbance, may then gather strength as it draws humid air toward its low-pressure center. This results in the formation of a tropical depression (defined when the maximum sustained surface wind speed is 38 mph or less), then a Tropical Cyclone (when the maximum sustained surface wind ranges from 39 mph to 73 mph), and finally a hurricane (when the maximum sustained surface wind speeds exceed 73 mph). On the next page, the table presents the Saffir-Simpson Hurricane Wind Scale, which categorizes tropical cyclones based on sustained winds.

Table 2-64: Saffir-Simpson Hurricane Wind Scale

Saffir-Simpson Hurricane Wind Scale			
Category	**Sustained Winds**	**Pressure**	**Types of Damage Due to Winds**
Tropical Depression	<39 mph	N/A	N/A
Tropical Cyclone	39-73 mph	N/A	N/A
1	74-95 mph	>14.2 psi	Very dangerous winds will produce some damage. Well-constructed frame homes could have damage to roof, shingles, vinyl siding, and gutters. Large branches of trees will snap and shallow-rooted trees may be toppled, especially after the soil becomes waterlogged. Extensive damage to power lines and poles will likely result in power outages that could last several days.
2	96-110 mph	14-14.2 psi	Extremely dangerous winds will cause extensive damage. Well-constructed frame homes could sustain major roof and siding damage. Many shallow-rooted trees will be snapped or uprooted, especially after the soil becomes waterlogged, and block numerous roads. Near total power loss is expected, with outages that could last from several days to weeks.
3	111-129 mph	13.7 -14 psi	Devastating damage will occur. Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, especially after the soil becomes waterlogged, blocking numerous roads. Electricity and water may be unavailable for several days to weeks after the storm passes.
4	130-156 mph	13.3-13.7 psi	Catastrophic damage will occur. Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted, especially after the soil becomes waterlogged, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	157 mph or higher	<13.7 psi	Catastrophic damage will occur. A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks to months.

Many associated hazards can occur during a hurricane, including heavy rains, flooding, high winds, and tornadoes. A general rule of thumb in coastal Louisiana is that the number of inches of rainfall to be expected from a tropical cyclone is approximately 100 divided by the forward velocity of the storm in mph; so a fast-moving storm (20 mph) might be expected to drop five inches of rain while a slow-moving (5 mph) storm could produce totals of around 20 inches. However, no two storms are alike, and such generalizations have limited utility for planning purposes. Hurricane Beulah, which struck Texas in 1967, spawned 115 confirmed tornadoes. In recent years, extensive coastal development has increased the storm surge resulting from these storms so much that this has become the greatest natural hazard threat to property and loss of life in the state. Storm surge is a temporary rise in sea level generally caused by reduced air pressure and strong onshore winds associated with a storm system near the coast. Although storm surge can technically occur at any time of the year in Louisiana, surges caused by hurricanes can be particularly deadly and destructive. Such storm surge events are often accompanied by large, destructive waves (exceeding ten meters in some places) that can inflict a high number of fatalities and economic losses. In 2005, Hurricane Katrina clearly demonstrated the destructive potential of this hazard, as it produced the highest modern-day storm surge levels in the State of Louisiana, reaching up to 18.7 feet near Alluvial City in St. Bernard Parish.

Property can be damaged by the various forces that accompany a tropical cyclone. High winds can directly impact structures in three ways: wind forces, flying debris, and pressure. By itself, the force of the wind can knock over trees, break tree limbs, and destroy loose items, such as television antennas and power lines. Many things can be moved by high winds. As winds increase, so does the pressure against stationary objects. Pressure against a wall rises with the square of the wind speed. For some structures, this force is enough to cause failure. The potential for damage to structures is increased when debris breaks the building “envelope” and allows the wind pressure to impact all surfaces (the building envelope includes all surfaces that make up the barrier between the indoors and the outdoors, such as the walls, foundation, doors, windows, and roof). Mobile homes and buildings in need of maintenance are most subject to wind damage. High winds mean bigger waves. Extended pounding by waves can demolish any poorly or improperly designed structures. The waves also erode sand beaches, roads, and foundations. When foundations are compromised, the building will collapse.

Nine out of ten deaths during hurricanes are caused by storm surge flooding. Falling tree limbs and flying debris caused by high winds have the ability to cause injury or death. Downed trees and damaged buildings are a potential health hazard due to instability, electrical system damage, broken pipelines, chemical releases, and gas leaks. Sewage and water lines may also be damaged. Salt water and fresh water intrusions from storm surge send animals, such as snakes, into areas occupied by humans.

Location

Hurricanes are the single biggest threat to the State of Louisiana. With any single hurricane having the potential to devastate multiple parishes at once, the risk of a tropical cyclone has the probability of impacting anywhere within the planning area for Caddo Parish. As such, all jurisdictions are equally at risk for tropical cyclones.

Previous Occurrences / Extents

The central Gulf of Mexico coastline is among the most hurricane-prone locations in the United States, and hurricanes can affect every part of the state. The SHELDUS database reports a total of three tropical cyclone events occurring within the boundaries of Caddo Parish between the years 2002 and 2015 (*Table 2-65*). The tropical cyclone events experienced in Caddo Parish include depressions, storms, and hurricanes. As a worst case scenario, Caddo Parish can expect to experience hurricanes at the Category 1 level in the future.

Table 2-65: Historical Tropical Cyclone Events in Caddo Parish from 2002 - 2015 (Source: SHELDUS)

Date	Name	Storm Type At Time of Impact
September 24, 2005	Rita	Hurricane – Category 1
September 1, 2008	Gustav	Tropical Storm
September 13, 2008	Ike	Tropical Storm

Hurricane Rita (2005)

While Hurricane Katrina and resulting levee failures captured headlines worldwide, lesser known (but just as destructive) Hurricane Rita wreaked havoc on southwestern Louisiana less than a month later. The storm made landfall as a Category 3 hurricane in Cameron Parish. Across southeast Louisiana, the main effect from Hurricane Rita was the substantial storm surge flooding that occurred in low lying communities across coastal areas of southern Terrebonne, southern Lafourche, and southern Jefferson Parishes, where numerous homes and businesses were flooded. Some of the most substantial damage occurred in southern Terrebonne Parish, where storm surge of five to seven feet above normal overtopped or breached local drainage levees, inundating many small communities. Newspaper accounts indicated that approximately 10,000 structures were flooded in Terrebonne Parish. Lafitte and other communities in lower Jefferson Parish also suffered extensive storm surge flooding. Storm surge flooding also occurred in areas adjacent to Lake Pontchartrain and Lake Maurepas, affecting homes and businesses from Slidell to Mandeville and Madisonville. Approximately 1,500 structures were reported as flooded in Livingston Parish near Lake Maurepas. Repaired levees damaged by Hurricane Katrina in late August were overtopped or breached along the Industrial Canal in New Orleans, resulting in renewed flooding in adjacent portions of New Orleans and St. Bernard Parish. However, the flooding was much more limited in scope than during Hurricane Katrina.

Hurricane Rita was the most powerful hurricane to impact southwestern Louisiana since Hurricane Audrey in 1957. Estimated damages in southwest Louisiana totaled near $4 billion, with the majority of those losses occurring in Cameron and Calcasieu Parishes. Entire towns were destroyed in Cameron Parish, including downtown Cameron, Creole, Holly Beach, and Grand Chenier. An estimated 90 to 95 percent of the homes in the parish were severely damaged or destroyed. Storm surge values were estimated around 15 feet in parts of Cameron Parish.

Caddo Parish was on the east side of Rita's eye and experienced strong tropical force winds as a result of the storm. Damage was sporadic across the region with damage consisting of downed trees and power lines as well as structural damage to homes, businesses, and automobiles from downed trees. Many residents of Northwest Louisiana lost power during the height of the storm.

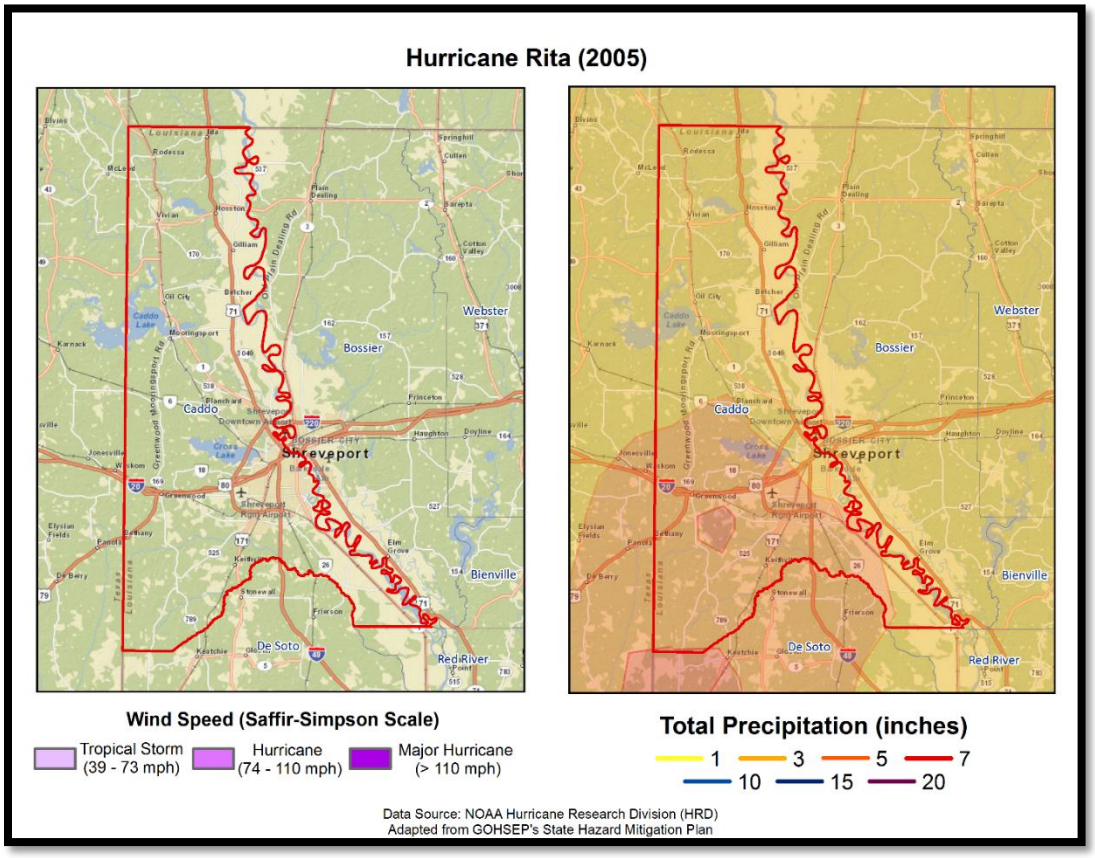

Figure 2-29: Wind Speed and Precipitation Totals in Caddo Parish for Hurricane Rita

Hurricane Gustav (2008)

Hurricane Gustav entered the southeast Gulf of Mexico as a major Category 3 hurricane on August 31, 2008, after developing in the Caribbean Sea and moving across western Cuba. Gustav tracked northwestward across the Gulf toward Louisiana and made landfall as a Category 2 hurricane near Cocodrie, Louisiana, during the morning of September 1st. Gustav continued to move northwest across south Louisiana and weakened to a Category 1 storm over south central Louisiana later that day. The storm diminished to a tropical depression over northwestern Louisiana on September 2nd.

The highest wind gust recorded was 117 mph (102 kts) at a USGS site at the Houma Navigational Canal and at the Pilot Station East C-MAN near the Southwest Pass of the Mississippi River. The highest sustained wind of 91 mph was recorded at the Pilot's Station East C-MAN site. However, due to the failure of equipment at some observation sites during the storm, higher winds may have occurred. The minimum sea level pressure measured was 951.6 millibars at a USGS site at Caillou Lake, southwest of Dulac, and 954.5 millibars at the LUMCON facility near Dulac. Rainfall varied considerably across southeast Louisiana, ranging from around four inches to just over 11 inches.

Gustav produced widespread wind damage across southeast Louisiana, especially in the area from Houma and Thibodaux through the greater Baton Rouge area. Hurricane force wind gusts occurred also across the inland areas, including the Baton Rouge area and surrounding parishes. A peak wind gust of 91 mph was recorded at the Baton Rouge (Ryan Field) Airport at 1:12 PM CST. This was only one mph less than the highest wind gust recorded during Hurricane Betsy in 1965. After the storm, the electric utility serving most of

southeast Louisiana reported 75 to 100 percent of utility customers were without power, in areas ranging from Lafourche and Terrebonne Parishes northwest through the Baton Rouge area to central Louisiana and southwest Mississippi. Considerable damage occurred to many houses and structures as large tree limbs and trees were toppled by the hurricane force winds. Preliminary estimates from the American Red Cross indicated that around 13,000 single family dwellings were damaged by the hurricane in southeast Louisiana, and several thousand more apartments and mobile homes were also damaged. Early estimates from Louisiana Economic Development indicated that Gustav caused at least $4.5 billion in property damage in Louisiana, including insured and uninsured losses.

In Caddo Parish, tropical storm force winds resulted in numerous trees and power lines downed. Tree damage was particularly near and south of Shreveport across the southern end of the parish. Power outages were widespread as well. Winds resulted in the collapse of a vacant building brick wall in downtown Shreveport. The wall fell across the corner of Linwood and Texas Avenue.

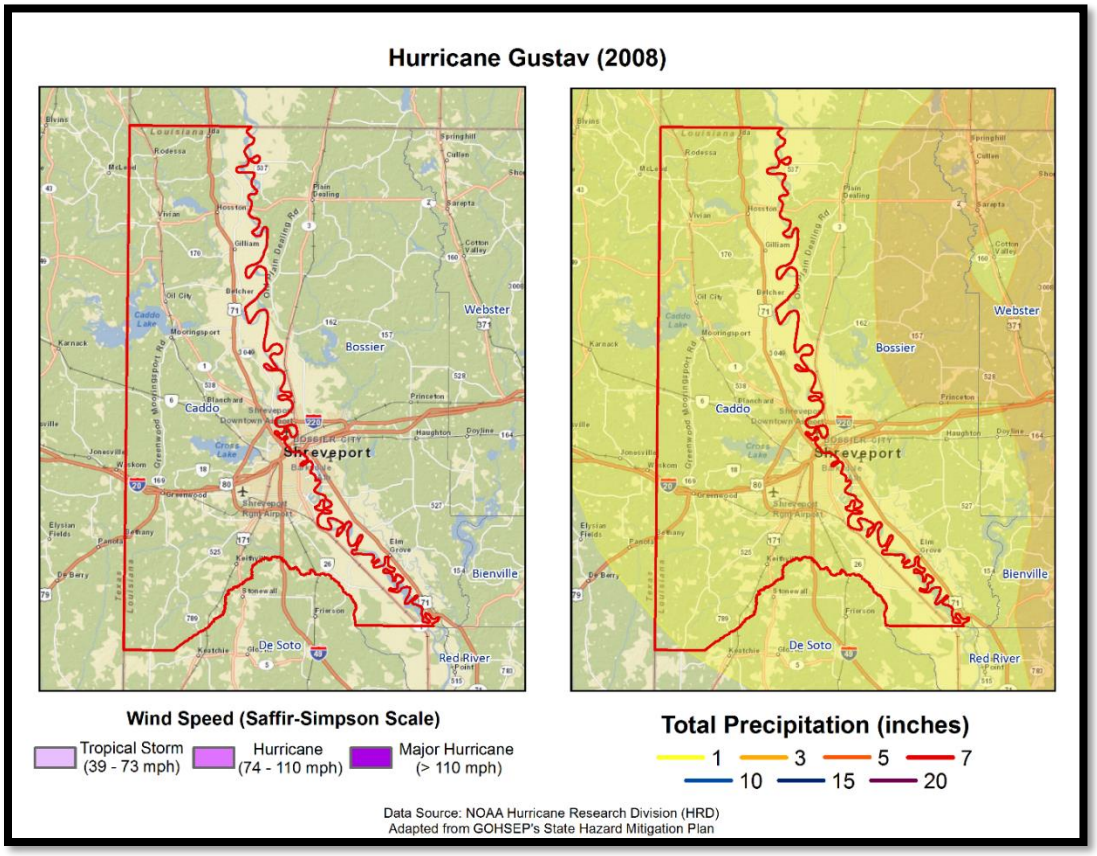

Figure 2-30: Wind Speed and Precipitation Totals in Caddo Parish for Hurricane Gustav

Hurricane Ike (2008)

Hurricane Ike caused wind damage, storm surge flooding, and tornadoes across southwest Louisiana. Ike made landfall near Galveston, TX early in the morning on September 13, 2008, as a strong category 2 hurricane. Sustained hurricane force winds were confined to extreme western Cameron Parish. The highest recorded winds in southwest Louisiana were experienced at Lake Charles Regional Airport, with sustained winds of 53 mph (46 kts) and gusts of 77 mph (67 kts). The lowest pressure reading occurred at Southland Field near Sulphur, LA, with a low of 994.6 millibars. Several tornadoes were reported across southwest

Louisiana. The most significant one was near Mamou, where ten to fifteen homes were damaged, including one that lost its roof. Storm surge was a significant event. Water levels ranged from 14 feet in western Cameron Parish, to eight feet in St. Mary Parish. This resulted in widespread flooding of the same areas that flooded during Hurricane Rita in 2005. Most of Cameron Parish was under water. Over 3,000 homes were flooded. This extended north into Calcasieu Parish, where another 1,000 homes flooded in Lake Charles, Westlake, and Sulphur. In Vermilion Parish, at least 1,000 homes flooded in Pecan Island, Forked Island, Intracoastal City, and Henry. This extended east into Iberia Parish, where another 1,000 homes flooded south of Highway 14 and Highway 90. In St. Mary Parish, some of the worst flooding occurred in Franklin, where a man-made levee failed, flooding over 450 homes. Maximum storm total rainfall ranged from six to eight inches across Cameron, Calcasieu, and Beauregard Parishes. No fatalities were reported in southwest Louisiana. Total property damages, however, were high. Losses were estimated to be almost $420 million across southwest Louisiana. Agricultural losses were over $225 million.

In Caddo Parish, tropical storm force winds associated with the remnants of Hurricane Ike resulted in widespread tree and power line damage throughout the parish. Power outages were widespread well after the storm had passed. The National Weather Service ASOS in Shreveport reported a wind gust of 56 mph during the height of the storm. Several trees blocked roads and highways across the parish. One tree fell on a home near the intersection of Cornwell and Jordan Roads with two minor injuries associated with that fallen tree. A tree was also reported downed on a mobile home on Jefferson Paige Road. There were two injuries reported at the residence. No other injuries were reported.

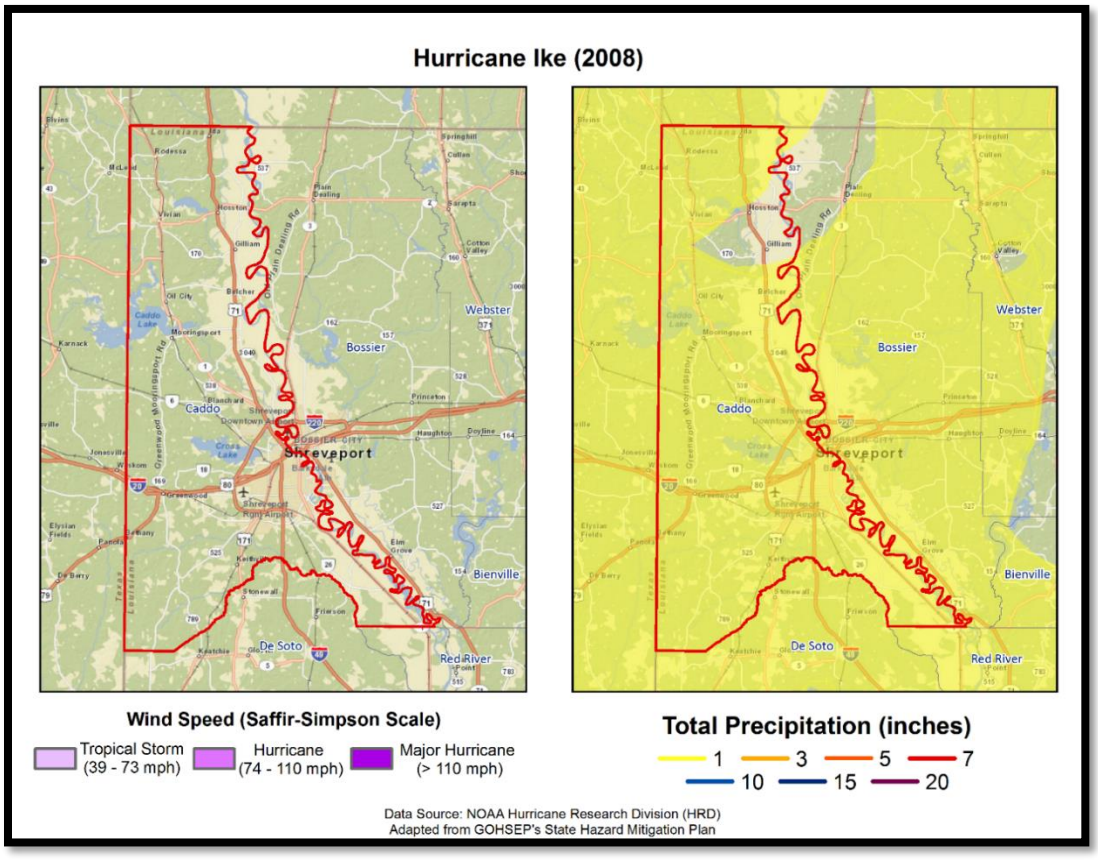

Figure 2-31: Wind Speed and Precipitation Totals in Caddo Parish for Hurricane Ike

The following figure displays the wind zones that affect Caddo Parish in relation to critical facilities throughout the parish.

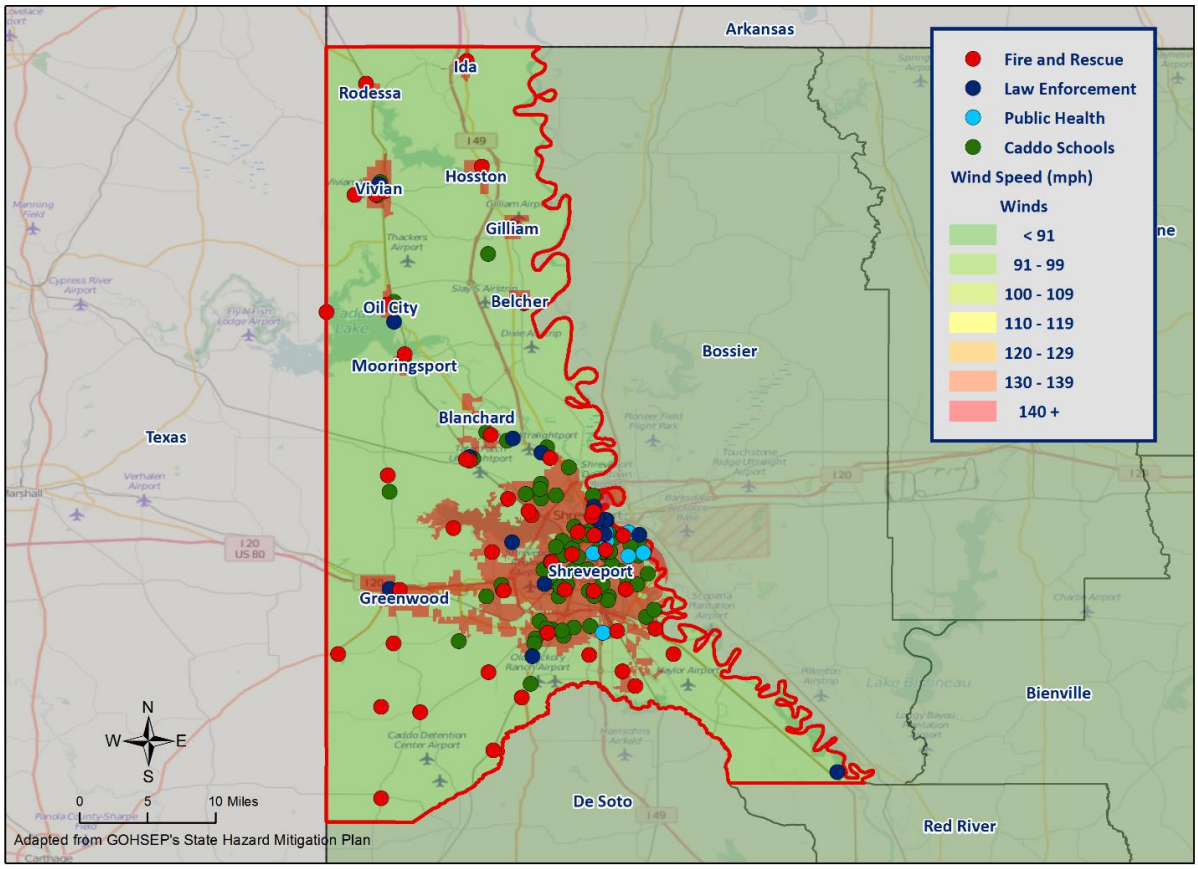

Figure 2-32: Winds Zones for Caddo Parish in Relation to Critical Facilities

Frequency / Probability

Tropical cyclones are large natural hazard events that regularly impact Caddo Parish. The annual chance of occurrence for a tropical cyclone is estimated at 12% for Caddo Parish and its municipalities, with three events occurring within 25 years. The tropical cyclone season for the Atlantic Basin is from June 1st through November 30th, with most of the major hurricanes (Saffir-Simpson Categories 3, 4, & 5) occurring between the months of August and October.

Estimated Potential Losses

Using Hazus 2.2 100-Year Hurricane Model, the 100-year hurricane scenario was analyzed to determine losses from this worst-case scenario. The table on the following page shows the total economic losses that would result from this occurrence.

Table 2-66: Total Estimated Losses for a 100-Year Hurricane Event (Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
Caddo Parish (Unincorporated)	$1,303,399
Belcher	$8,003
Blanchard	$88,218
Gilliam	$4,991
Greenwood	$97,956
Hosston	$9,677
Ida	$6,725
Mooringsport	$24,131
Oil City	$30,674
Rodessa	$8,216
Shreveport	$6,065,134
Vivian	$111,710
Total	$7,647,125

Total losses from a 100-year hurricane event for each jurisdiction were compared with the total value of assets to determine the ratio of potential damage to total inventory in the table below.

Table 2-67: Ratio of Total Losses to Total Estimated Value of Assets for each Jurisdiction in Caddo Parish (Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
Unincorporated	$1,303,399	$6,465,640,000	< 0.1%
Belcher	$8,003	$37,174,000	< 0.1%
Blanchard	$88,218	$368,487,000	< 0.1%
Gilliam	$4,991	$17,115,000	< 0.1%
Greenwood	$97,956	$414,173,000	< 0.1%
Hosston	$9,677	$44,913,000	< 0.1%
Ida	$6,725	$25,027,000	< 0.1%
Mooringsport	$24,131	$102,777,000	< 0.1%
Oil City	$30,674	$158,022,000	< 0.1%
Rodessa	$8,216	$23,245,000	< 0.1%
Shreveport	$6,065,134	$35,843,406,000	< 0.1%
Vivian	$111,710	$510,398,000	< 0.1%

Based on the Hazus 2.2 Hurricane Model, estimated total losses are less than 0.1% of the total estimated value of all assets for the unincorporated area of Caddo Parish, and the incorporated areas of Belcher, Blanchard, Gilliam, Greenwood, Hosston, Ida, Mooringsport, Oil City, Rodessa, Shreveport, and Vivian.

The Hazus 2.2 Hurricane Model also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. The losses for each jurisdiction by sector are listed in the tables on the following pages.

Table 2-68: Estimated Losses in Unincorporated Caddo Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)

Caddo Parish (Unincorporated)	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$131
Commercial	$6,560
Government	$253
Industrial	$3,781
Religious / Non-Profit	$1,723
Residential	$1,402,332
Schools	$330
Total	$1,415,110

Table 2-69: Estimated Losses in Belcher for a 100-Year Hurricane Event (Source: Hazus 2.2)

Belcher	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$1
Commercial	$37
Government	$1
Industrial	$21
Religious / Non-Profit	$10
Residential	$7,931
Schools	$2
Total	$8,003

Table 2-70: *Estimated Losses in Blanchard for a 100-Year Hurricane Event (Source: Hazus 2.2)*

Blanchard	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$8
Commercial	$409
Government	$16
Industrial	$236
Religious / Non-Profit	$107
Residential	$87,421
Schools	$21
Total	$88,218

Table 2-71: Estimated Losses in Gilliam for a 100-Year Hurricane Event (Source: Hazus 2.2)

Gilliam	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$0
Commercial	$23
Government	$1
Industrial	$13
Religious / Non-Profit	$6
Residential	$4,946
Schools	$1
Total	$4,991

Table 2-72: Estimated Losses in Greenwood for a 100-Year Hurricane Event (Source: Hazus 2.2)

Greenwood	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$9
Commercial	$454
Government	$17
Industrial	$262
Religious / Non-Profit	$119
Residential	$97,071
Schools	$23
Total	$97,956

Table 2-73: Estimated Losses in Hosston for a 100-Year Hurricane Event (Source: Hazus 2.2)

Hosston	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$1
Commercial	$45
Government	$2
Industrial	$26
Religious / Non-Profit	$12
Residential	$9,590
Schools	$2
Total	$9,677

Table 2-74: Estimated Losses in Ida for a 100-Year Hurricane Event (Source: Hazus 2.2)

Ida	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$1
Commercial	$31
Government	$1
Industrial	$18
Religious / Non-Profit	$8
Residential	$6,664
Schools	$2
Total	$6,725

Table 2-75: Estimated Losses in Mooringsport for a 100-Year Hurricane Event (Source: Hazus 2.2)

Mooringsport	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$2
Commercial	$112
Government	$4
Industrial	$64
Religious / Non-Profit	$29
Residential	$23,914
Schools	$6
Total	$24,131

Table 2-76: Estimated Losses in Oil City for a 100-Year Hurricane Event (Source: Hazus 2.2)

Oil City	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$3
Commercial	$142
Government	$5
Industrial	$82
Religious / Non-Profit	$37
Residential	$30,397
Schools	$7
Total	$30,674

Table 2-77: Estimated Losses in Rodessa for a 100-Year Hurricane Event (Source: Hazus 2.2)

Rodessa	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$1
Commercial	$38
Government	$1
Industrial	$22
Religious / Non-Profit	$10
Residential	$8,142
Schools	$2
Total	$8,216

Table 2-78: Estimated Losses in Shreveport for a 100-Year Hurricane Event (Source: Hazus 2.2)

Shreveport	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$562
Commercial	$28,114
Government	$1,082
Industrial	$16,207
Religious / Non-Profit	$7,385
Residential	$6,010,371
Schools	$1,413
Total	$6,065,134

Table 2-79: Estimated Losses in Vivian for a 100-Year Hurricane Event (Source: Hazus 2.2)

Vivian	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$10
Commercial	$518
Government	$20
Industrial	$299
Religious / Non-Profit	$136
Residential	$110,702
Schools	$26
Total	$111,710

Threat to People

The total population within the parish that is susceptible to a hurricane hazard is shown in the table below:

Table 2-80: Number of People Susceptible to a 100-Year Hurricane Event in Caddo Parish (Source: Hazus 2.2)

Number of People Exposed to Hurricane Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
Parish (Unincorporated)	**42,832**	**42,832**	**100.0%**
Belcher	**263**	**263**	**100.0%**
Blanchard	**2,899**	**2,899**	**100.0%**
Gilliam	**164**	**164**	**100.0%**
Greenwood	**3,219**	**3,219**	**100.0%**
Hosston	**318**	**318**	**100.0%**
Ida	**221**	**221**	**100.0%**
Mooringsport	**793**	**793**	**100.0%**
Oil City	**1,008**	**1,008**	**100.0%**
Rodessa	**270**	**270**	**100.0%**
Shreveport	**199,311**	**199,311**	**100.0%**
Vivian	**3,671**	**3,671**	**100.0%**
Total	**254,969**	**254,969**	**100.0%**

The HAZUS-MH Hurricane Model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions. These populations are illustrated in the following tables:

Table 2-81: Vulnerable Populations in Unincorporated Caddo Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)

Caddo Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	42,832	100.0%
Persons Under 5 Years	2,998	7.0%
Persons Under 18 Years	10,524	24.6%
Persons 65 Years and Over	5,821	13.6%
White	20,988	49.0%
Minority	21,844	51.0%

Table 2-82: Vulnerable Populations in Belcher for a 100-Year Hurricane Event (Source: Hazus 2.2)

Belcher		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	263	100.0%
Persons Under 5 Years	18	6.8%
Persons Under 18 Years	57	21.7%
Persons 65 Years and Over	53	20.2%
White	181	68.8%
Minority	82	31.2%

Table 2-83: Vulnerable Populations in Blanchard for a 100-Year Hurricane Event (Source: Hazus 2.2)

Blanchard		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	263	100.0%
Persons Under 5 Years	18	6.8%
Persons Under 18 Years	57	21.7%
Persons 65 Years and Over	53	20.2%
White	181	68.8%
Minority	82	31.2%

Table 2-84: Vulnerable Populations in Gilliam for a 100-Year Hurricane Event (Source: Hazus 2.2)

Gilliam		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	164	100.0%
Persons Under 5 Years	8	4.9%
Persons Under 18 Years	33	20.1%
Persons 65 Years and Over	25	15.2%
White	96	58.5%
Minority	68	41.5%

Table 2-85: Vulnerable Populations in Greenwood for a 100-Year Hurricane Event (Source: Hazus 2.2)

Greenwood		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	3,219	100.0%
Persons Under 5 Years	178	5.5%
Persons Under 18 Years	668	20.8%
Persons 65 Years and Over	443	13.8%
White	2,281	70.9%
Minority	938	29.1%

Table 2-86: Vulnerable Populations in Hosston for a 100-Year Hurricane Event (Source: Hazus 2.2)

Hosston		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	318	100.0%
Persons Under 5 Years	13	4.1%
Persons Under 18 Years	64	20.1%
Persons 65 Years and Over	55	17.3%
White	230	72.3%
Minority	88	27.7%

Table 2-87: Vulnerable Populations in Ida for a 100-Year Hurricane Event (Source: Hazus 2.2)

Ida		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	221	100.0%
Persons Under 5 Years	13	5.9%
Persons Under 18 Years	33	14.9%
Persons 65 Years and Over	68	30.8%
White	213	96.4%
Minority	8	3.6%

Table 2-88: Vulnerable Populations in Mooringsport for a 100-Year Hurricane Event (Source: Hazus 2.2)

Mooringsport		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	793	100.0%
Persons Under 5 Years	54	6.8%
Persons Under 18 Years	202	25.5%
Persons 65 Years and Over	133	16.8%
White	664	83.7%
Minority	129	16.3%

Table 2-89: Vulnerable Populations in Oil City for a 100-Year Hurricane Event (Source: Hazus 2.2)

Oil City		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	1,008	100.0%
Persons Under 5 Years	89	8.8%
Persons Under 18 Years	284	28.2%
Persons 65 Years and Over	133	13.2%
White	573	56.9%
Minority	435	43.2%

Table 2-90: Vulnerable Populations in Rodessa for a 100-Year Hurricane Event (Source: Hazus 2.2)

Rodessa		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	270	100.0%
Persons Under 5 Years	17	6.3%
Persons Under 18 Years	73	27.0%
Persons 65 Years and Over	38	14.1%
White	175	64.8%
Minority	95	35.2%

Table 2-91: Vulnerable Populations in Shreveport for a 100-Year Hurricane Event (Source: Hazus 2.2)

Shreveport		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	199,311	100.0%
Persons Under 5 Years	14,470	7.3%
Persons Under 18 Years	49,848	25.0%
Persons 65 Years and Over	26,229	13.2%
White	82,036	41.2%
Minority	117,275	58.8%

Table 2-92: Vulnerable Populations in Vivian for a 100-Year Hurricane Event (Source: Hazus 2.2)

Vivian		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	3,671	100.0%
Persons Under 5 Years	280	7.6%
Persons Under 18 Years	989	26.9%
Persons 65 Years and Over	600	16.3%
White	2,048	55.8%
Minority	1,623	44.2%

Vulnerability

See Appendix C for parish and municipality buildings that are susceptible to tropical cyclones.

Wildfires

A wildfire is combustion in a natural setting, marked by flames or intense heat. Most frequently, wildfires are ignited by lightning or unintentionally by humans. Fires set purposefully (but lawfully) are referred to as controlled fires or burns. There are three different types of wildfires: (1) **Ground fires** burn primarily in the thick layers of organic matter directly on the forest floor and even within the soil. Ground fires destroy root networks, peat, and compact litter. These fires spread extremely slowly and can smolder for months. (2) **Surface fires** burn litter and vegetative matter in the underbrush of a forest. (3) **Crown fires** spread rapidly by wind and move quickly by jumping along the tops of trees. There are two types of crown fires: (a) *passive (or dependent)* crown fires rely on heat transfer from surface fire, whereas (b) *active (or independent)* crown fires do not require any heat transfer from below. Active crown fires tend to occur with greater tree density and drier conditions. A firestorm is a mass, crown fire (also called a running crown fire, area fire, or conflagration). They are large, continuous, intense fires that lead to violent convection. They are characterized by destructively violent surface in-drafts near and beyond their perimeter. Crown fires are the most damaging and most difficult to contain. The intensity of crown fires enables the fire to produce its own wind gusts. These so-called *fire whirls* can move embers ahead of the fire front and ignite new fires. Fire whirls are spinning vortex columns of ascending hot air and gases rising from the fire. Large fire whirls have the intensity of a small tornado.

The conditions conducive to the occurrence of wildfires are not distributed equally across the United States. Wildfires have a much greater likelihood of occurring in the western part of the country. Although less frequent than in other areas, wildfires do occur in Louisiana. Wildfire danger can vary greatly season to season, and is exacerbated by dry weather conditions. Factors that increase susceptibility to wildfires are the availability of fuel (e.g., litter and debris), topography (i.e., slope and elevation affect various factors like precipitation, fuel amount, and wind exposure), and specific meteorological conditions (e.g., low rainfall, high temperatures, low relative humidity, and winds). The potential for wildfire is often measured by the Keetch–Byram Drought Index (KBDI), which represents the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in the soil. The KBDI tries to measure the amount of precipitation needed to return soil to its full field capacity, with KBDI values ranging from 0 (moist soil) to 800 (severe drought).

According to the State of Louisiana Forestry Division, most forest fires in Louisiana are caused by intentional acts (arson) or carelessness and negligence committed by people, exacerbated by human confrontation with nature. The wildland–urban interface is the area in which development meets wildland vegetation, where both vegetation and the built environment provide fuel for fires. As development near wildland settings continues, more people and property are exposed to wildfire danger. Figure 2-33 displays the areas of wildland-urban interaction in Caddo Parish.

The Southern Group of State Foresters developed the Southern Wildfire Risk Assessment Portal to create awareness among the public and government sectors about the threat of wildfires in their areas. The Southern Wildfire Assessment Portal allows users to identify areas that are most prone to wildfires. The table on the next page summarizes the intensity levels assigned to areas in the Southern Wildfire Assessment Portal.

Table 2-93: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale (Source: Southern Wildfire Assessment Portal)

Fire Intensity Scale	
Level	**Definition**
1	Lowest Intensity: Minimal direct wildfire impacts. Location has a minimal chance of being directly impacted by a wildfire.
2	Low Intensity: Small flames usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress.
3	Moderate Intensity: Flames up to eight feet in length; short-range spotting is possible.
4	High Intensity: Large flames up to 30 feet in length; short-range spotting common; medium range spotting possible.
5	Highest Intensity: Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire induced winds.

Location

Wildfires impact areas that are populated with forests and grasslands. The following figure displays the areas of wildland-urban interface and intermix in Caddo Parish and its jurisdictions.

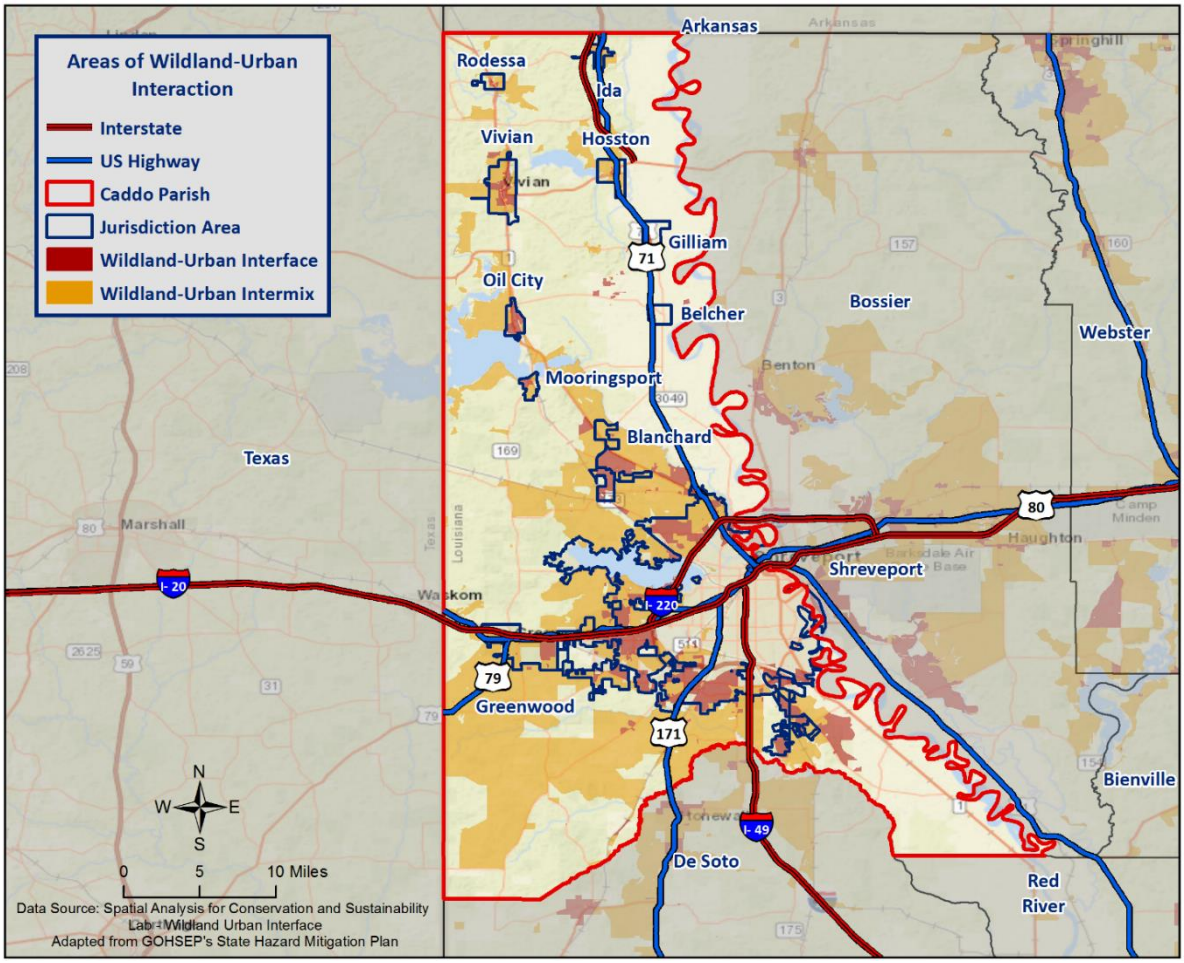

Figure 2-33: Wildland-Urban Interaction in Caddo Parish

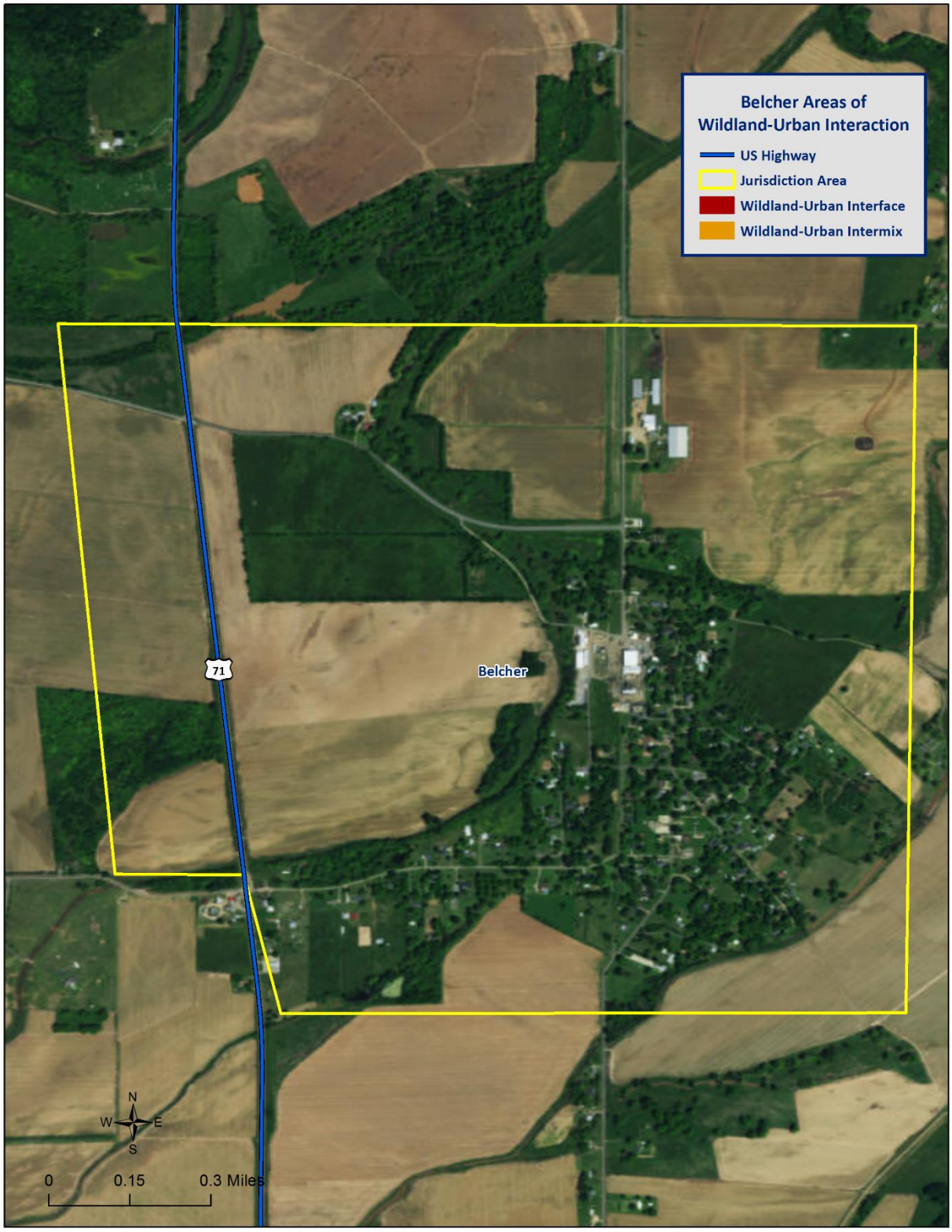

Figure 2-34: Wildland-Urban Interaction in Belcher

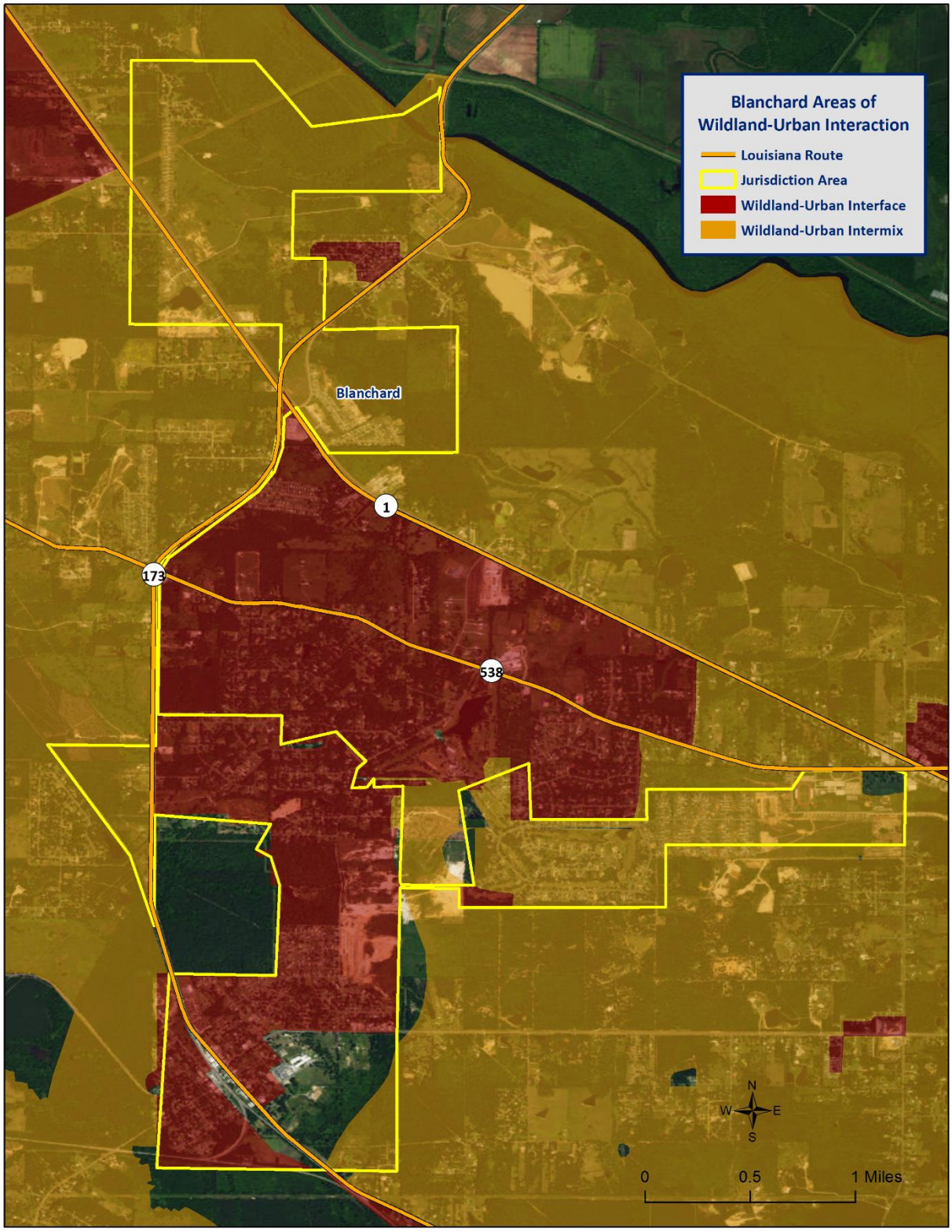

Figure 2-35: Wildland-Urban Interaction in Blanchard

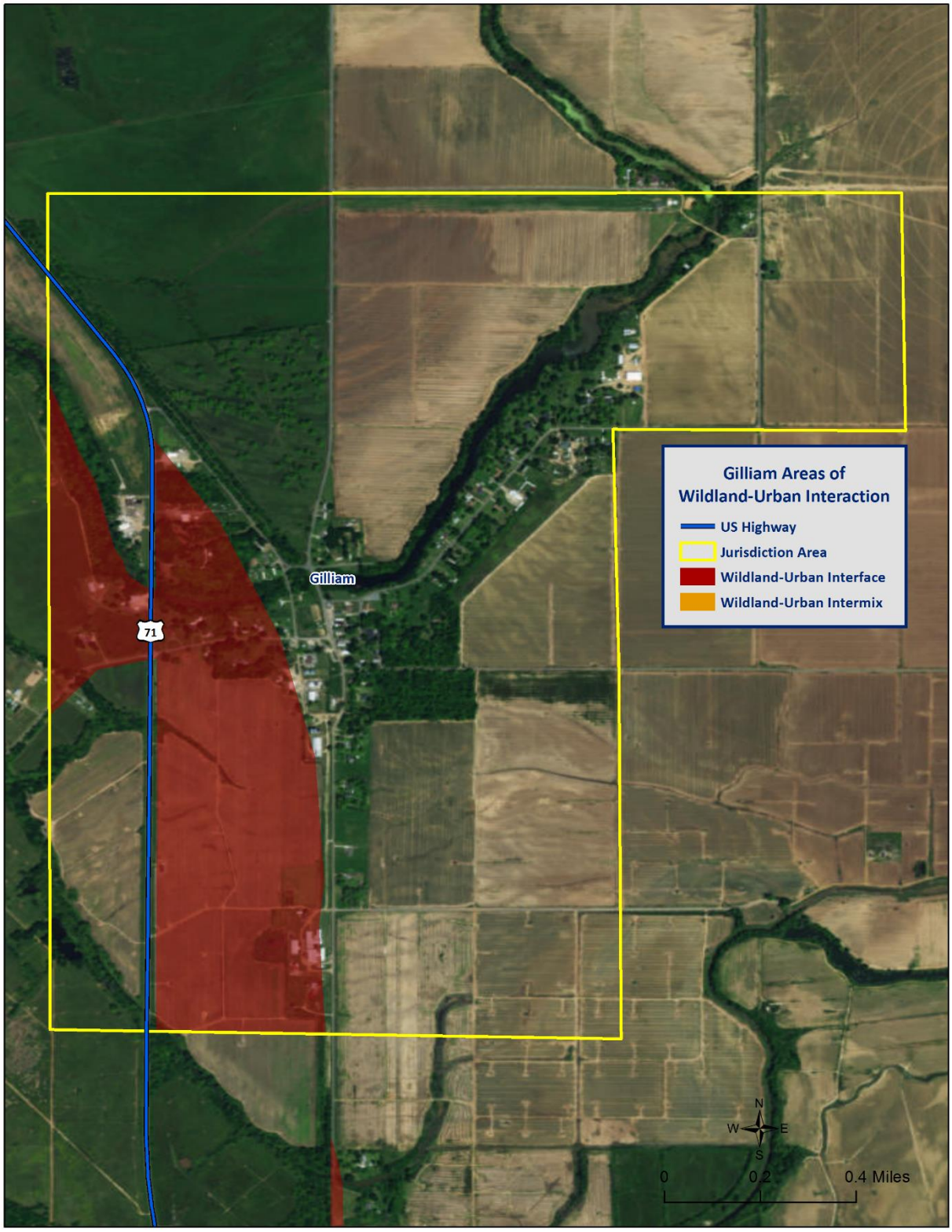

Figure 2-36: Wildland-Urban Interaction in Gilliam

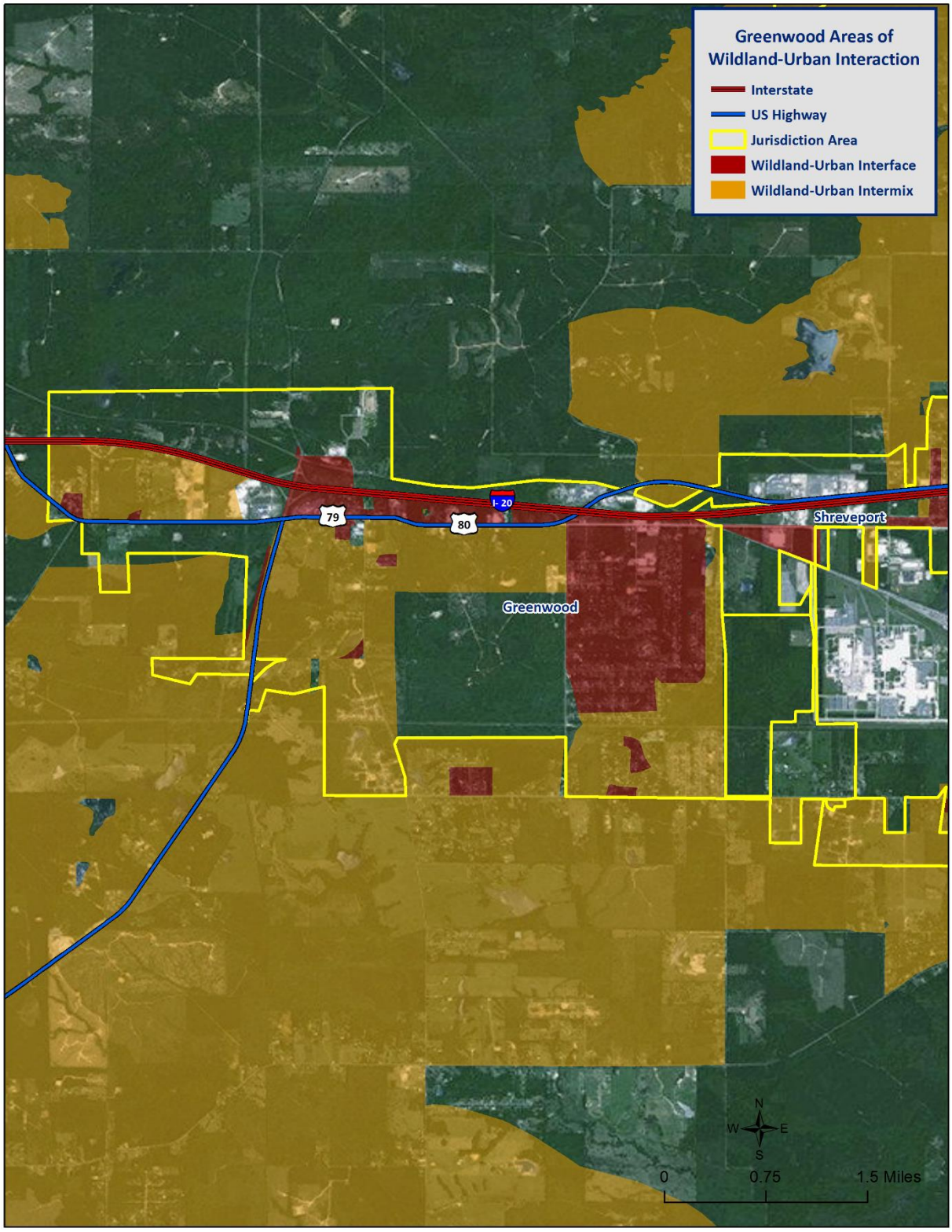

Figure 2-37: Wildland-Urban Interaction in Greenwood

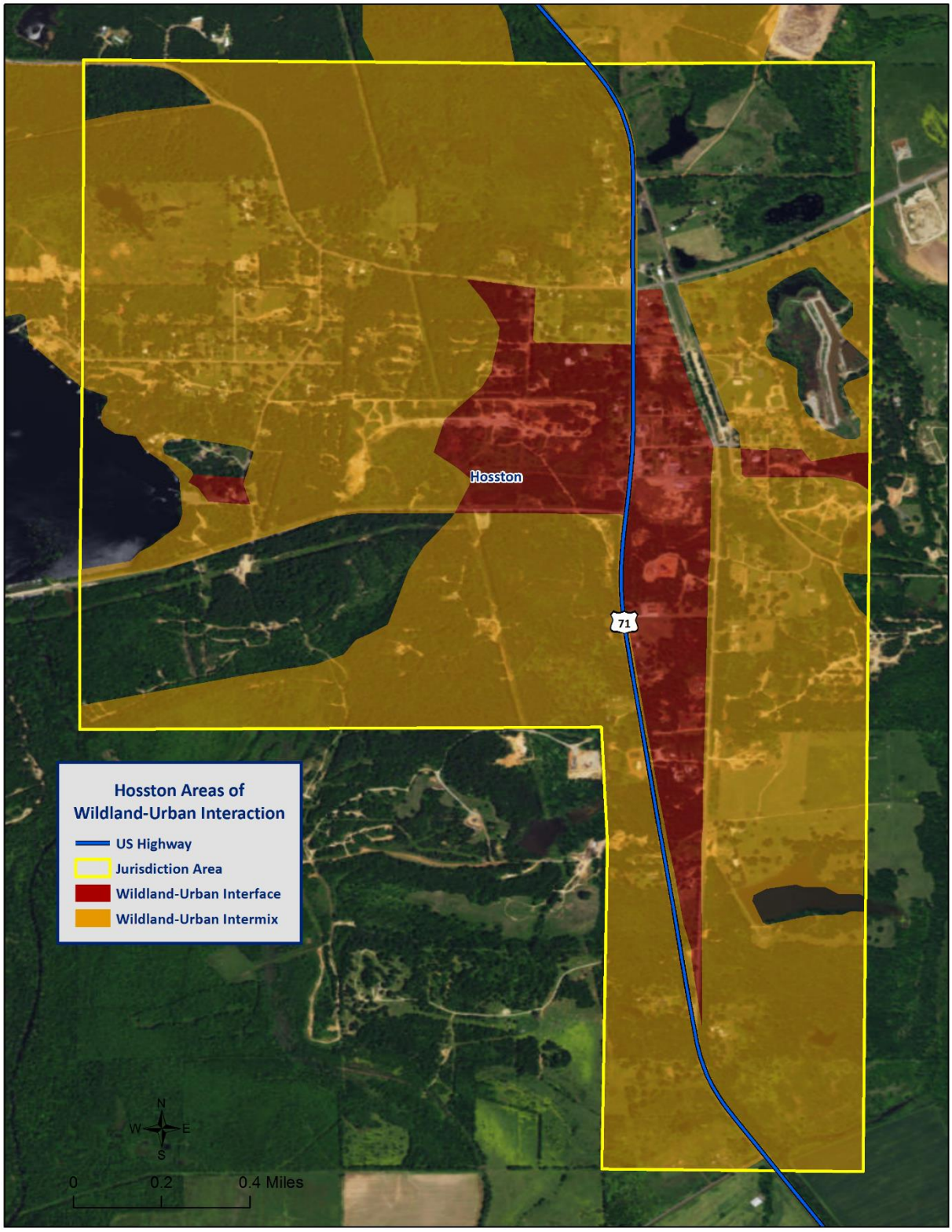

Figure 2-38: Wildland-Urban Interaction in Hosston

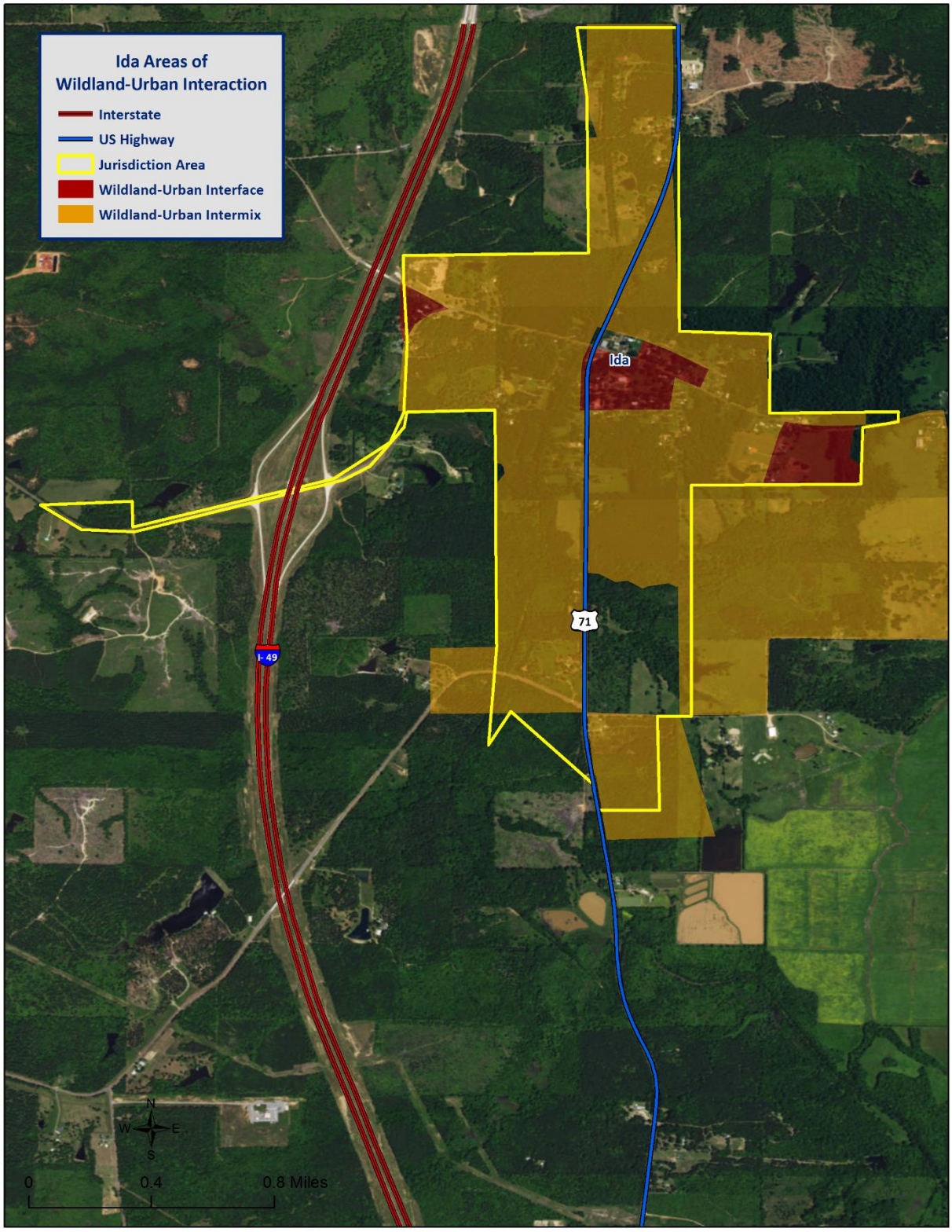

Figure 2-39: Wildland-Urban Interaction in Ida

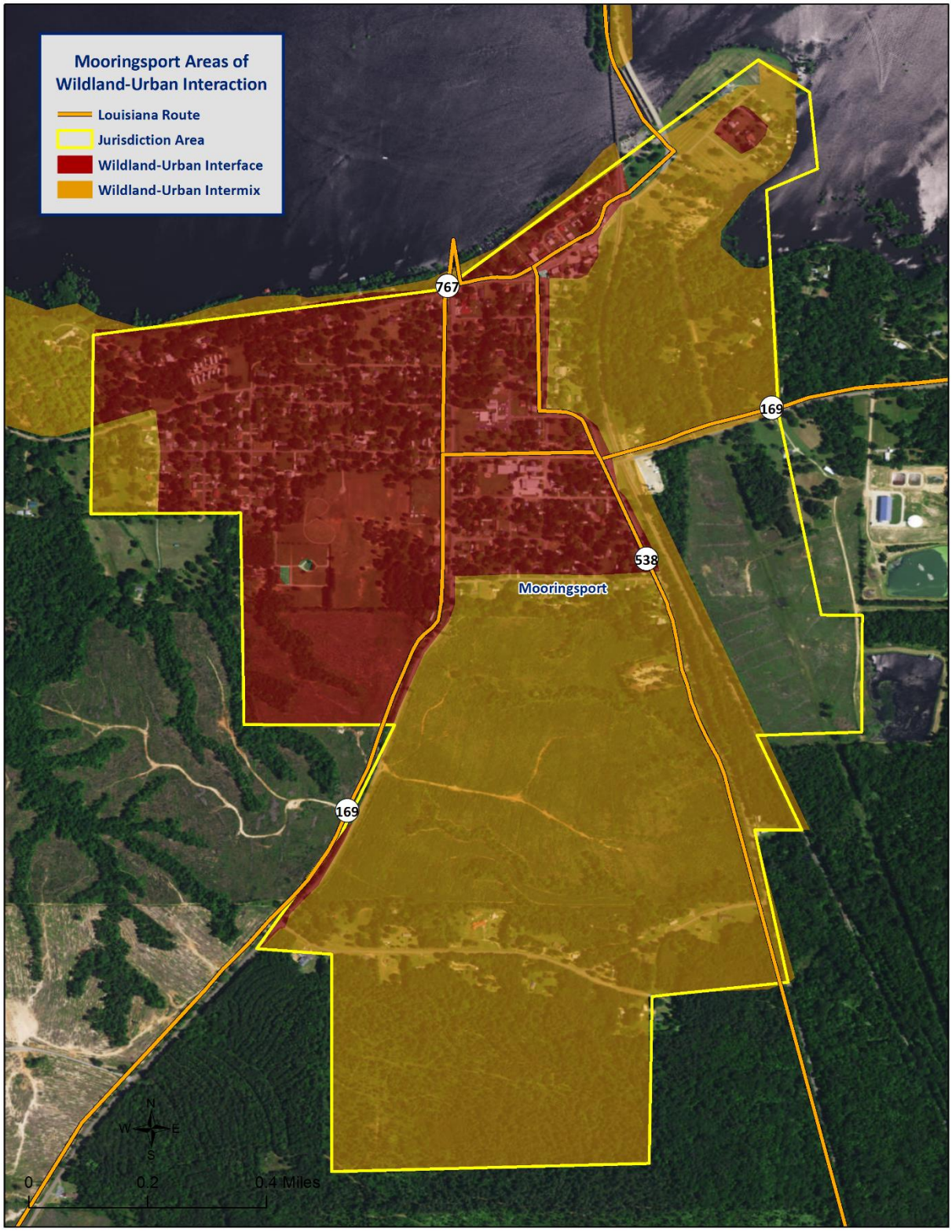

Figure 2-40: Wildland-Urban Interaction in Mooringsport

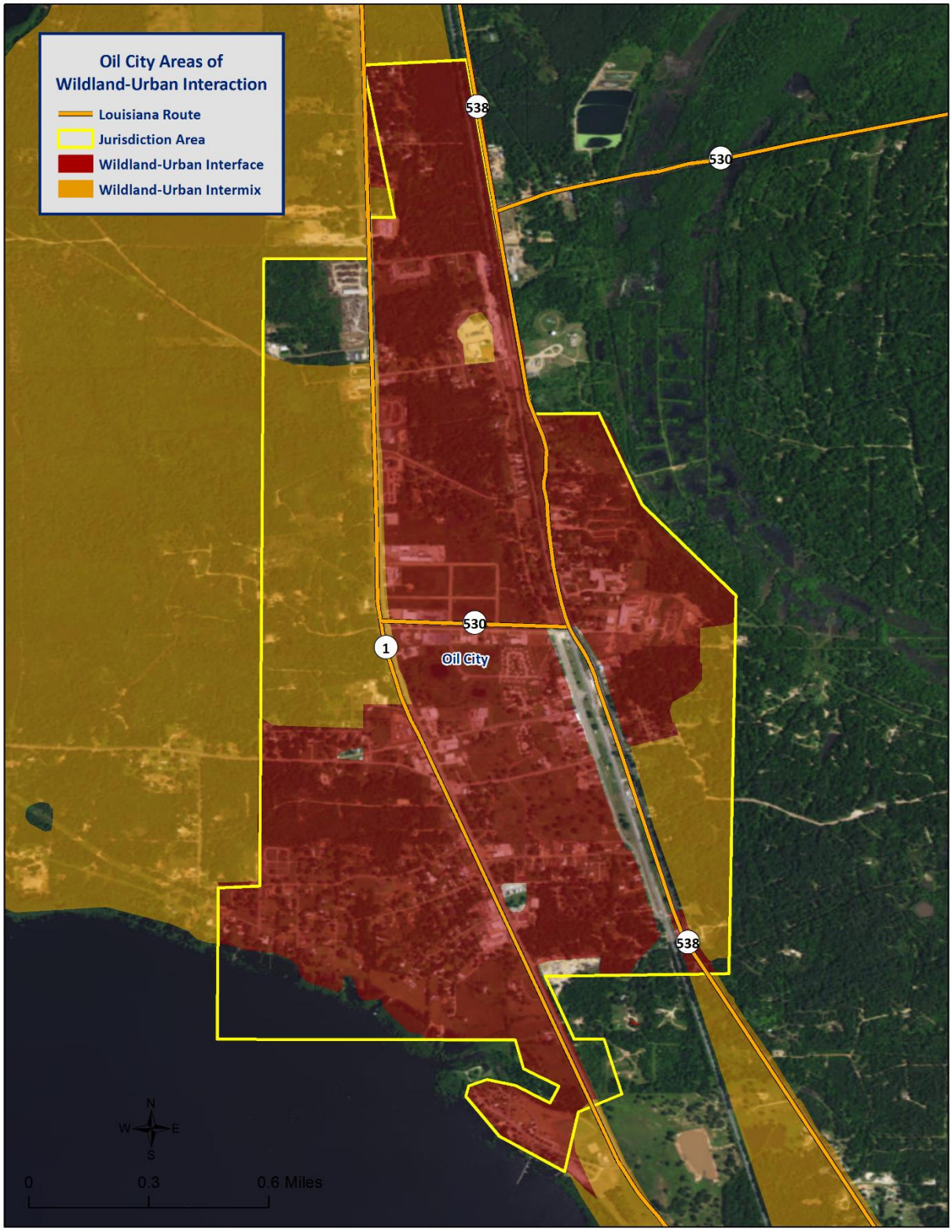

Figure 2-41: Wildland-Urban Interaction in Oil City

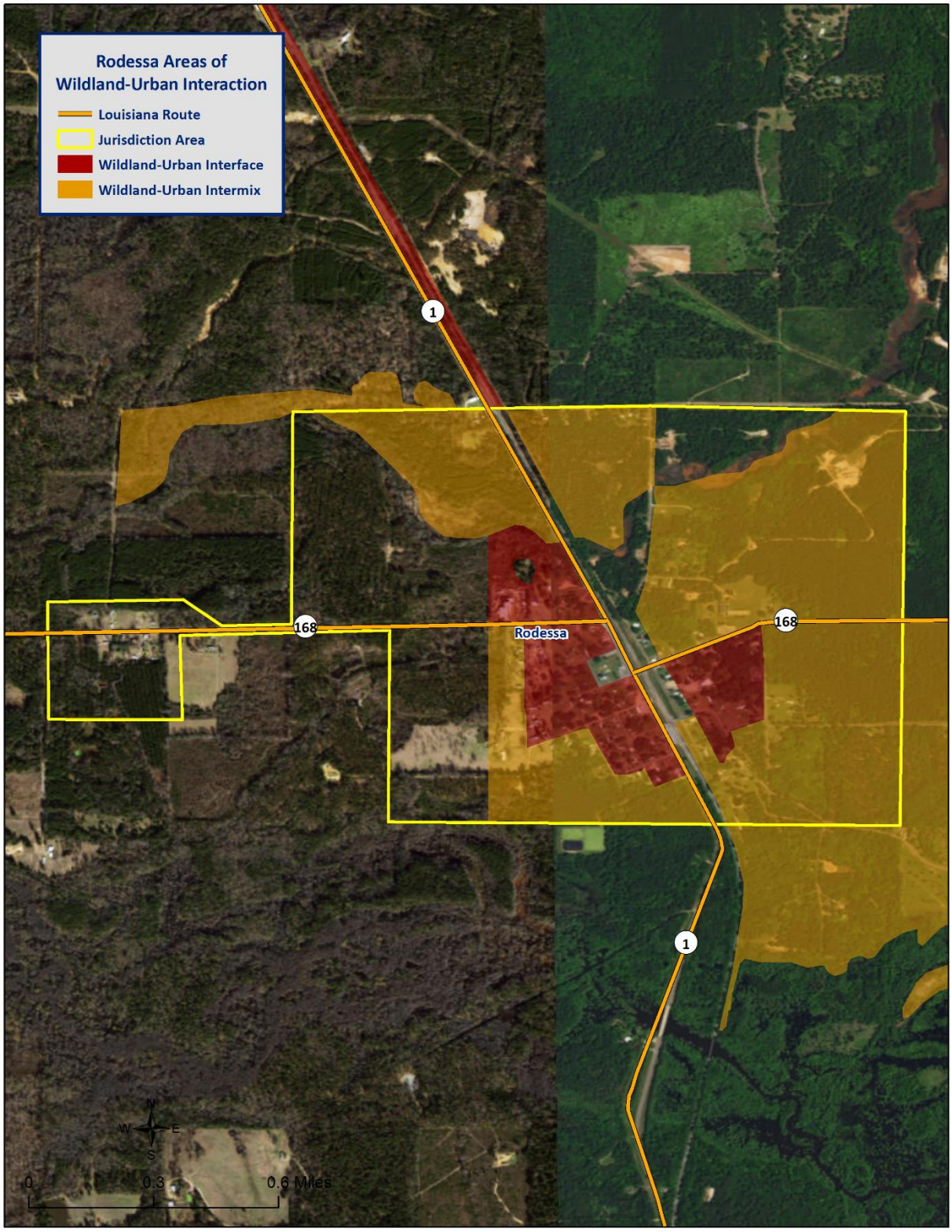

Figure 2-42: Wildland-Urban Interaction in Rodessa

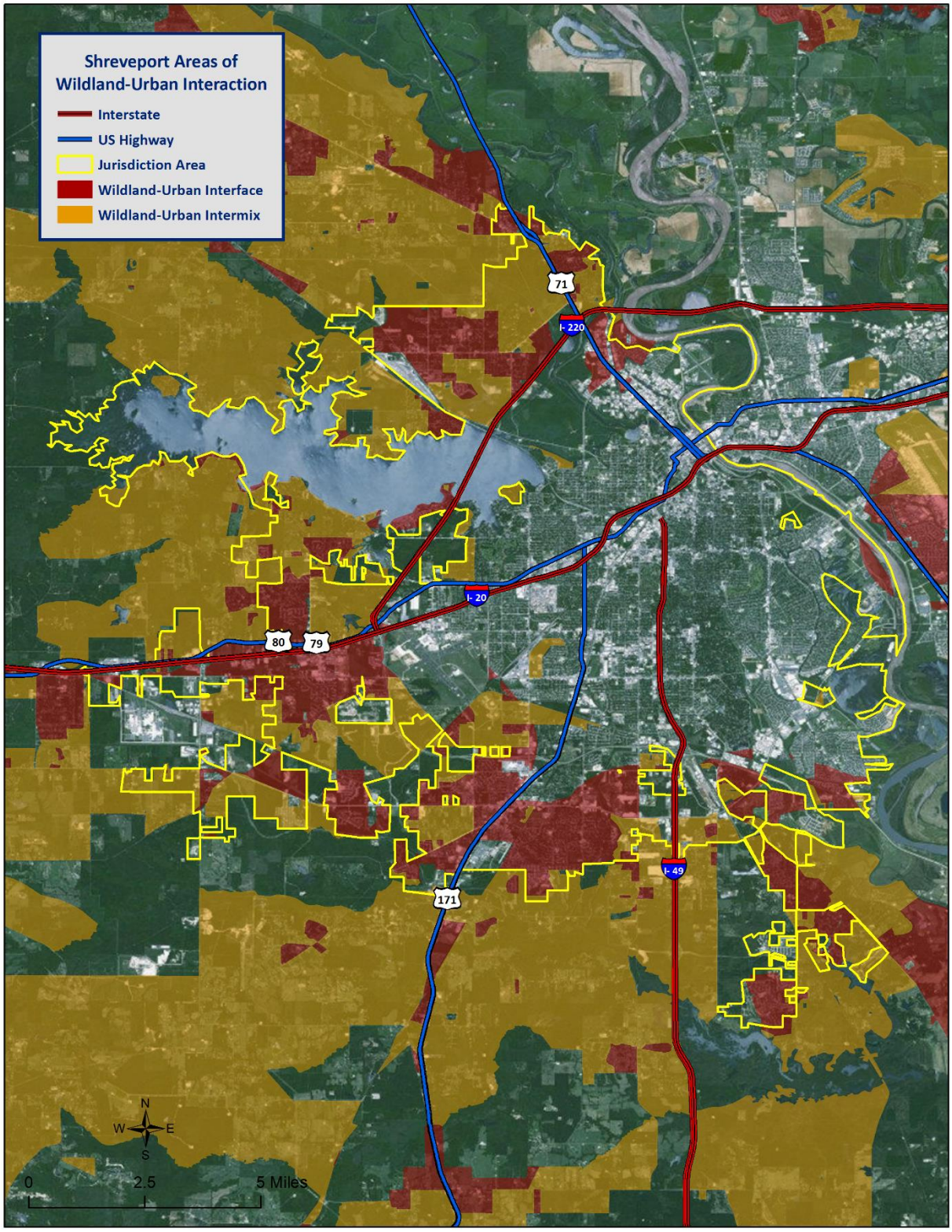

Figure 2-43: Wildland-Urban Interaction in Shreveport

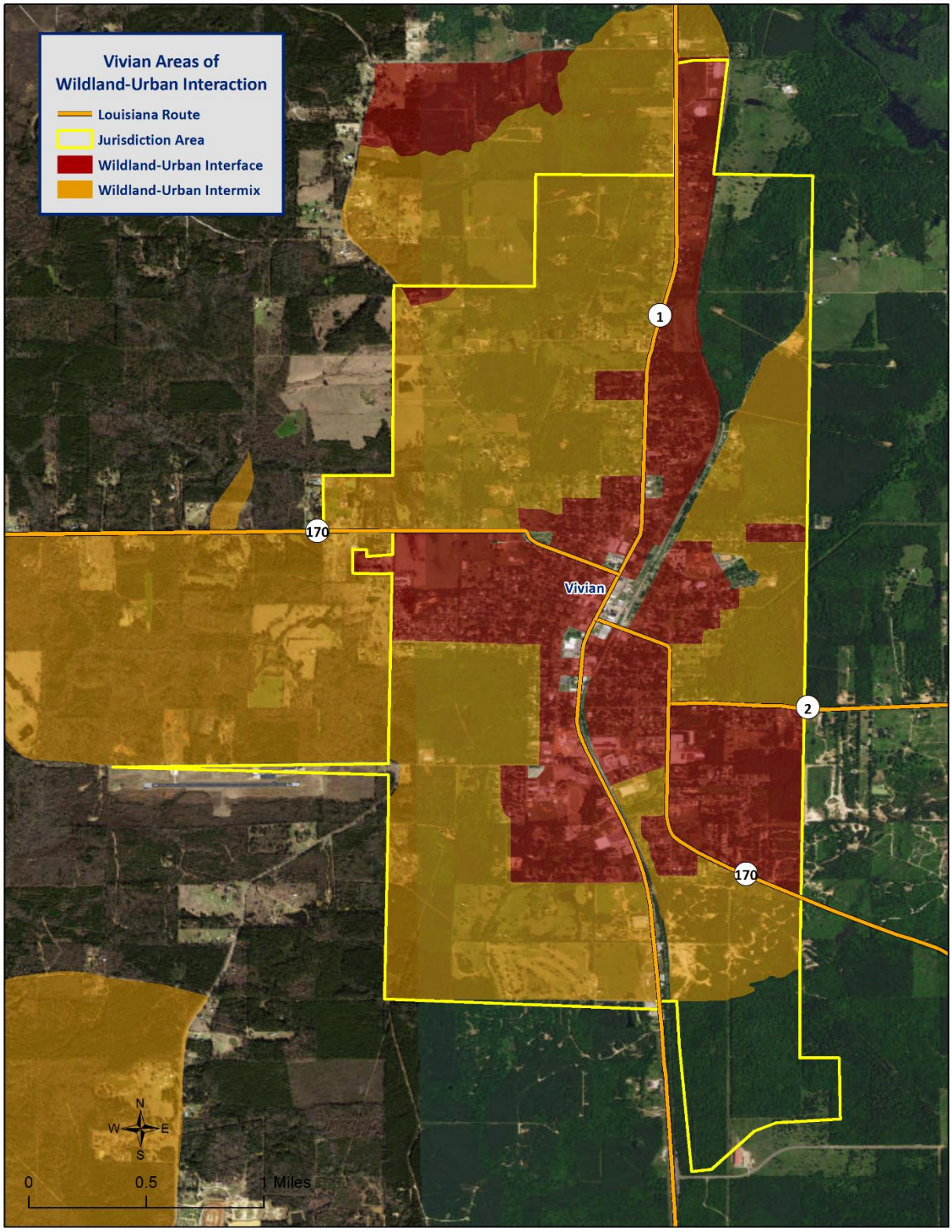

Figure 2-44: Wildland-Urban Interaction in Vivian

Previous Occurrences / Extents

According to SHELDUS, there have been two reported wildfire events that have occurred within the boundaries of Caddo Parish between the years of 1990 and 2015. The following table provides a brief synopsis of each event.

Table 2-94: Previous Occurrences for Wildfire Events

Date	Synopsis	Property Damage	Crop Damage
June 18, 2011	Sparks from a tractor and trailer sparked a large fire across northern Caddo Parish. The fire started along Trees City Road and spread to both sides of the road. Two camp homes between Oil City and Vivian were lost to the fire.	$70,000	$0
September 5, 2011	A wildfire began near Oil City consuming 3,000 acres of timberland and grassland. Two homes were destroyed along with several fishing camps along Caddo Lake.	$400,000	$0

Since 2010, there have been no reported wildfire events in the incorporated areas of Belcher, Blanchard, Gilliam, Greenwood, Hosston, Ida, Mooringsport, Rodessa, Shreveport, and Vivian.

Based on the Southern Group of State Foresters Risk Assessment Portal, the following table outlines the intensity that each jurisdictional area within Caddo Parish could potential experience due to a wildfire event.

Table 2-95: Potential Wildfire Intensity Levels for Caddo Parish
(Source: Southern Wildfire Assessment Portal)

Potential Wildfire Intensity	
Caddo Parish (Unincorporated)	Highest Intensity Level 5
Belcher	Lowest Intensity Level 1
Blanchard	Lowest Intensity Level 1
Gilliam	Moderate to High Intensity Level 3.5
Greenwood	Low Intensity Level 2
Hosston	Moderate Intensity Level 3
Ida	Moderate Intensity Level 3
Mooringsport	Moderate to High Intensity Level 3.5
Oil City	Moderate to High Intensity Level 3.5
Rodessa	Moderate to High Intensity Level 3.5
Shreveport	Moderate to High Intensity Level 3.5
Vivian	Low Intensity Level 2

Frequency / Probability

With two recorded events in 25 years, wildfire events within the boundaries of Caddo Parish have an annual chance of occurrence calculated at 8% based on the SHELDUS dataset.

Estimated Potential Losses

According to the SHELDUS database, there have been two wildfire events that have caused property damage, crop damage, injuries, or fatalities in Caddo Parish. In assessing the overall risk to population, the most vulnerable population throughout the parish consists of those residing in areas of wildland-urban interaction. Figure 2-33 displays the areas of wildland-urban interaction in Caddo Parish.

Using Hazus 2.2, along with wildland-urban interaction areas, the following table presents an analysis of total building exposure that is located within the wildland-urban interaction areas.

Table 2-96: Total Building Exposure by Wildland-Urban Interaction Areas (Source: Hazus 2.2)

Jurisdiction	Estimated Total Building Exposure
Caddo Parish (Unincorporated)	$5,811,549,000
Belcher	$0
Blanchard	$362,075,000
Gilliam	$4,506,000
Greenwood	$403,831,000
Hosston	$44,655,000
Ida	$27,890,000
Mooringsport	$102,777,000
Oil City	$160,702,000
Rodessa	$23,183,000
Shreveport	$12,793,846,000
Vivian	$504,594,000
Total	$20,239,608,000

Hazus 2.2 also provides a breakdown by jurisdiction for seven primary sectors (Hazus occupancy) throughout the parish. Utilizing this information with the wildland-urban interaction areas allows for identifying the total exposure by jurisdiction. The total exposure for each jurisdiction by sector is listed in the following tables. These sectors are comprised of privately owned structures/facilities, as well as locally, state, and federally owned structures/facilities.

Table 2-97: Estimated Exposure for Unincorporated Caddo Parish by Sector (Source: Hazus 2.2)

Caddo Parish (Unincorporated)	Estimated Total Building Exposure by Sector
Agricultural	$23,818,000
Commercial	$542,814,000
Government	$29,248,000
Industrial	$287,886,000
Religious / Non-Profit	$174,556,000
Residential	$4,728,794,000
Schools	$24,433,000
Total	$5,811,549,000

Table 2-98: Estimated Exposure for Blanchard by Sector
(Source: Hazus 2.2)

Blanchard	Estimated Total Building Exposure by Sector
Agricultural	$1,356,000
Commercial	$22,954,000
Government	$172,000
Industrial	$12,786,000
Religious / Non-Profit	$9,294,000
Residential	$308,897,000
Schools	$6,616,000
Total	$362,075,000

Table 2-99: Estimated Exposure for Gilliam by Sector
(Source: Hazus 2.2)

Gilliam	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$242,000
Government	$174,000
Industrial	$0
Religious / Non-Profit	$0
Residential	$4,090,000
Schools	$0
Total	$4,506,000

Table 2-100: Estimated Exposure for Greenwood by Sector
(Source: Hazus 2.2)

Greenwood	Estimated Total Building Exposure by Sector
Agricultural	$536,000
Commercial	$40,090,000
Government	$5,062,000
Industrial	$33,942,000
Religious / Non-Profit	$16,080,000
Residential	$308,121,000
Schools	$0
Total	$403,831,000

Table 2-101: Estimated Exposure for Hosston by Sector
(Source: Hazus 2.2)

Hosston	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$2,642,000
Government	$172,000
Industrial	$3,259,000
Religious / Non-Profit	$5,716,000
Residential	$31,890,000
Schools	$976,000
Total	$44,655,000

Table 2-102: Estimated Exposure for Ida by Sector
(Source: Hazus 2.2)

Ida	Estimated Total Building Exposure by Sector
Agricultural	$154,000
Commercial	$2,190,000
Government	$346,000
Industrial	$916,000
Religious / Non-Profit	$2,360,000
Residential	$21,528,000
Schools	$396,000
Total	$27,890,000

Table 2-103: Estimated Exposure for Mooringsport by Sector
(Source: Hazus 2.2)

Mooringsport	Estimated Total Building Exposure by Sector
Agricultural	$350,000
Commercial	$2,816,000
Government	$1,388,000
Industrial	$2,246,000
Religious / Non-Profit	$7,082,000
Residential	$84,807,000
Schools	$4,088,000
Total	$102,777,000

Table 2-104: Estimated Exposure for Oil City by Sector
(Source: Hazus 2.2)

Oil City	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$22,730,000
Government	$4,908,000
Industrial	$35,116,000
Religious / Non-Profit	$6,940,000
Residential	$87,224,000
Schools	$3,784,000
Total	$160,702,000

Table 2-105: Estimated Exposure for Rodessa by Sector
(Source: Hazus 2.2)

Rodessa	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$1,504,000
Government	$864,000
Industrial	$786,000
Religious / Non-Profit	$2,354,000
Residential	$17,217,000
Schools	$458,000
Total	$23,183,000

Table 2-106: Estimated Exposure for Shreveport by Sector
(Source: Hazus 2.2)

Shreveport	Estimated Total Building Exposure by Sector
Agricultural	$32,208,000
Commercial	$1,758,768,000
Government	$15,162,000
Industrial	$534,749,000
Religious / Non-Profit	$415,132,000
Residential	$9,984,573,000
Schools	$53,254,000
Total	$12,793,846,000

Table 2-107: Estimated Exposure for Vivian by Sector
(Source: Hazus 2.2)

Vivian	Estimated Total Building Exposure by Sector
Agricultural	$138,000
Commercial	$75,452,000
Government	$2,914,000
Industrial	$44,764,000
Religious / Non-Profit	$22,500,000
Residential	$354,090,000
Schools	$4,736,000
Total	$504,594,000

Threat to People

The total population within the parish that is located within a wildland-urban interaction area is shown in the table below:

Table 2-108: Populations Located within a Wildland-Urban Interaction Area
(Source: 2010 U.S. Census Data)

Number of People Exposed to Hurricane Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
Parish (Unincorporated)	**42,832**	**35,086**	**81.9%**
Belcher	**263**	**0**	**0.0%**
Blanchard	**2,899**	**2,571**	**88.7%**
Gilliam	**164**	**54**	**32.9%**
Greenwood	**3,219**	**3,182**	**98.9%**
Hosston	**318**	**318**	**100.0%**
Ida	**221**	**221**	**100.0%**
Mooringsport	**793**	**793**	**100.0%**
Oil City	**1,008**	**1,008**	**100.0%**
Rodessa	**270**	**270**	**100.0%**
Shreveport	**199,311**	**89,458**	**44.9%**
Vivian	**3,671**	**3,671**	**100.0%**
Total	**254,969**	**136,632**	**53.6%**

The 2010 U.S. Census data was also extrapolated to provide an overview of populations located within wildland-urban interaction areas throughout the jurisdictions. That data is illustrated in the tables on the following pages.

Table 2-109: Population in Unincorporated Caddo Parish Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Caddo Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	35,086	81.9%
Persons Under 5 Years	2,456	7.0%
Persons Under 18 Years	8,631	24.6%
Persons 65 Years and Over	4,772	13.6%
White	17,017	48.5%
Minority	18,069	51.5%

Table 2-110: Population in Blanchard Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Blanchard		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	3,164	97.8%
Persons Under 5 Years	230	7.3%
Persons Under 18 Years	622	19.7%
Persons 65 Years and Over	544	17.2%
White	2,443	77.2%
Minority	721	22.8%

Table 2-111: Population in Gilliam Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Gilliam		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	54	32.9%
Persons Under 5 Years	3	4.9%
Persons Under 18 Years	8	15.2%
Persons 65 Years and Over	8	15.2%
White	32	58.5%
Minority	22	41.5%

Table 2-112: Population in Greenwood Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Greenwood		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	3,182	98.9%
Persons Under 5 Years	176	5.5%
Persons Under 18 Years	484	15.2%
Persons 65 Years and Over	438	13.8%
White	2,255	70.9%
Minority	927	29.1%

Table 2-113: Population in Hosston Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Hosston		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	318	100.0%
Persons Under 5 Years	13	4.1%
Persons Under 18 Years	51	16.0%
Persons 65 Years and Over	55	17.3%
White	230	72.3%
Minority	88	27.7%

Table 2-114: Population in Ida Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Ida		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	221	100.0%
Persons Under 5 Years	13	5.9%
Persons Under 18 Years	20	9.1%
Persons 65 Years and Over	68	30.8%
White	213	96.4%
Minority	8	3.6%

Table 2-115: Population in Mooringsport Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Mooringsport		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	793	100.0%
Persons Under 5 Years	54	6.8%
Persons Under 18 Years	148	18.7%
Persons 65 Years and Over	133	16.8%
White	664	83.7%
Minority	129	16.3%

Table 2-116: Population in Oil City Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Oil City		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	1,008	100.0%
Persons Under 5 Years	89	8.8%
Persons Under 18 Years	195	19.4%
Persons 65 Years and Over	133	13.2%
White	573	56.9%
Minority	435	43.2%

Table 2-117: Population in Rodessa Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Rodessa		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	270	100.0%
Persons Under 5 Years	14	6.3%
Persons Under 18 Years	46	20.7%
Persons 65 Years and Over	31	14.1%
White	143	64.8%
Minority	78	35.2%

Table 2-118: Population in Shreveport Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Shreveport		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	89,458	44.9%
Persons Under 5 Years	58	7.3%
Persons Under 18 Years	141	17.8%
Persons 65 Years and Over	104	13.2%
White	326	41.2%
Minority	467	58.8%

Table 2-119: Population in Vivian Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Vivian		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	3,671	100.0%
Persons Under 5 Years	280	7.6%
Persons Under 18 Years	195	19.3%
Persons 65 Years and Over	165	16.3%
White	562	55.8%
Minority	446	44.2%

Vulnerability

See Appendix C for parish and municipality facilities that could potentially be exposed to a wildfire hazard. Buildings were determined based on whether or not they fall within the wildfire-urban interface and/or intermix.

Winter Storms

For Louisiana and other parts of the southeastern United States, a severe winter storm occurs when humid air from the Gulf of Mexico meets a cold air mass from the north. Once the cold air mass crosses Louisiana, and the temperature drops, precipitation may fall in the form of snow or sleet. If the ground temperature is cold enough but air temperature is above freezing, rain can freeze instantly on contact with the surface, causing massive ice storms.

The winter storm events that affect the state of Louisiana are ice storms, freezes, and snow events. Of the winter storm types listed above, ice storms are the most dangerous. Ice storms occur during a precipitation event when warm air aloft exceeds 32 °F, while the surface remains below the freezing point. Ice will form on all surfaces when precipitation originating as rain or drizzle contacts physical structures. These ice storms are usually accompanied by freezing temperatures and occasionally snow.

Winter storms can be accompanied by strong winds, creating blizzard conditions with blinding, wind driven snow, severe drifting, and dangerous wind chill. These types of conditions are very rare in Louisiana, even in north Louisiana, but ice storms are more common. The climatic line between snow and rain often stalls over north Louisiana, creating ideal conditions for ice accumulation.

In a typical winter storm event, homes and buildings are damaged by ice accumulation, either directly by the weight of the ice on the roofs or by trees and/or limbs falling on buildings. While it is not very prevalent, this type of damage can occur in Louisiana, particularly in north Louisiana. Effects of winter weather more likely to occur in Louisiana, especially southern Louisiana, include extreme temperatures which can cause waterlines to freeze and sewer lines to rupture. This is especially true with elevated or mobile homes, since cold air is able to access more of the building's infrastructure. Winter storms can also have a devastating effect on agriculture, particularly on crops (like citrus) that are dependent on warm weather. Long exposures to low temperatures can kill many kinds of crops, and ice storms can weigh down branches and fruit.

Winter storms are not only a direct threat to human health through conditions like frostbite and hypothermia, but they are also an indirect threat to human health due to vehicle accidents and loss of power and heat, which can be disrupted for days. However, these impacts are rarely seen in Louisiana. As people use space heaters and fireplaces to stay warm, the risk of household fires and carbon monoxide poisoning increases.

Winter storm events occur throughout Louisiana usually during the colder calendar months of December, January, and February. Severe weather events do not occur with the same frequency across all parts of Louisiana. The northern quarter of Louisiana has historically experienced the most severe winter events between 1987 and 2012. The central, and to an even greater extent the southern parts of the state, such as Ascension Parish, have experienced the fewest severe winter events. The table on the following page shows the Sperry-Piltz Ice Accumulation Index which is utilized to predict the potential damage to overhead utility systems from freezing rain and ice storms.

Table 2-120: Sperry-Piltz Ice Accumulation Index

Ice Damage Index	Damage and Impact Descriptions
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structure. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Location

Because a winter storm is a climatological based hazard and has the same probability of occurring in Caddo Parish as all of the adjacent parishes, the entire planning area for Caddo Parish is equally at risk for winter storms.

Previous Occurrences / Extents

According to SHELDUS, there have been 10 reported winter storm events that have occurred within the boundaries of Caddo Parish between the years of 1990 and 2015. The table on the next page provides a brief synopsis of each event. Based on historic data, Caddo Parish can expect an ice damage index of 2 on the Sperry-Piltz Ice Accumulation Index.

Table 2-121: Previous Occurrences for Winter Storm Events

Date	Synopsis	Property Damage	Crop Damage
January 16, 1992	A 77 year old man died from hypothermia in his unheated Shreveport home according to the Caddo Parish coroner.	$0	$0
March 14, 1993	A widespread, damaging freeze occurred as temperatures fell into the upper teens. Total agricultural losses are estimated to be about $8.9 million. Due to the relatively mild winter, many crops were in early bloom. The peach crop which is grown in the northern part of the state suffered a 60% loss valued around $2 million. In addition, the blueberry crop was almost totally destroyed for a loss of $1.1 million.	$0	$227,828

Date	Synopsis	Property Damage	Crop Damage
February 10, 1994	A severe ice storm developed over Louisiana. Freezing rain spread across much of the north third of Louisiana and at times was accompanied by thunderstorms. The greatest damage occurred on elevated objects. The combination of gusty winds and icing of one to two inches thick snapped power lines, power poles, or caused tree limbs to snap. The weight from ice accumulations was also heavy enough to collapse a number of chicken houses.	$1,540,359	$0
February 3, 1996	Freezing rain, sleet, and snow accumulation on roadways contributed to three dozen accidents in just under three hours. Accumulations of snow were as high as two inches in some places. One person died in the storm.	$22,633	$0
December 22, 1998	Ice accumulated mainly across exposed surfaces such as trees and power lines as well as bridges and overpasses. Over a quarter million people were without power, some for over a week. Interstates 20, 220, and 49 were shut down for a period. Numerous minor injuries were reported from vehicle accidents caused by slippery roads.	$85,433	$0
December 12, 2000	Ice accumulations on average of one inch were common across northwest Louisiana. An estimated 235,000 residents lost power from snapped power lines. Upwards of 29 transmission lines atop “H” shaped steel towers were snapped due to the weight of the ice. One man was killed and another injured when a tree limb laden with ice fell on them.	$37,162,944	$0
December 13, 2000	Two men were checking gas meters when an ice-laden limb fell on them. One died while the other was injured.	$0	$0
December 24, 2000	Freezing rain accumulations ranged from ¼ to near 1 inch north of Interstate 20. Widespread power outages were reported across north Louisiana. 50,000 residents lost power due to ice accumulations on power lines and fallen trees and limbs.	$145,898,966	$0
January 7, 2010	Cold temperatures froze water pipes of many homes throughout the parish. Many residents were without water for a short period of time or with reduced water pressure. Flames broke out in a trailer on Rainer Street just on the north side of the Shreveport city line. A homeless man was apparently using kerosene to keep warm when the trailer he was staying in caught fire and the man died.	$271,417	$0
February 11, 2014	Moderate amounts of a wintery mix fell across the parish with ice accumulations of approximately ¼ of an inch.	$0	$0

Based on previous winter storm events, the worst-case scenario for the unincorporated area of Caddo Parish and all of the incorporated areas is approximately one to two inches of ice accumulation and approximately two to four inches of snow accumulation.

Frequency / Probability

With nine recorded events in 25 years, winter storm events within the boundaries of Caddo Parish have an annual chance of occurrence calculated at 40% based on the SHELDUS dataset.

Estimated Potential Losses

Since 1990, there have been nine reported winter weather events that have resulted in property and/or crop damages according to the SHELDUS database. The total property damages associated with these storms have totaled $22,235,989. To estimate the potential losses of a winter weather event on an annual basis, the total damage recorded for winter weather events was divided by the total number of years of available winter weather data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of $889,440. To assess potential losses to the participating jurisdictions, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. The following tables provides an estimate of potential property losses for Caddo Parish based on the 2010 Census data:

Table 2-122: Estimated Annual Losses in Caddo Parish from Winter Weather

Estimated Annual Potential Losses from Winter Weather for Caddo Parish					
Unincorporated Caddo Parish (16.8% of Population)	Belcher (0.1% of Population)	Blanchard (1.1% of Population)	Gilliam (0.1% of Population)	Greenwood (1.3% of Population)	Hosston (0.1% of Population)
$149,416	$917	$10,113	$572	$11,229	$1,109

Table 2-122: Estimated Annual Losses in Caddo Parish from Winter Weather (Continued)

Estimated Annual Potential Losses from Winter Weather for Caddo Parish					
Ida (0.1% of Population)	Mooringsport (0.3% of Population)	Oil City (0.4% of Population)	Rodessa (0.1% of Population)	Shreveport (78.2% of Population)	Vivian (1.4% of Population)
$771	$2,766	$3,516	$942	$695,281	$12,806

From 1990 - 2015, there have been two fatalities and one injury as a result of winter weather in Caddo Parish.

Vulnerability

See Appendix C for parish and municipality building exposure to winter weather hazards.

Dam Failure

Dams are water storage, control, or diversion barriers that impound water upstream in reservoirs. Dams are a vital part of our nation's infrastructure, providing drinking water, flood protection, renewable hydroelectric power, navigation, irrigation, and recreation. These critical daily benefits are also inextricably linked to the potential harmful consequences of a dam failure.

Dam failure is a collapse or breach in the structure. A dam failure can result in severe loss of life, economic disaster, and extensive environmental damage. While most dams have storage volumes small enough that failures have few repercussions, dams with large storage volumes can cause significant flooding downstream. Dam failures often have a rapid rate of onset, leaving little time for evacuation. The first signs of the failure may go unnoticed upon visual inspection of the dam structure. However, continual maintenance and inspection of dams often provide the opportunity to identify possible deficiencies in their early stages and can prevent a possible catastrophic failure event.

The duration of the flooding event caused by the failure depends largely on the amount of water and downstream topography. Given smaller volumes of water and a topography suited for transporting the water rapidly downstream, the event may only last hours. Because of the lack of seasonality and other predictive factors, a predictive frequency or likelihood of dam failures cannot be determined. However, the National Dam Safety Program (NDSP) produces hazard rankings (high, significant, and low) and definitions of dam structures, based on potential impact.

Dam/reservoir failures can result from any one of or a combination of the following causes:

- Prolonged periods of rainfall and flooding, which cause most failures;
- Inadequate spillway capacity, resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage or piping;
- Improper maintenance, including failure to remove trees, repair internal seepage problems, replace lost material from the cross-section of the dam and abutments, or maintain gates, valves, and other operational components;
- Improper design, including the use of improper construction materials and construction practices;
- Negligent operation, including the failure to remove or open gates or valves during high flow periods;
- Failure of upstream dams on the same waterway;
- Landslides into reservoirs, which cause surges that result in overtopping;
- High winds, which can cause significant wave action and result in substantial erosion; and
- Earthquakes, which typically cause longitudinal cracks at the tops of the embankments that can weaken entire structures.

Location

Caddo Parish is awaiting a response from the U.S. Army Corps of Engineers on dam locations within the Caddo Parish Planning area. Currently, a data deficiency exists for dam failure in Caddo Parish.

Previous Occurrences / Extents

There have been no reported dam failures in Caddo Parish from 1990 to 2015. Dam information including the extent of dam failures has been requested from the USACE. Caddo Parish is awaiting a response from the USACE, and will continue to work to update this information as new data is received.

Frequency / Probability

Based on the 25-year record, it is determined that a dam failure has less than a 1% annual chance of occurrence in the Caddo Parish planning area. Caddo Parish is awaiting a response from the USACE, and will continue to work to update this information as new data is received.

Levee Failure

Levees and floodwalls are flood control barriers constructed of earth, concrete, or other materials. For the purposes of this plan, levees are distinguished from smaller flood barriers (such as berms) by their size and extent. Berms are barriers that only protect a small number of structures, or at times only a single structure. Levees and floodwalls are barriers that protect significant areas of residential, commercial, or industrial development; at a minimum, they protect a neighborhood or small community. Levee failure involves the overtopping, breach, or collapse of the levee. Levee failure is especially destructive to nearby development during flood and hurricane events.

The northern half of Louisiana is protected by levees on the Ouachita River, under the authority of the Vicksburg District of the United States Army Corp of Engineers (USACE). The Vicksburg District encompasses 68,000 mi^2 in the states of Arkansas, Mississippi and Louisiana. They manage seven drainage basins, including the Yazoo, Pearl, Big Black, Red, Ouachita, and Mississippi Rivers; 12 locks and dams on the Pearl, Red, and Ouachita Rivers; 1,808 miles of levees, including 468 miles along the Mississippi River; and multiple lakes with 1,709 miles of shoreline.

Coastal and southern Louisiana are protected by an extensive levee system under the authority of the New Orleans District of the USACE. This system includes 30,000 mi^2 of Louisiana south of Alexandria, including 961 miles of river levees in the Mississippi River and Tributaries Project, 449 miles of river levees in the Atchafalaya Basin, and 340 miles of hurricane-protection levees. Other levees have been built along stretches of rivers throughout Louisiana by local levee districts and private citizens. The data regarding these non-federal levees are managed by the individual entity responsible for construction and subsequent maintenance and are not kept in a consistent format for comprehensive hazard analysis.

The effects of a levee failure on property is similar to that of a flood, as discussed in the flooding section. One major difference is that the velocity of the water is increased in the area of the breach, so the potential for property damage is higher in these areas.

A levee failure occurs during high water events, so the populace is normally alerted to the potential danger. Levees are normally monitored during these events and the population in danger is alerted to a possible levee failure. However, if people consider themselves safe once a levee has been breached and do not evacuate, the results could be deadly.

Location

Caddo Parish is awaiting a response from the U.S. Army Corps of Engineers on levee locations within the Caddo Parish Planning area. Currently, a data deficiency exists for levee failure in Caddo Parish.

Previous Occurrences / Extents

There have been no reported levee failures in Caddo Parish from 1990 to 2015. Levee information including the extent of a levee failure has been requested from the U.S. Army Corps of Engineers. Caddo Parish is awaiting a response from the USACE, and will continue to update this information as new data is received.

Frequency / Probability

Based on the 25-year record, it is determined that a levee failure has less than a 1% annual chance of occurrence in the Caddo Parish planning area. Caddo Parish is awaiting a response from the USACE, and will continue to work to update this information as new data is received.

This Page Left Intentionally Blank

3. Capability Assessment

This section summarizes the results of the Caddo Parish jurisdictions and other agency efforts to develop policies, programs, and activities that directly or indirectly support hazard mitigation. It also provides information on resources and gaps in the parish's infrastructure, as well as relevant changes in its law since the last plan update, in order to suggest a mitigation strategy.

Through this assessment, Caddo Parish and the participating jurisdictions are able to identify strengths that could be used to reduce losses and reduce risk throughout the community. It also identifies areas where mitigation actions might be used to supplement current capabilities and create a more resilient community before, during, and after a hazard event.

Policies, Plans, and Programs

Caddo Parish capabilities are unique to the parish, including planning, regulatory, administrative, technical, financial, and education and outreach resources. There are a number of mitigation-specific acts, plans, executive orders, and policies that lay out specific goals, objectives, and policy statements which already support or could support pre- and post-disaster hazard mitigation. Many of the ongoing plans and policies hold significant promise for hazard mitigation. They take an integrated and strategic look holistically at hazard mitigation in Caddo Parish to propose ways to continually improve it. These tools are valuable instruments in pre- and post-disaster mitigation as they facilitate the implementation of mitigation activities through the current legal and regulatory framework. Examples of existing documents in Caddo Parish and its jurisdictions are shown in the table on the following page.

Table 3-1: Caddo Parish Planning and Regulatory Capabilities

Worksheet 4.1: Capability Assessment Worksheet													
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.													
Planning and Regulatory													
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.													
	Caddo Parish	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida	Morningsport	Oil City	Rodessa	Shreveport	Vivian	
Plans	Yes / No												
Comprehensive / Master Plan	Yes	No	No	No	No	No	No	No	No	Yes	Yes	No	
Capital Improvements Plan	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Economic Development Plan	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Local Emergency Operations Plan	Yes	No	No	No	No	No	No	No	No	YEs	Yes	No	
Continuity of Operations Plan	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	
Transportation Plan	No	No	No	No	No	No	No	No	No	No	Yes	No	
Stormwater Management Plan	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	
Community Wildfire Protection Plan	Yes	No	No	No	No	No	No	No	No	No	No	No	
Other plans (redevelopment, recovery, coastal zone management)	N/A	No	No	No	No	No	N/A	No	No	No		No	
Building Code, Permitting and Inspections	Yes / No												
Building Code	Yes	No	No	No	No	No	N/A	No	No	No	Yes	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	No	No	No	No	No	N/A	No	No	No		No	
Fire Department ISO/PIAL rating	N/A	No	No	No	No	No	N/A	No	No	Yes	Yes	No	
Site plan review requirements	Yes	No	No	No	No	No	N/A	No	No	No	Yes	No	
Land Use Planning and Ordinances	Yes / No												
Zoning Ordinance	No	No	No	No	No	No	No	No	No	No	Yes	No	
Subdivision Ordinance	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Floodplain Ordinance	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Flood Insurance Rate Maps	Yes	Yes	Yes	No	Yes	Yes	Parish Wide	Yes	Yes	Yes	Yes	Yes	
Acquisition of land for open space and public recreation uses	Yes	No	No	No	No	No	No	No	No	Yes	Yes	No	
Other	N/A	No	No	N/A	No	No	N/A	No	No	N/A		No	

Building Codes, Permitting, Land Use Planning and Ordinances

The Caddo Parish Commission provides oversight for building permits and codes for the parish, as well as the jurisdiction of Shreveport, and all parish ordinances where applicable.

As of the 2016 update, Caddo Parish and its jurisdictions ensure that all adopted building codes are enforced and in compliance relating to the construction of any structure within the boundaries of the parish. Building permits are required prior to beginning any type of construction or renovation projects, installation of electrical wiring, plumbing or gas piping, moving manufactured/modular or portable buildings, and reroofing or demolitions.

The Caddo Parish Commission is also responsible for enforcing the Parish Ordinances relating to health and safety, property maintenance standards, condemnation of unsafe structures, and zoning compliance.

The Caddo Parish Commission meets regularly to consider any proposed ordinance changes, and to take final actions on proposed changes.

While local capabilities for mitigation can vary from community to community, Caddo Parish as a whole has a system in place to coordinate and share these capabilities through Caddo Parish Government and through this Parish Hazard Mitigation Plan.

Some programs and policies, such as the above described, might use complementary tools to achieve a common end, but fail to coordinate with or support each other. Thus, coordination among local mitigation policies and programs is essential to hazard mitigation.

Administration, Technical, and Financial

As a community, Caddo Parish has administrative and technical capabilities in place that may be utilized in reducing hazard impacts or implementing hazard mitigation activities. Such capabilities include staff, skillset, and tools available in the community that may be accessed to implement mitigation activities and to effectively coordinate resources. The ability to access and coordinate these resources is also important. The table below shows examples of resources in place in Caddo Parish and its jurisdictions.

Table 3-2: Caddo Parish Administrative and Technical Capabilities

Administration and Technical													
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.													
	Caddo Parish	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida	Morningsport	Oil City	Rodessa	Shreveport	Vivian	
Administration	Yes / No												
Planning Commission	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Mitigation Planning Committee	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	
Staff	Yes / No; FT/PT; % Hazard Mitigation												
Chief Building Official	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Floodplain Administrator	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	
Emergency Manager	Yes	No	No	Yes	No	No	Yes	No	No	Yes	Yes	No	
Community Planner	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Civil Engineer	No	No	No	No	No	No	No	No	No	No	Yes	No	
GIS Coordinator	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No	
Grant Writer	No	No	No	No	No	No	No	No	No	Yes	Yes	No	
Other	N/A	No	No	N/A	No	No	N/A	No	No	N/A		No	
Technical	Yes / No												
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No	
Hazard Data & Information	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Grant Writing	No	No	No	No	No	No	No	No	No	Yes	Yes	No	
Hazus Analysis	No	No	No	No	No	No	No	No	No	No	Yes	No	
Other	N/A	No	No	N/A	No	No	No	No	No	No	No	No	

Financial capabilities are the resources that Caddo Parish and its incorporated jurisdictions have access to or are eligible to use in order to fund mitigation actions. Costs associated with implementing the actions identified by the jurisdictions may vary from little/no cost actions, such as outreach efforts, to substantial action costs such acquisition of flood prone properties.

The following resources are available to fund mitigation actions in Caddo Parish and its jurisdictions:

Table 3-3: Caddo Parish Financial Capabilities

Financial													
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.													
	Caddo Parish	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida	Morningsport	Oil City	Rodessa	Shreveport	Vivian	
Funding Resource	Yes / No												
Capital Improvements project funding	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	
Authority to levy taxes for specific purposes	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No	
Fees for water, sewer, gas, or electric services	Yes	No	No	Yes	No	No	No	No	No	Yes	Yes	No	
Impact fees for new development	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	
Stormwater Utility Fee	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
Community Development Block Grant (CDBG)	Yes	No	No	Yes	No	No	No	No	No	Yes	Yes	No	
Other Funding Programs	No	No	No	No	No	No	No	No	No	No	No	No	

Education and Outreach

A key element in hazard mitigation is promoting a safer, more disaster resilient community through education and outreach activities and/or programs. Successful outreach programs provide data and information that improves overall quality and accuracy of important information for citizens to feel better prepared and educated with mitigation activities. These programs enable the individual jurisdictions and parish as a whole to maximize opportunities for implementation of activities through greater acceptance and consensus of the community.

Caddo Parish and its jurisdictions have existing education and outreach programs to implement mitigation activities, as well as to communicate risk and hazard related information to its communities. The existing programs are as follows:

Table 3-4: Caddo Parish Education and Outreach Capabilities

Education and Outreach													
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.													
	Caddo Parish	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida	Morningsport	Oil City	Rodessa	Shreveport	Vivian	
Program / Organization	Yes / No												
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	
Natural Disaster or safety related school program	Yes	No	No	No	No	No	No	No	No	No	No	No	
Storm Ready certification	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	
Firewise Communities certification	Yes	No	No	No	No	No	Yes	No	No	No	No	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	No	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	
Other	No	No	No	No	No	No	No	No	No	No	No	No	

In some cases, the jurisdictions rely on Caddo Parish OHSEP and/or Caddo Parish Government Agencies for the above listed planning and regulatory, administrative and technical, financial, and education and outreach capabilities. Comments regarding the jurisdictions utilization or intentions to utilize and leverage the capabilities of the parish government can be found in Appendix E in the jurisdictional specific worksheets.

As reflected in the aforementioned existing regulatory mechanisms, programs, and resources within each jurisdiction, Caddo Parish and its jurisdiction remains committed to expanding and improving on the existing capabilities within the parish. Each participating jurisdiction will work toward increased participation in funding opportunities and available mitigation programs. Should funding become available, the hiring of additional personnel to dedicate to hazard mitigation initiatives and programs, as well as increasing ordinances within the jurisdictions, will help to enhance and expand risk reduction measures within the parish.

With the sharing of these capabilities, the following municipalities and entities are recognized by the Parish of Caddo under the Hazard Mitigation Plan, allowing them to apply for available hazard mitigation funding for as long as these municipalities and entities notify the parish of their intentions and the parish concurs:

- Village of Belcher
- Town of Blanchard
- Village of Gilliam
- Town of Greenwood
- Village of Hosston
- Town of Ida
- Town of Mooringsport
- Town of Oil City
- Village of Rodessa
- City of Shreveport
- Town of Vivian

Flood Insurance and Community Rating System

Caddo Parish is a participant in the Community Rating System (CRS), as well as the City of Shreveport. Obtaining the CRS rating for the parish and participating jurisdictions is recognized as an eventual goal by the Hazard Mitigation Steering Committee. Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements.

Under the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) administers the Community Rating System. Under the CRS, flood insurance premiums for properties in participating communities are reduced to reflect the flood protection activities that are being implemented. This program can have a major influence on the design and implementation of flood mitigation activities, so a brief summary is provided here.

A community receives a CRS classification based upon the credit points it receives for its activities. It can undertake any mix of activities that reduce flood losses through better mapping, regulations, public information, flood damage reduction and/or flood warning and preparedness programs.

There are ten CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction (see *Figure 3-1*). A community that does not apply for the CRS or that does not obtain the minimum number of credit points is a class 10 community.

During the last update, 38 Louisiana communities participated, including Shreveport (class 7) and Caddo Parish (class 8). Mandeville, Shreveport, and Jefferson and East Baton Rouge Parishes had the best classifications in the state, class 7. As of the 2016 update, Jefferson, East Baton Rouge, and Terrebonne Parishes all lead the state with best classifications, class 6.

CLASS	DISCOUNT	CLASS	DISCOUNT
1	45%	6	20%
2	40%	7	15%
3	35%	8	10%
4	30%	9	5%
5	25%	10	–

SFHA (Zones A, AE, A1–A30, V, V1–V30, AO, and AH): Discount varies depending on class.

SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO): 10% discount for Classes 1–6; 5% discount for Classes 7–9.*

Non-SFHA (Zones B, C, X, D): 10% discount for Classes 1–6; 5% discount for Classes 7–9.

* In determining CRS Premium Discounts, all AR and A99 Zones are treated as non-SFHAs.

Figure 3-1: CRS Discounts by Class (Source: FEMA)

As of May 2012, 310 communities in the State of Louisiana participate in the Federal Emergency Management Agency's NFIP. Of these

communities, 41 (or 13%) participate in the Community Rating System (CRS). Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 27 participate in the CRS. The remaining 23 communities present an outreach opportunity for encouraging participation in the CRS.

The CRS provides an incentive not just to start new mitigation programs, but to keep them going. There are two requirements that "encourage" a community to implement flood mitigation activities.

First, the parish and the jurisdiction will receive CRS credit for this plan when it is adopted. To retain that credit, though, the parish and jurisdiction must submit an evaluation report on progress toward implementing this plan to FEMA by October 1st of each year. That report must be made available to the media and the public.

Second, the parish and jurisdiction must annually recertify to FEMA that it is continuing to implement its CRS credited activities. Failure to maintain the same level of involvement in flood protection can result in a loss of CRS credit points and a resulting increase in flood insurance rates to residents.

In 2011[1], the National Flood Insurance Program (NFIP) completed a comprehensive review of the Community Rating System that will result in the release of a new CRS Coordinator's Manual.

The changes to the 2013 CRS Coordinator's Manual are the result of a multi-year program evaluation that included input from a broad group of contributors in order to evaluate the CRS and refine the program to meet its stated goals.

The upcoming changes will drive new achievements in the following six core flood loss reduction areas important to the NFIP: (1) reduce liabilities to the NFIP Fund; (2) improve disaster resiliency and sustainability of communities; (3) integrate a whole community approach to addressing emergency management; (4) promote natural and beneficial functions of floodplains; (5) increase understanding of risk, and; (6) strengthen adoption and enforcement of disaster-resistant building codes.

The 2013 CRS Coordinator's Manual changes will impact each CRS community differently. Some communities will see an increase in the points they receive since points for certain activities have increased (e.g., Activity 420 Open Space Preservation). Other communities will receive fewer points for certain activities (e.g., Activity 320 Map Information Service). It is likely that some communities with marginal CRS class 9 programs will have to identify new CRS credits in order to remain in the CRS.

Typically, CRS communities do not request credit for all the activities they are currently implementing unless it would earn enough credit to advance the community to a higher CRS class. A community that finds itself losing CRS credit with the 2013 manual could likely identify activities deserving credit they had not previously received.

Due to the changes in both activities and CRS points, community CRS coordinators should speak with their ISO/CRS Specialist to understand how and when the 2013 manual will impact their community.

[1] https://www.fema.gov/national-flood-insurance-program-community-rating-system

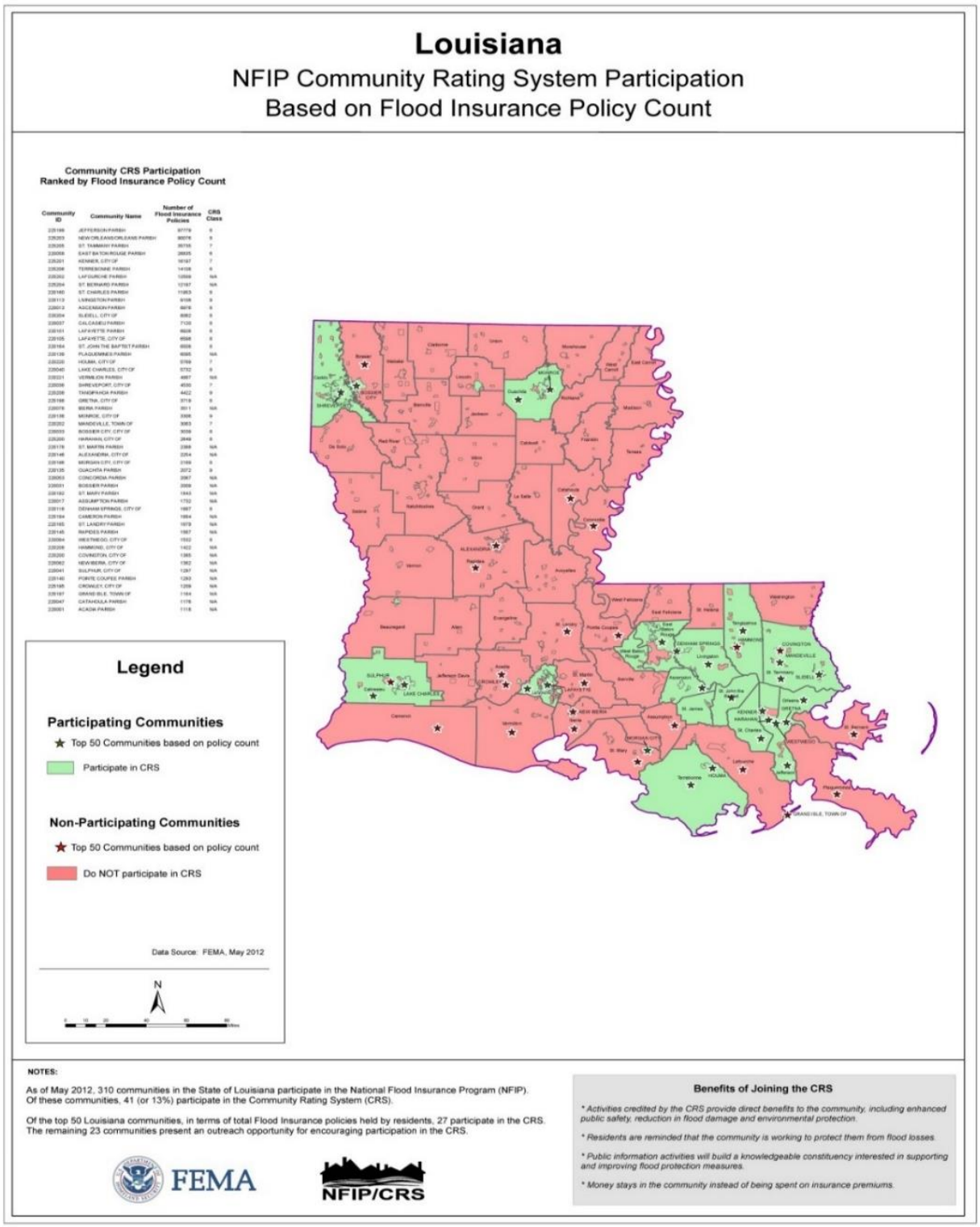

Figure 3-2: Louisiana CRS NFIP Participation
(Source: FEMA[2])

[2] http://www.fema.gov/media-library-data/20130726-2128-31471-9581/ks_ky_la_crs_may_2012_508.zip

In addition to the direct financial reward for participating in the Community Rating System, there are many other reasons to participate in the CRS. As FEMA staff often say, "If you are only interested in saving premium dollars, you're in the CRS for the wrong reason." The other benefits that are more difficult to measure in dollars include:

1. The activities credited by the CRS provide direct benefits to residents, including:
   – Enhanced public safety
   – A reduction in damage to property and public infrastructure
   – Avoidance of economic disruption and losses
   – Reduction of human suffering
   – Protection of the environment

2. A community's flood programs will be better organized and more formal. Ad hoc activities, such as responding to drainage complaints rather than an inspection program, will be conducted on a sounder, more equitable basis.

3. A community can evaluate the effectiveness of its flood programs against a nationally recognized benchmark.

4. Technical assistance in designing and implementing a number of activities is available at no charge from the Insurance Services Office.

5. The public information activities will build a knowledgeable constituency interested in supporting and improving flood protection measures.

6. A community would have an added incentive to maintain its flood programs over the years. The fact that its CRS status could be affected by the elimination of a flood related activity or a weakening of the regulatory requirements for new developments would be taken into account by the governing board when considering such actions.

7. Every time residents pay their insurance premiums, they are reminded that the community is working to protect them from flood losses, even during dry years.

More information on the Community Rating System can be found at www.fema.gov/nfip/crs.shtm

NFIP Worksheets

Parish and participating jurisdiction NFIP worksheets can be found in Appendix E: State Required Worksheets

4. Mitigation Strategy

Introduction

Caddo Parish's Hazard Mitigation Strategy has a common guiding principle and is the demonstration of the parish's and participating jurisdictions' commitment to reduce risks from hazards. The strategy also serves as a guide for parish and local decision makers as they commit resources to reducing the effects of hazards.

Caddo Parish confirmed the goals, objectives, actions, and projects over the period of the Hazard Mitigation Plan Update process. The mitigation actions and projects in this 2016 update are a product of analysis and review of the Caddo Parish Hazard Mitigation Plan Steering Committee, under the coordination of the Caddo Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2011 plan, for review from February 2016 – November 2016.

An online public opinion survey was conducted of Caddo Parish residents between March and November 2016. The survey was designed to capture public perceptions and opinions regarding natural hazards in Caddo Parish. In addition, the survey sought to collect information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

This activity was created in an effort to confirm that the goals and action items developed by the Caddo Parish Hazard Mitigation Plan Steering Committee are representative of the outlook of the community at large. However, because there were no responses to the survey, this public feedback could not be incorporated into the plan. The full Caddo Parish survey can be found at the following link:

https://www.surveymonkey.com/r/CaddoParish

During the public meeting in June, the committee provided a status of the projects from 2011 and the proposed actions for the 2016 update. Committee members then agreed on the submission of each project based on feasibility for funding, ease of completion and other community specific factors. The actions were later prioritized.

Goals

The goals represent the guidelines that the parish and its communities want to achieve with this plan update. To help implement the strategy and adhere to the mission of the Hazard Mitigation Plan, the preceding section of the plan update was focused on identifying and quantifying the risks faced by the residents and property owners in Caddo Parish from natural and manmade hazards. By articulating goals and objectives based on the previous plans, the risk assessment results, and intending to address those results, this section sets the stage for identifying, evaluating, and prioritizing feasible, cost effective, and environmentally sound actions to be promoted at the parish and municipal level – and to be undertaken by the state for its own property and assets. By doing so, Caddo Parish and its jurisdictions can make progress toward reducing identified risks.

For the purposes of this plan update, goals and action items are defined as follows:

- **Goals** are general guidelines that explain what the parish wants to achieve. Goals are expressed as broad policy statements representing desired long-term results.
- **Action Items** are the specific steps (projects, policies, and programs) that advance a given goal. They are highly focused, specific, and measurable.

The current goals of the Caddo Parish Hazard Mitigation Plan Update Steering Committee represent long-term commitments by the parish and its jurisdictions. After assessing these goals, the committee decided that the current four goals remain valid.

The goals are as follows:

- Improve/enhance critical public facilities and equipment to ensure operability before, during, and after hazard events
- Enhance public safety and protect lives from dangers of natural hazards
- Facilitate sound development in the parish to reduce or eliminate the potential impact of hazards
- Enhance public awareness of natural hazards and understanding of disaster preparedness

The Mitigation Action Plan focuses on actions to be taken by Caddo Parish and its jurisdictions. All of the activities in the Mitigation Action Plan will be focused on helping the parish and its municipalities in developing and funding projects that are not only cost effective, but also meet the other DMA 2000 criteria of environmental compatibility and technical feasibility.

The Hazard Mitigation Plan Steering Committee and each jurisdiction reviewed and evaluated the potential action and project lists in which consideration was given to a variety of factors. Such factors include determining a project's eligibility for federal mitigation grants, as well as its ability to be funded. This process required evaluation of each project's engineering feasibility, cost effectiveness, and environmental and cultural factors.

2016 Mitigation Actions and Update on Previous Plan Actions

The Caddo Parish Hazard Mitigation Plan Steering Committee and participating jurisdictions each identified actions that would reduce and/or prevent future damage within Caddo Parish and their respective communities. In that effort, each jurisdiction focused on a comprehensive range of specific mitigation actions. These actions were identified in thorough fashion by the consultant team, the committee, and the individual jurisdictions by way of frequent and open communications and meetings held throughout the planning process.

As outlined in the Local Mitigation Planning Handbook, the following are eligible types of mitigation actions:

- **Local Plans and Regulations –** These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and Infrastructure Projects –** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area, and also includes projects to construct manmade structures to reduce the impact of hazards.
- **Natural System Protection –** These actions minimize the damage and losses and also preserve or restore the functions of natural systems.
- **Education and Awareness Programs –** These actions inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

The established and agreed upon parish and jurisdiction actions relative to the parish-wide goals are below. Additionally, action updates from the previous plan updates can be found in the table below.

Caddo 2011 Hazard Mitigation Action Update

Caddo Parish - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
C1: Acquire and Install Generators	Maintain power at critical facilities throughout all of Caddo Parish to insure operability during storm/hazard events by acquiring and installing (as appropriate) adequately sized auxiliary generators with all necessary wiring and switches.	Mitigation Grant; Parish Budget; Capital Outlay	Parish Public Works Director; Parish OEP Director	Floods/Severe Winter Storms (Ice and Snow)/Tornadoes/Hail/Thunderstorms (Lightning and High Wind)	Carried Over
C2: Purchase Portable Pumping	Maintain functionality of sewage lift stations by purchasing and pre-staging portable pumping capacity.	Mitigation Grant; Parish Budget; Capital Outlay	Parish Public Works Director; Parish OEP Director	Floods/Severe Winter Storms (Ice and Snow)/Tornadoes/Hail/Thunderstorms (Lightning and High Wind)	Carried Over
C3: Acquire Portable Pump with Generators	Increase emergency storm water pumping capacity through acquisition of portable pumps with generators.	Mitigation Grant; Parish Budget; Capital Outlay	Parish Public Works Director; Parish OEP Director	Floods/Severe Winter Storms (Ice and Snow)/Tornadoes/Hail/Thunderstorms (Lightning and High Wind)	Carried Over
C4: Acquire Evacuation Equipment	Continue to acquire portable traffic barricades and similar equipment to facilitate traffic control during evacuations necessitated by hazard threats/events.	Parish Budget	Caddo Parish Sheriff	Floods	Carried Over
C5: Retrofit Critical Facilities	Harden critical facilities in Parish to make them more resistant to damage from wind hazards and flooding. For wind hazards, hardening may take the form of retrofitting with roof tie-downs, wind resistant doors and windows, etc. For floods, a variety of wet and/or dry floodproofing techniques may be used.	Mitigation Grants; Parish Budget	Parish Public Works Director; Parish OEP Director	Floods/Tornadoes/Thunderstorms (Lightning and High Wind)/Severe Winter Storms (Ice and Snow)/Hurricanes/Tropical Storms/Hail/Dam-Levee Failure/Hail	Carried Over

C6: Acquire Structures	Acquire repetitive loss properties in flood-prone areas.	Mitigation Grants; Parish Budget	Parish Public Works Director; Parish OEP Director	Floods	Carried Over
C7: Elevate Structures	Elevate structures in flood prone areas throughout the Parish.	Mitigation Grants; Parish Budget	Parish Public Works Director; Parish OEP Director	Floods	Carried Over
C8: CRS	Improve CRS score (from 9 to 8) for Parish and participating municipalities in Parish by developing, printing, and distributing a new flyer explaining benefits of NFIP program, eligibility for CRS program and its benefits to property owners.	Parish Budget; Town Budgets	Parish Floodplain Manager/Mayor of Greenwood	Floods	Carried Over
C9: Multi-Hazard Awareness	Sponsor a "Multi-Hazard Awareness Week" in the Parish in conjunction with the City of Shreveport and other jurisdictions, or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, structural retrofitting, driving precautions in winter/icing conditions, precautions with exposed pipes, plants, and pets during severe winter weather, warning signs of hypothermia etc.	Parish Budget	Parish OEP Director; Parish Floodplain Manager	Floods/Tornadoes/Thunderstorms (Lightning and High Wind)/Severe Winter Storms (Ice and Snow)/Hurricanes/ Tropical Storms/ Hail/ Drought/Extreme Heat/Wildland/Forest Fires/Dam-Levee Failure/Earthquakes	Carried Over
C10: Public Awareness	Prepare revised informational brochure providing citizens with information on preparing for and surviving flooding hazards where homes, property, or life is threatened, and that contains that homeowners may implement to protect homes from damaging high winds, tornadoes, and floods (flood proofing homes), dangers and precautions to take for severe winter storms, etc.	Parish Budget	Parish OEP Director; Parish Floodplain Manager	Floods/Tornadoes/Thunderstorms (Lightning and High Wind)/Severe Winter Storms (Ice and Snow)/Hurricanes/ Tropical Storms/ Hail/Drought/Extreme Heat/Wildland/Forest Fires/Dam-Levee Failure/Earthquakes	Carried Over
C11: Closure Plans and Warning Signs	Develop closure plans and install advisory warning signs along flood-prone roads in Parish which usually flood to a depth of 2 feet or more.	Parish Budget	Caddo Parish Sheriff	All Hazards	Completed
C12: Purchase Riot Gear	Purchase riot gear for law enforcement personnel to allow better protection of critical facilities and to maintain order during civil disturbances.	Parish Budget	Caddo Parish Sheriff	All Hazards	Completed

C13: Adopt Building Regulations	Adopt additional residential and commercial building regulations in accord with the new State Uniform Construction Code as required by Act 387.	Parish Budget	Caddo Parish Building Code Inspector	All Hazards	Completed
C14: Master Drainage Plan	Develop and implement by ordinance a Master Drainage Plan for Caddo Parish.	Parish Budget	Parish Floodplain Manager	Flooding, Tropical Cyclone	Completed

Village of Belcher- Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
B1: Caddo Levee Committee	Establish a committee to work with Caddo Levee system officials to develop and maintain an emergency action plan and perform periodic levee inspections.	Village Budget, Parish Budget	Mayor, Parish Public Works Director	Flooding/Dam-Levee Failure	On-Going
B2: Removing Flood Prone Properties	Acquire and demolish properties in the Village that have been subjected to repetitive flooding, removing them from the threat of future flooding.	Mitigation Grants	Mayor, Parish Flood Plain Manager	Flooding	Carried Over
B3: Identifying At-Risk Citizens	Identify the elderly and indigent citizens who are at most risk from natural hazards; encourage churches and other community groups to assist them during drought and extreme heat events to ensure adequate hydration and safety in the event of a power loss; develop emergency plans to provide shelter when power fails from winter storms, thunderstorms, tornadoes, drought, and extreme heat events.	Village Budget, Parish Budget	Mayor, Parish OEP Director	Thunderstorms (High Winds) / Drought / Extreme Heat / Tornadoes / Severe Winter Storms	On-Going
B4: Identify Wind-Risk Properties	Identify homes, buildings, and power lines that are vulnerable to loss from high winds; trim trees and dead limbs as necessary and suggest ways that homeowners can prepare for storms.	Village Budget, Parish Budget	Mayor, Parish Public Works Director	Thunderstorms (Lightning and High Winds) / Tornadoes / Severe Winter Storms (Ice and Snow) / Hurricanes - Tropical Storms	Carried Over
B5: Portable Generators	Purchase portable generators to provide emergency power to critical facilities in the Village in the event of a power failure due to a high wind hazard event.	Capital Outlay, USDA, Mitigation Grant	Mayor, Parish Public Works Director	Thunderstorms (Lightning and High Winds), Tornadoes, Severe Winter Storms (Ice and Snow)	Carried Over
B6: Hardening Critical Facilities	Harden critical facilities in the Village to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Village Budget, Parish Budget, Mitigation Grants	Mayor, Parish Public Works Director	Thunderstorms (Lightning and High Winds), Tornadoes, Winter Storms, Hurricanes / Tropical Storms	Carried Over

B7: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Village of Belcher in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Village Budget	Mayor, Parish / Local OEP Director	Thunderstorms / Drought / Extreme Heat / Tornadoes / Severe Winter Storms (Ice and Snow) / Floods / Hurricanes / Tropical Storms / Hailstorms / Dam-Levee Failure / Earthquakes / Wildland Fires	Carried Over
B8: Available Information Materials	Make information materials pertaining to natural hazard reduction available to Village residents at various locations around the Village and at a once-a-year hazard reduction workshop.	Village Budget, Parish Budget	Mayor, Parish / Local OEP Director	Thunderstorms / Drought / Extreme Heat / Tornadoes / Severe Winter Storms (Ice and Snow) / Floods / Hurricanes / Tropical Storms / Hailstorms / Dam-Levee Failure / Earthquakes / Wildland Fires	On-going

Town of Blanchard- Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
B1: Fixed and Portable Generators	Purchase fixed and portable generators for critical facilities in town to maintain functions in the event of a power outage.	Capital Outlay, GOHSEP	Mayor, Caddo Parish Public Works Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms / Earthquakes	Carried Over
B2: Hardening Critical Facilities	Harden critical facilities in the Town to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Town Budget, Caddo Parish, Mitigation Grants	Mayor, Parish / Local Public Works Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms	Carried Over
B3: Identify Wind-Risk Properties	Identify homes and buildings that are vulnerable to loss from high winds; suggest ways that homeowners can prepare for storms.	Town Budget, Caddo Parish, Mitigation Grants	Mayor, Town Staff	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms / Earthquakes	Carried Over
B4: New Construction Codes and Permits	Encourage new construction and builders to utilize new building codes and permits adopted by Caddo Parish.	Town Budget	Town of Blanchard	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms / Floods / Earthquakes	On-going
B5: Identifying At-Risk Citizens	Identify the elderly and indigent citizens who are at most risk; encourage churches and other community groups to assist them during drought and extreme heat events to ensure adequate hydration; to assist them when power losses result from high wind and other storm or natural hazard events.	Town Budget	Mayor, Town Staff	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms / Floods / Earthquakes / Drought / Extreme Heat	On-going

B6: Public Awareness	Increase public awareness of natural hazards impacting the Town. Distribute public awareness information regarding natural hazards common to in the area and potential mitigation measures using the local newspaper, utility bill inserts, phone book inserts, Town website, and an educational program for school age children in Town.	Town Budget, School Board Budget, Parish Budget	Mayor, School Board Superintendent, Utility Providers	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Wildland Fires / Hurricanes / Tropical Storms / Floods / Earthquakes / Drought / Dam-Levee Failure	On-going
B7: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Town of Blanchard in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Town Budget, Parish Budget	Mayor, Parish / Local OEP Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Wildland Fires / Hurricanes / Tropical Storms / Floods / Earthquakes / Drought / Dam-Levee Failure	On-going

Village of Gilliam - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
G1: Hardening Critical Facilities	Harden critical facilities in the Village to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc., installing back-up generators at these facilities to ensure continued operation during power outages caused such events.	Village Budget, Caddo Parish Budget, Mitigation Grants	Mayor, Parish / Local Public Works Director, OEP Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms	Carried Over
G2: Fixed and Portable Generators	Purchase fixed and portable generators for critical facilities in Village to maintain operability and ability to serve the public in the event of a power outage caused by a storm event.	Capital Outlay, GOHSEP	Mayor, Parish / Local Public Works Director, OEP Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms / Earthquakes	Carried Over
G3: Identifying At-Risk Citizens	Identify the elderly and indigent citizens who are at most risk; encourage churches and other community groups to assist them during power losses caused by storm events.	Village Budget, Caddo Parish	Mayor, Parish / Local OEP Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Extreme Heat / Severe Winter Storms (Ice and Snow)	Carried Over
G4: Public Awareness	Promote public awareness of the dangers of high winds from such events as thunderstorms and tornadoes and what can be done to prevent/reduce personal injury and property damage.	Village Budget	Mayor, Parish / Local OEP Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Extreme Heat	On-going
G5: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Village of Gilliam in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Village Budget	Mayor, Parish / Local OEP Director	Tornadoes / Thunderstorms (Lightning and High Winds) / Hailstorms / Extreme Heat	On-going

Town of Greenwood - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
G1: Drainage Ditches	Continue drainage ditch dredging and clearing program in Town's flood prone areas.	Town Budget, Parish Budget	Mayor, Parish/Local Public Works Director	Floods	Carried Over
G2: Flood-prone Elevation	Acquire/elevate properties in flood-prone areas which have been flooded more than once.	Mitigation Grants	Mayor, Parish/Local Public Works Director	Floods	Carried Over
G3: Retention Ponds	Develop retention ponds in strategic locations to alleviate flooding in areas of the Town that are prone to flooding.	USACE, CPPWD, USDA, Mitigation Grants, Town Budget	Mayor, Parish/Local Public Works Director, Parish Flood Plain Manager	Floods	Carried Over
G4: Critical Facility Identification	Identify critical facilities and other public buildings in the Town that are vulnerable to power outages due to falling limbs during storm events and trim limbs when necessary to reduce power failures.	Town Budget, Caddo Parish Budget	Mayor, Parish/Local Public Works Director	Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms	On-Going
G5: Hardening Critical Facilities	Harden critical facilities in Town to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Capital Outlay, Mitigation Grants, Town Budget, Caddo Parish Budget	Mayor, Local/Parish Public Works Director, OEP Director	Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms	Carried Over
G6: Back-Up Generators	Continue to purchase back-up generators for critical facilities in Town.	Capital Outlay, USDA, Mitigation Grants	Mayor, Local/Parish Public Works Director, OEP Director	Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms	Carried Over
G7: Burn Bans	Conduct a wider publication and stricter enforcement of burn bans throughout Town during periods of high hazard threat from wildland fires.	Town Budget, Parish Budget	Mayor, Parish/Local OEP Director	Wildland Fires	On-Going
G8: Fire Prevention Awareness	Support local fire prevention awareness through educational partnerships between schools, civic groups and fire prevention organizations.	Town Budget, School Board Budget, Grants	Mayor, School Board Superintendent, Local OEP Director	Wildland Fires	On-Going
G9: Public Awareness	Promote public awareness of the dangers caused by various natural hazards that can impact the Town and what can be done to prevent/reduce personal injury and property damage through brochures or pamphlets available to the public at the Town Hall.	Town Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over
G10: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Town of Greenwood in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Town Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going

Village of Hosston - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
H1: Fixed and Portable Generators	Purchase fixed and portable generators and instill at critical facilities in the Village to maintain operability and ability to serve the public in the event of a power failure caused by storm event.	Village Budget, Parish Budget, LCDBG, Capital Outlay, USDA, Mitigation Grant	Mayor, Parish Public Works Director, OEP Director	Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Floods	Carried Over
H2: Harden Critical Facilities	Harden critical facilities in Village to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Village Budget, Parish Budget, LCDBG, Capital Outlay, USDA, Mitigation Grant	Mayor, Parish Public Works Director, OEP Director	Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Floods	Carried Over
H3: Sewer Service	Provide sewer service for the entire Village community.	LCDBG, Capital Outlay, USDA	Mayor, Parish Public Works Director	Flooding	Carried Over
H4: Identify At-Risk Citizens	Identify the elderly and indigent citizens who are at most risk; encourage churches and other community groups to assist them during high wind storm events and other natural hazard events that cause power failures.	Village Budget	Mayor, Village Staff	Thunderstorms (Lightning and High Wind) / Drought / Extreme Heat / Tornadoes / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms	On-Going
H5: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Village of Hosston in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Village Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going
H6: Public Awareness	Promote public awareness of the dangers caused by various natural hazards that can impact the Village and what can be done to prevent/reduce personal injury and property damage through brochures or pamphlets available to the public at the Town Hall.	Village Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over

Village of Ida - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
I1: Fire Prevention Awareness	Support local fire prevention awareness through educational partnerships between schools, civic groups and fire prevention organizations.	Village Budget, School Board, Caddo Parish, Grants	Mayor, Local/Parish OEP Director, School Superintendent	Wildland Fires	On-Going
I2: Clear Zones	Adopt a local ordinance mandating clear zones (free from combustible materials) around all structures in the community which are adjacent to wooded areas	Village Budget, Staff Time	Mayor, Village Attorney, Board of Aldermen	Wildland Fires	Carried Over
I3: Hardening Critical Facilities	Harden critical facilities in Village to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Village Budget, Parish Budget, LCDBG, Capital Outlay, USDA, Mitigation Grant	Mayor, Parish Public Works Director, OEP Director	Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms	Carried Over
I4: Burn Bans	Conduct a wider publication and a stricter enforcement of burn bans.	Village Budget, Staff Time	Mayor, Local/Parish OEP Director, Local Fire/Police Chiefs	Wildland Fires	On-Going
I5: Public Awareness	Promote public awareness of the dangers caused by various natural hazards that can impact the Village and what can be done to prevent/reduce personal injury and property damage through brochures or pamphlets available to the public at the Town Hall.	Village Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over
I6: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Village of Ida in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Village Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going

Town of Mooringsport - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
M1: Warning Devices	Acquire and install warning devices, such as sirens, electronic message boards, etc., around the Town.	Mitigation Grant Funds, Capital Outlay, Town Budget, USDA, Caddo Parish	Mayor, Parish/Local Public Works Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over
M2: Water Drainage	Improve critical storm water drainage systems throughout the Town.	Caddo Parish, Mitigation Grant, USDA	Mayor, Parish/Local Public Works Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Hurricanes / Tropical Storms	Carried Over
M3: Embankment	Erect embankment for Caddo Lake and for Pickering Street.	Town Budget, Caddo Parish, Mitigation Grants	Mayor, Parish/Local Public Works Director	Flooding	Carried Over
M4: Safe Rooms	Install safe rooms at key critical facilities to protect lives of critical Town employees working at these facilities.	Mitigation Grant Funds, Capital Outlay, Town Budget, USDA, Caddo Parish	Mayor, Parish/Local Public Works Director	Tornadoes / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind)	Carried Over
M5: Hardening and Flood-Proofing Critical Facilities	Harden and flood-proof critical facilities in Town to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc., and from flood hazards by elevating key components of these facilities and/or constructing protective beams around them.	Town Budget, Caddo Parish, Mitigation Grants	Mayor, Parish/Local Public Works Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Hurricanes / Tropical Storms	Carried Over
M6: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Town of Mooringsport in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Town Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going
M7: Hazard Reduction Workshop	Make information materials pertaining to natural hazard reduction available to Town residents at various locations around Town and at a once-a-year hazard reduction workshop.	Town Budget, Caddo Parish	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going

Town of Oil City - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
O1: Harden Critical Facilities	Harden critical facilities in Town to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Town Budget, Caddo Parish, Mitigation Grants	Mayor, Local/Parish OEP Director, Public Works Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Floods / Tornadoes / Hailstorms / Extreme Heat / Hurricanes / Tropical Storms	Carried Over
O2: Back-Up Generators	Purchase and install in protected positions back-up generators for Town's critical systems.	Town Budget, Caddo Parish, Mitigation Grants	Mayor, Local/Parish OEP Director	Floods / Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Floods / Tornadoes / Hailstorms / Extreme Heat / Hurricanes / Tropical Storms	Carried Over
O3: Identifying Vulnerable Properties	Identify homes and buildings in the Town that are vulnerable to loss from flooding and high wind events; suggest ways that homeowners can prepare for storms.	Town Budget, Staff Time	Mayor, Local/Parish OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Floods / Tornadoes / Hailstorms / Extreme Heat	On-Going
O4: Building Codes	Adopt building codes with provisions and new construction techniques that will improve resistance of new buildings to high winds and flooding.	Town Budget, Parish Budget	Mayor, Local/Parish OEP Director, Metro Planning Commission Staff	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Floods / Tornadoes	Carried Over
O5: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Town of Oil City in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Town Budget, Parish Budget	Mayor, Local/Parish OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going
O6: Hazard-Reduction Workshop	Make information materials pertaining to natural hazard reduction available to Town residents at various locations around Town and at a once-a-year hazard reduction workshop.	Town Budget, Parish Budget	Mayor, Local/Parish OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	On-Going

Village of Rodessa - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
R1: Identify At-Risk Citizens	Identify the elderly and indigent citizens in Village who are at risk; encourage churches and other community groups to assist them during power losses; develop emergency plans to provide shelter when power fails from winter storms, thunderstorms, and tornadoes.	Village Budget, Caddo Parish	Mayor, Local/Parish OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms	Carried Over
R2: Identify Vulnerable Buildings	Identify homes and buildings that are vulnerable to loss from high winds; suggest ways that homeowners can prepare for storms.	Village Budget, Caddo Parish	Mayor, Local/Parish OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms	Carried Over
R3: Electric Power Provider	Work with electric power provider to thin out trees and cutback limbs that are prone to falling on power lines in the Village and near Village's critical facilities.	Village Budget, Caddo Parish	Mayor, Local/Parish Public Works Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms	Carried Over
R4: Back-Up Generators	Purchase and install back-up generators in protected locations for critical facilities and services in Village.	Capital Outlay, USDA, Mitigation Grant	Mayor, Local/Parish OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms / Hailstorms	Carried Over
R5: Hardening Critical Facilities	Harden critical facilities in Village to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Village Budget, Caddo Parish, Mitigation Grants	Village Mayor, Parish/Local Public Works Director, Local/Parish OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms / Hailstorms	Carried Over
R6: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Village of Rodessa in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting.	Village Budget, Caddo Parish	Mayor, Local/Parish OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over
R7: Public Awareness	Promote public awareness of the dangers caused by various natural hazards that can impact the Village and what can be done to prevent/reduce personal injury and property damage through brochures or pamphlets available to the public at the Town Hall.	Village Budget, Caddo Parish	Mayor, Local/Parish OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over

City of Shreveport - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
S1: Critical Facility Power	Maintain power at critical facilities throughout all of Shreveport during storm/hazard events by acquiring and installing adequately sized auxiliary generators with all necessary wiring and switches.	Mitigation Grant, City Budget	Mayor, DOS Director	Floods / Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Hail / Tornadoes / Hurricanes / Tropical Storms	Carried Over
S2: Sewage Lift Stations	Maintain functionality of sewage lift stations by purchasing and pre-staging portable pumping capacity.	City Budget	Mayor, DOS Director	Floods / Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Hail / Tornadoes / Hurricanes / Tropical Storms	Carried Over
S3: Pumping Capacity	Increase emergency storm water pumping capacity through acquisition of portable pumps with generators.	City Budget	Mayor, DOS Director	Floods / Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Hail / Tornadoes / Hurricanes / Tropical Storms	Carried Over
S4: Portable Traffic Barricades	Continue to acquire portable traffic barricades and similar equipment to facilitate traffic control during evacuations necessitated by hazard threats/events.	City Budget, Police Department Budget	Mayor, Shreveport Police Department	Floods	Carried Over
S5: Repetitive Loss Properties	Acquire repetitive loss properties in flood-prone areas.	Mitigation Grant, City Budget	Mayor, DOS Director, City Floodplain Manager	Floods	Carried Over
S6: Elevate Structures	Elevate structures in flood prone areas throughout the City.	Mitigation Grant, City Budget	Mayor, DOS Director, City Floodplain Manager	Floods	Carried Over
S7: Harden Critical Facilities	harden critical facilities in the City to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Mitigation Grant, City Budget	Mayor, DOS Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Hail / Tornadoes / Hurricanes / Tropical Storms	Carried Over
S8: Closure Plans and Signs	Develop closure plans and install advisory/warning signs along flood-prone roads in City which usually flood to a depth of two feet or more	City Budget	Mayor, DOS Director, City Floodplain Manager	Floods	Carried Over
S9: Community Rating System	Improve Community Rating System (CRS) score for City of Shreveport by developing, printing and distributing a new flyer explaining benefits of NFIP program, eligibility for CRS program and its benefits to property owners.	City Budget	Mayor, City Floodplain Manager	Floods	Carried Over

S10: Informational Brochure	Prepare revised informational brochure providing citizens with information on preparing for and surviving flooding and other natural hazards where homes, property, or life is threatened, which contains mitigation measures that homeowners may implement to protect homes from damaging high winds, tornadoes, floods (flood-proofing homes), and other hazards.	City Budget	Mayor, City Floodplain Manager	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat / Forest Fire	Carried Over
S11: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in City of Shreveport in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, structural retrofitting, and other hazard mitigation measures.	City Budget	Mayor, City Floodplain Manager, OEP Director	Floods / Severe Winter Storms (Ice and Snow) / Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat / Forest Fire	Carried Over

Town of Vivian - Action Update					
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
V1: Collapsed Culverts	Replace collapsed culverts at appropriate locations throughout Town.	Capital Outlay, Mitigation Grant, USDA, Parish Budget	Mayor, Local/Parish Public Works Director	Flooding	Carried Over
V2: Dredge Drainage Ditches	Dredge drainage ditches throughout Town to improve the storm water flow after a heavy rainfall event.	Capital Outlay, USDA, Town Budget	Mayor, Local/ Parish Public Works Director	Flooding	Carried Over
V3: Harden Critical Facilities	Harden critical facilities in Town to make them more resistant to damage from wind hazards by retrofitting these facilities with roof tie-downs, wind resistant doors and windows, etc.	Mitigation Grant, Town Budget, Parish Budget	Mayor, Local/Parish Public Works Director, OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms / Hailstorms	Carried Over
V4: Identifying At-Risk Citizens	Identify the elderly and indigent citizens who are at risk from power outages caused by high wind and related hazards and extreme heat events. Encourage churches and other community groups to assist them during power losses and extreme heat events; develop emergency plans to provide shelter when power fails from high wind and related hazard events.	Town Budget, Parish Budget	Mayor, Local/Parish OEP Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Hurricanes / Tropical Storms / Extreme Heat	Carried Over
V5: Trees and Limbs	Thin out trees and cutback limbs, particularly near critical facilities, that during high wind and related hazard events are prone to falling on power lines.	Town Budget, Parish Budget	Mayor, Local/Parish Public Works Director	Thunderstorms (Lightning and High Winds) / Severe Winter Storms (Ice and Snow) / Tornadoes / Hurricanes / Tropical Storms	Carried Over
V6: Burn Bans	Conduct a wider publication and a stricter enforcement of burn bans.	Town Budget	Mayor, Local/Parish OEP Director, Local Fire/Police Chiefs	Wildland Fires	On-Going
V7: Clear Zones	Adopt a local ordinance mandating clear zones (free from combustible materials) around all structures in the community which are adjacent to wooded areas.	Town Budget	Mayor, Town Attorney, Board of Aldermen	Wildland Fires	Carried Over
V8: Fire Prevention Awareness	Support local fire prevention awareness through educational partnerships between schools, civic groups and fire prevention organizations.	Town Budget, School Board Budget, Parish Budget, Grants	Mayor, Local/ Parish OEP Director, School Superintendent	Wildland Fires	On-Going
V9: Public Awareness	Increase public awareness of natural hazards impacting the Town. Distribute public awareness information regarding natural hazards common in the area and potential mitigation measures using the local newspaper, utility bill inserts, phone book inserts, Town website, and an educational program for school age children in Town.	Town Budget, School Board Budget, Parish Budget	Mayor, School Board Superintendent, Utility Providers	Floods / Severe Winter Storms (Ice and Snow)/Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure / Earthquakes / Wildland Fires / Extreme Heat	Carried Over
V10: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week" in Town of Vivian in conjunction with similar parish-wide event or alone, to educate residents on threats from various hazards, sheltering in place, evacuation, emergency preparedness, and structural retrofitting, etc.	Town Budget, Parish Budget	Mayor, Parish/Local OEP Director	Floods / Severe Winter Storms (Ice and Snow)/Thunderstorms (Lightning and High Wind) / Tornadoes / Hailstorms / Hurricanes, Tropical Storms / Drought/ Dam-Levee Failure /Earthquakes / Wildland Fires/ Extreme Heat	On-Going

Unincorporated Caddo New Mitigation Actions

Caddo Unincorporated - New Mitigation Actions						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
C1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
C2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
C3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
C4: Safe Room Projects	Construction of a safe room for first responders located in Caddo Parish. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
C5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

C6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
C7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Lightning	New
C8: Warning Systems	Update/upgrade public warning system components throughout Caddo Parish as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
C9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
C10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
C11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
C12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Dam Failure, Levee Failure	New
C13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Drought	New
C14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Wildfires	New
C15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Caddo Parish OHSEP	Extreme Heat	New

Village of Belcher - New Mitigation Actions

Village of Belcher						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
B1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
B2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
B3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
B4: Safe Room Projects	Construction of a safe room for first responders located in Belcher. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
B5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

B6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
B7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Lightning	New
B8: Warning Systems	Update/upgrade public warning system components throughout Belcher as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Winter Storms, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
B9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
B10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
B11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
B12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
B13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Drought	New
B14: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Village of Belcher/Caddo Parish OHSEP	Extreme Heat	New

Town of Blanchard - New Mitigation Actions

Town of Blanchard						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
B1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
B2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
B3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
B4: Safe Room Projects	Construction of a safe room for first responders located in Belcher. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
B5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

B6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
B7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Lightning	New
B8: Warning Systems	Update/upgrade public warning system components throughout Belcher as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
B9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
B10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
B11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
B12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
B13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Drought	New
B14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Wildfires	New
C15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Blanchard/Caddo Parish OHSEP	Extreme Heat	New

Village of Gilliam - New Mitigation Actions

Village of Gilliam						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
G1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
G2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
G3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
G4: Safe Room Projects	Construction of a safe room for first responders located in Gilliam. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
G5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

G6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
G7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Lightning	New
G8: Warning Systems	Update/upgrade public warning system components throughout Gilliam as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
G9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
G10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
G11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
G12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
G13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Drought	New
G14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Wildfires	New
G15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Village of Gilliam/Caddo Parish OHSEP	Extreme Heat	New

Town of Greenwood - New Mitigation Actions

Town of Greenwood						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
G1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
G2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
G3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
G4: Safe Room Projects	Construction of a safe room for first responders located in Greenwood. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
G5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

G6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
G7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Lightning	New
G8: Warning Systems	Update/upgrade public warning system components throughout Greenwood as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
G9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
G10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
G11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
G12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
G13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Drought	New
G14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Wildfires	New
G15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Greenwood/Caddo Parish OHSEP	Extreme Heat	New

Village of Hosston - New Mitigation Actions

Village of Hosston						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
H1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
H2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
H3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
H4: Safe Room Projects	Construction of a safe room for first responders located in Hosston. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
H5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

H6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
H7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Lightning	New
H8: Warning Systems	Update/upgrade public warning system components throughout Hosston as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
H9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
H10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
H11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
H12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
H13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Drought	New
H14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Wildfires	New
H15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Village of Hosston/Caddo Parish OHSEP	Extreme Heat	New

Town of Ida - New Mitigation Actions

Town of Ida						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
I1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
I2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
I3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
I4: Safe Room Projects	Construction of a safe room for first responders located in Ida. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
I5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

I6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
I7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Lightning	New
I8: Warning Systems	Update/upgrade public warning system components throughout Ida as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
I9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
I10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
I11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
I12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
I13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Drought	New
I14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Wildfires	New
I15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Ida/Caddo Parish OHSEP	Extreme Heat	New

Town of Mooringsport - New Mitigation Actions

Town of Mooringsport						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
M1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
M2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
M3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
M4: Safe Room Projects	Construction of a safe room for first responders located in Mooringsport. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
M5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

M6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
M7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Lightning	New
M8: Warning Systems	Update/upgrade public warning system components throughout Mooringsport as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
M9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
M10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
M11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
M12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
M13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Drought	New
M14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Wildfires	New
M15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Mooringsport/Caddo Parish OHSEP	Extreme Heat	New

Town of Oil City - New Mitigation Actions

Town of Oil City						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
O1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
O2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
O3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
O4: Safe Room Projects	Construction of a safe room for first responders located in Oil City. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
O5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

O6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
O7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Lightning	New
O8: Warning Systems	Update/upgrade public warning system components throughout Oil City as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
O9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
O10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
O11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
O12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
O13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Drought	New
O14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Wildfires	New
O15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Oil City/Caddo Parish OHSEP	Extreme Heat	New

Village of Rodessa - New Mitigation Actions

Village of Rodessa						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
R1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
R2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
R3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
R4: Safe Room Projects	Construction of a safe room for first responders located in Rodessa. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
R5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

R6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
R7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Lightning	New
R8: Warning Systems	Update/upgrade public warning system components throughout Rodessa as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
R9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
R10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
R11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
R12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
R13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Drought	New
R14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Wildfires	New
R15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Village of Rodessa/Caddo Parish OHSEP	Extreme Heat	New

City of Shreveport - New Mitigation Actions

City of Shreveport						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
S1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
S2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
S3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
S4 Safe Room Projects	Construction of a safe room for first responders located in Shreveport. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
S5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

S6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
S7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Lightning	New
S8: Warning Systems	Update/upgrade public warning system components throughout Shreveport as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
S9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
S10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
S11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
S12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
S13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Drought	New
S14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Wildfires	New
S15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	City of Shreveport/Caddo Parish OHSEP	Extreme Heat	New

Town of Vivian - New Mitigation Actions

Town of Vivian						
Jurisdiction-Specific Action	**Action Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Status**
V1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	High Wind, Hail, Tropical Cyclones, Tornadoes	New
V2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
V3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Dam Failure, Levee Failure	New
V4 Safe Room Projects	Construction of a safe room for first responders located in Vivian. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones	New
V5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Dam Failure, Levee Failure, and Winter Storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high winds, hail), Winter Storms, Drought, Dam Failure, Levee Failure	New

V6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclone, Thunderstorms (lightning, high winds, hail), Extreme Heat	New
V7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Lightning	New
V8: Warning Systems	Update/upgrade public warning system components throughout Vivian as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
V9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
V10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Tropical Cyclones, Flooding	New
V11: Flood Control Measures	Install and/or upgrade minor flood control structures including berms and floodwalls to protect critical facilities.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Tropical Cyclones, Flooding, Dam Failure, Levee Failure	New
V12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam/levee failure.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Dam Failure, Levee Failure	New
V13: Drought Ordinances	Adopt ordinances requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Drought	New
V14: Wildfire Ordinances	Strengthen penalties and improve enforcement capabilities of burn ban ordinances	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Wildfires	New
M15: Cooling Shelter Construction	Construct or enhance a cooling facility for the public to utilize during periods of extreme heat to protect life and safety of citizens.	FEMA HMGP, Local	1-5 years	Town of Vivian/Caddo Parish OHSEP	Extreme Heat	New

Action Prioritization

During the prioritization process, each jurisdiction and the steering committee considered the costs and relative benefits of each new action. Costs can usually be listed in terms of dollars, although at times it involves staff time rather than the purchase of equipment or services that can be readily measured in dollars. In most cases, benefits, such as lives saved or future damage prevented, are hard to measure in dollars, many projects were prioritized with these factors in mind.

In all cases, the jurisdictions concluded that the benefits (in terms of reduced property damage, lives saved, health problems averted and/or economic harm prevented) outweighed the costs for the recommended action items.

The steering committee met internally for mitigation action meetings to review and approve Caddo Parish and the jurisdiction's mitigation actions. On-going actions, as well as actions which can be undertaken by existing parish or local staff without need for additional funding, were given high priority. The actions with high benefit and low cost, political support, and public support but require additional funding from parish or external sources were given medium priority. The actions that require substantial funding from external sources with relatively longer completion time were given low priority. There have been no changes in financial, legal, and political priorities within the past 5 years, with the methodology and prioritization process remaining the same.

Caddo Parish and the participating jurisdictions will implement and administer the identified actions based off of the proposed timeframes and priorities for each reflected in the portions of this section where actions are summarized. The inclusion of any specific action item in this document does not commit the parish to implementation. Each action item will be subject to availability of staff and funding. Certain items may require regulatory changes or other decisions that must be implemented through standard processes, such as changing regulations. This plan is intended to offer priorities based on an examination of hazards.

This Page Left Intentionally Blank

Appendix A: Planning Process

Purpose

The Hazard Mitigation Plan Update process prompts local jurisdictions to keep their hazard mitigation plan current and moving toward a more resilient community. The plan update builds on the research and planning efforts of previous plans while reviewing recent trends. The steering committee followed FEMA's hazard mitigation planning process per the FEMA Local Mitigation Planning Handbook. This planning process assured public involvement and the participation of interested agencies and private organizations. Documentation of the planning process for the updated plan is addressed in this section.

The Caddo Parish Hazard Mitigation Plan Update

The Caddo Parish Hazard Mitigation Plan Update process began in January 2016 with a series of meetings and collaborations between the contractor (SDMI) and the participating jurisdictions. Update activities were intended to give each jurisdiction the opportunity to shape the plan to best fit their community's goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

Caddo Parish includes the unincorporated areas of the parish, as well as the eleven incorporated municipalities that participated in the plan update process – the Village of Belcher, Town of Blanchard, Village of Gilliam, Town of Greenwood, Village of Hosston, Town of Ida, Town of Mooringsport, Town of Oil City, Village of Rodessa, City of Shreveport, and Town of Vivian. Caddo Parish Office of Homeland Security and Emergency Preparedness (OHSEP) invited communities' representatives to meetings, where they supplied critical infrastructure data and reviewed work-in-progress for the plan update.

Similar to the development of the original Hazard Mitigation Plan, the role of the steering committee members during the plan update was to attend the planning meetings and provide valuable information on the parish, develop parts of the plan update, and review the results of research conducted by SDMI. Tasks completed by the steering committee include:

- Reviewing and revising the list of potential hazards included in the plan update
- Assembling a list of critical facilities, such as hospitals, police stations, and shelters
- Updating mitigation goals and objectives
- Determining prudent mitigation measures
- Prioritization of identified mitigation measures

The table below details the meeting schedule and purpose for the planning process:

Date	Meeting or Outreach	Location	Public Invited	Purpose
1/22/2016	Initial Coordination	Telephone/ Email	No	Discuss with Parish HM coordinator and any Steering Committee members expectations and requirements of the project.
2/18/2016	Kick-Off Meeting	Shreveport, LA	No	Discuss with the plan steering committee expectations and requirements of the project. Assign plan worksheets to jurisdictions.
6/16/2016	Risk Assessment Overview	Shreveport, LA	No	Discuss and review the risk assessment with the steering committee discuss and review expectations for public meeting.
6/16/2016	Public Meeting	Shreveport, LA	Yes	The public meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the Caddo Parish communities were provide for the meeting attendees to identify specific areas where localized hazards occur.
Ongoing	Public Survey Tool	Online	Yes	This survey asked participants about public perceptions and opinions regarding natural hazards in Caddo Parish. In addition, we asked about the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: https://www.surveymonkey.com/r/CaddoParish
2 Week Period	Public Plan Review (Digital)		Yes	Parish Website and Caddo Parish OHSEP

Planning

The plan update process consisted of several phases:

Phase	Month 1-2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9
Plan Revision								
Data Collection								
Risk Assessment								
Public Input								
Mitigation Strategy and Actions								
Plan Review by GOHSEP and FEMA								
Plan Adoption								
Plan Approval								

Coordination

The Caddo Parish OHSEP oversaw the coordination of the 2016 Hazard Mitigation Plan Update Steering Committee during the update process. The Caddo Parish OHSEP and participating jurisdictions were responsible for identifying members for the committee.

The Parish Director and SDMI were jointly responsible for inviting the Steering Committee and key stakeholders to all planned meetings and activities by email invitations and calendar invites. SDMI assisted the Parish Director with meeting notices, website and social media statements for notification to the media and general public for public meetings and public outreach activities.

SDMI was responsible for facilitating meetings and outreach efforts during the update process.

Neighboring Community, Local and Regional Planning Process Involvement

From the outset of the planning process, the Hazard Mitigation Team encouraged participation from a broad range of jurisdictional entities. The involvement of representatives from the city, state, and regional agencies provided diverse perspectives and mitigation ideas.

Formal participation in this plan includes but is not limited to the following activities:

- Participation in Hazard Mitigation Team meetings at the local and parish level
- Sharing local data and information
- Local action item development

- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan document by each jurisdiction following provisional approval by The State of Louisiana and FEMA

The 2016 Hazard Mitigation Plan Update Steering Committee consisted of representatives from the following parish, municipal, or community stakeholders:

- Caddo Parish Government
- Caddo Office of Homeland Security and Emergency Preparedness
- Village of Belcher
- Village of Gilliam
- Town of Greenwood
- Village of Hosston
- Town of Ida
- Town of Mooringsport
- Town of Oil City
- Village of Rodessa
- City of Shreveport
- Town of Vivian

The Bossier Parish OHSEP Director was invited by the Caddo Parish OHSEP via email to participate in all meetings and activities as well in an effort to collaborate with neighboring communities. In addition, the participation of the GOHSEP Region 7 Coordinator during the process also contributed to neighboring community representation.

As part of the coordination and planning process, each jurisdiction was provided the State Required Hazard Mitigation Plan Update Worksheet. Jurisdictions with the capability to complete and return these worksheets returned them to assist with the 2016 update. The completed worksheets can be found in Appendix E – State Required Plan Update Worksheets.

Below is a detailed list of the 2016 Hazard Mitigation Plan Update Steering Committee:

Name	Title	Agency	Address	Email	Phone
John Fourcade	Supervisor	Belcher Police Department	411 Charles Street Belcher, LA 71004	john.fourcade@caddosheriff.org	318-681-1117
Major Fant	Chief of Police	Belcher Police Department	411 Charles Street Belcher, LA 71004	majorfant@gmail.com	318-378-4209
Debra Smith	Town Clerk	Blanchard	110 Main St Blanchard, LA 71009	debra@blanchardla.org	318-929-7593
Gary Presswood	Chief of Police	Blanchard Police Department	314 W Alexander Ave Blanchard, LA 71009	chiefpresswood@blanchardla.org	318-929-3700
Bryant Williams	Fire Chief	Caddo Fire District 4	8240 Colquitt Rd Keithville, LA 71047	caddofire4@aol.com	318-925-2200
Keith Harris	Fire Chief	Caddo Fire District 5	1675 Leonard Rd Shreveport, LA 71115	gkharris60@yahoo.com	318-797-4111
Damon Johnson	Fire Chief	Caddo Fire District 6	11450 Old Mansfield Rd Keithville, LA 71047	deezpc@aol.com	318-925-8791

Danny Richardson	Fire Chief	Caddo Fire District 7	300 Hwy 1 North Oil City, LA 71061	dannycfd7@ bluebirdwireless.com	318-995-7114
Jay Paulette	Fire Chief	Caddo Fire District 8	1007 S Spruce Vivian, LA 71082	chiefjfw40@ hotmail.com	318-375-3233
Ali Mustapha	Administrator	Caddo Levee Board	1320 Grimmett Dr Shreveport, LA 71107	amustapha@ caddolevee.org	318-221-2654
James Demouchet	Environmental Service Control	Caddo Parish	505 Travis St, Suite 820 Shreveport, LA 71101	jdemouchet@ caddo.org	318-226-6932
Tim Weaver	Public Works	Caddo Parish	505 Travis St Shreveport, LA 71101	tweaver@ caddo.org	318-226-6934
Randy Lucky	Assistant Administrator	Caddo Parish Commission	505 Travis St, Suite 800 Shreveport, LA 71101	rlucky@ caddo.org	318-226-6900
Woody Wilson	Parish Administrator	Caddo Parish Commission	505 Travis St, Suite 800 Shreveport, LA 71101	wwilson@ caddo.org	318-226-6900
Dan Cotten	Fire Chief	Caddo Parish Fire District 1	7058 Old Mooringsport Rd Blanchard, LA 71107	dancfd1@ gmail.com	318-929-3575
Jeff Akes	Assistant Fire Chief	Caddo Parish Fire District 1	7058 Old Mooringsport Rd Blanchard, LA 71107	jeff.akes@ gmail.com	318-929-3575
Ernest Mitchell	Fire Chief	Caddo Parish Fire District 3	9081 Hwy 80 Greenwood, LA 71033	firechief@ cfd3.org	318-938-5290
DE Stevens	Chief Deputy	Caddo Parish Sheriff's Office	505 Texas St Shreveport, LA 71101	de.stevents@ caddosheriff.org	318-681-0632
Steve Prator	Sheriff	Caddo Parish Sheriff's Office	501 Texas St, Room 101 Shreveport, LA 71101	steve.prator@ caddosheriff.org	318-681-0812
Lisa Carmack	Homeland Security Manager	Caddo Parish Sheriff's Office OHSEP	1144 Texas Ave Shreveport, LA 71101	lisa.carmack@ caddosheriff.org	318-675-2255
Robert Jump	Deputy Director	Caddo Parish Sheriff's Office OHSEP	1144 Texas Ave Shreveport, LA 71101	robert.jump@ caddosheriff.org	318-675-2255
Tony LeBlanc	Field Operations Manager	Caddo Parish Sheriff's Office OHSEP	1144 Texas Ave Shreveport, LA 71101	tony.leblanc@ caddosheriff.org	318-675-2255
Barbara Featherson	Director, Water & Sewerage	City of Shreveport	505 Travis St, Suite 580 Shreveport, LA 71101	barbara.featherston@ shreveportla.gov	318-673-7660
Brian Crawford	CAO	City of Shreveport	505 Travis St Shreveport, LA 71101	brian.crawford@ shreveportla.gov	318-673-5010
Patrick Furlong	Engineer	City of Shreveport	505 Travis St Shreveport, LA 71101	patrick.furlong@ shreveportla.gov	318-673-6000
Ollie Tyler	Mayor	City of Shreveprot	505 Travis St Shreveport, LA 71101	ollie.tyler@ shreveportla.gov	318-673-5050
Shayne Gibson	Chief of Police	Greenwood Police Department	9381 Greenwood Rd Greenwood, LA 71033	sgibson@ greenwoodla.org	318-938-5554

Whitlow Giles	Chief of Police	Hosston Police Department	15717 US71 Hosston, LA 71043	chiefhosston@aolcom	318-617-3809
David Austin	Chief of Police	Ida Police Department			318-284-3231
Knox Andress	HRSA Region 7 Coordinator	Louisiana Poison Control Center	1455 Wilkinson St Shreveport, LA 71103	wandr1@lsuhsc.edu	318-813-3311
Tabitha Dendy	Water Clerk	Mooringsport	119 Gremen St Mooringsport, LA 71060	mooringsport@bellsouth.net	318-996-7661
Tom Bass	Chief of Police	Oil City Police Department	202 Allen St Oil City, LA 71061	chieftombass@yahoo.com	318-995-6205
Kisha McDow	Town Hall	Oil City Town Hall	202 Allen St Oil City, LA 71061	kishamcdow@yahoo.com	318-995-7177
Patrick Card	Emergency Manager	Overton Brooks VA	510 E. Stoner Ave Shreveport, LA 71101	patrick.card@va.gov	318-221-8411
Cecil Littlejohn	Chief of Police	Rodessa Police Department		rodessa015@centurytel.net	318-469-9741
Scott Wolverton	Fire Chief	Shreveport Fire Department	263 N Common St Shreveport, LA 71101	scott.wolverton@shreveportla.gov	318-673-6760
Skip Pinkston	Chief of Specials Ops and Safety	Shreveport Fire Department	263 N Common St Shreveport, LA 71101	skip.pinkston@shreveportla.gov	318-673-6760
Bill Goodin	Chief Administrative Assistant	Shreveport Police Department	1234 Texas Ave Shreveport, LA 71101	bill.goodin@shreveportla.gov	318-673-6943
Willie Shaw	Chief of Police	Shreveport Police Department	1234 Texas Ave Shreveport, LA 71101	willie.shaw@shreveportla.gov	318-673-6900
Ryan Nelson	Chief of Police	Vivian Police Department	121 N Pine St Vivian, LA 71082	viviandispatch@centurylink.net	318-375-9214
Helen Adger	Mayor	Village of Gilliam	P. O. Box 247 Gilliam, LA 71029		318-296-4393

Program Integration

Local governments are required to describe how their mitigation planning process is integrated with other ongoing local and area planning efforts. This subsection describes Caddo Parish programs and planning.

A measure of integration and coordination is achieved through the Hazard Mitigation Plan participation of steering committee members and community stakeholders, who administer programs such as floodplain management under the National Flood Insurance Program (NFIP) and parish planning and zoning and building code enforcement.

Opportunities to integrate the requirements of this Hazard Mitigation Plan into other local planning mechanisms will continue to be identified through future meetings of the parish and jurisdictions, and through the five-year review process described in the Plan Maintenance section. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update, and implementation of each jurisdiction's individual city/town plans that require specific planning and

administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the Caddo Parish Hazard Mitigation Steering Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the parish. Existing plans, studies, and technical information were incorporated in the planning process. Examples include flood data from FEMA, the U.S. Army Corps of Engineers (USACE or Corps), and the U.S. Geological Survey. Much of this data was incorporated into the risk assessment component of the plan relative to plotting historical events and the magnitude of damages that occurred. The parish's 2005 Hazard Mitigation Plan was also used in the planning process. Other existing parish and jurisdiction data and plans reviewed and/or incorporated into the planning process include those listed below:

- Emergency Operations Plan
- State of Louisiana's Hazard Mitigation Plan
- Flood Insurance Rate Maps

Further information on other plans and capabilities reviewed can be found in the Capabilities Assessment, Section 3.

Meeting Documentation and Public Outreach Activities

The following pages contain information from the meetings and public outreach activities conducted during this Hazard Mitigation Plan Update for Caddo Parish.

Meeting #1: Coordination Discussion

Date: January 22, 2016
Location: Email
Purpose: Discuss with the Hazard Mitigation Lead for the parish (OHSEP Director) the expectations and requirements of the Hazard Mitigation Plan Update process and to establish and initial project timeline.
Public Initiation: No
Invitees Included: Caddo Parish OHSEP, SDMI Staff

Meeting #2: Hazard Mitigation Plan Update Kick-Off

Date: February 18, 2016

Location: Shreveport, LA

Purpose: Discuss the expectations and requirements of the Hazard Mitigation Plan Update process and to establish and initial project timeline with the parish's Hazard Mitigation Plan Steering Committee. Assign each individual jurisdiction and the parish data collection for the plan update.

Public Initiation: No

Invitees Included:

Name	Title	Agency
John Fourcade	Supervisor	Belcher Police Department
Major Fant	Chief of Police	Belcher Police Department
Debra Smith	Town Clerk	Blanchard
Gary Presswood	Chief of Police	Blanchard Police Department
Bryant Williams	Fire Chief	Caddo Fire District 4
Keith Harris	Fire Chief	Caddo Fire District 5
Damon Johnson	Fire Chief	Caddo Fire District 6
Danny Richardson	Fire Chief	Caddo Fire District 7
Jay Paulette	Fire Chief	Caddo Fire District 8
Ali Mustapha	Administrator	Caddo Levee Board
James Demouchet	Environmental Service Control	Caddo Parish
Tim Weaver	Public Works	Caddo Parish
Randy Lucky	Assistant Administrator	Caddo Parish Commission
Woody Wilson	Parish Administrator	Caddo Parish Commission
Dan Cotten	Fire Chief	Caddo Parish Fire District 1
Jeff Akes	Assistant Fire Chief	Caddo Parish Fire District 1
Ernest Mitchell	Fire Chief	Caddo Parish Fire District 3
DE Stevens	Chief Deputy	Caddo Parish Sheriff's Office
Steve Prator	Sheriff	Caddo Parish Sheriff's Office
Lisa Carmack	Homeland Security Manager	Caddo Parish Sheriff's Office OHSEP
Robert Jump	Deputy Director	Caddo Parish Sheriff's Office OHSEP
Tony LeBlanc	Field Operations Manager	Caddo Parish Sheriff's Office OHSEP
Barbara Featherson	Director, Water & Sewerage	City of Shreveport
Brian Crawford	CAO	City of Shreveport
Patrick Furlong	Engineer	City of Shreveport
Ollie Tyler	Mayor	City of Shreveport
Shayne Gibson	Chief of Police	Greenwood Police Department
Whitlow Giles	Chief of Police	Hosston Police Department
David Austin	Chief of Police	Ida Police Department
Knox Andress	HRSA Region 7 Coordinator	Louisiana Poison Control Center
Tabitha Dendy	Water Clerk	Mooringsport
Tom Bass	Chief of Police	Oil City Police Department
Kisha McDow	Town Hall	Oil City Town Hall
Patrick Card	Emergency Manager	Overton Brooks VA
Cecil Littlejohn	Chief of Police	Rodessa Police Department
Scott Wolverton	Fire Chief	Shreveport Fire Department
Skip Pinkston	Chief of Specials Ops and Safety	Shreveport Fire Department
Bill Goodin	Chief Administrative Assistant	Shreveport Police Department
Willie Shaw	Chief of Police	Shreveport Police Department
Ryan Nelson	Chief of Police	Vivian Police Department
Helen Adger	Mayor	Village of Gilliam

Meeting #3: Risk Assessment Overview

Date: June 16, 2016

Location: Shreveport, LA

Purpose: Members of the Hazard Mitigation Plan Update Steering Committee were invited and were presented the results of the most recent risk assessment and an overview of the public meeting presentation during this overview. The assessment was conducted based on hazards identified during previous plans.

Public Initiation: No

Invitees Included:

Name	Title	Agency
John Fourcade	Supervisor	Belcher Police Department
Major Fant	Chief of Police	Belcher Police Department
Debra Smith	Town Clerk	Blanchard
Gary Presswood	Chief of Police	Blanchard Police Department
Bryant Williams	Fire Chief	Caddo Fire District 4
Keith Harris	Fire Chief	Caddo Fire District 5
Damon Johnson	Fire Chief	Caddo Fire District 6
Danny Richardson	Fire Chief	Caddo Fire District 7
Jay Paulette	Fire Chief	Caddo Fire District 8
Ali Mustapha	Administrator	Caddo Levee Board
James Demouchet	Environmental Service Control	Caddo Parish
Tim Weaver	Public Works	Caddo Parish
Randy Lucky	Assistant Administrator	Caddo Parish Commission
Woody Wilson	Parish Administrator	Caddo Parish Commission
Dan Cotten	Fire Chief	Caddo Parish Fire District 1
Jeff Akes	Assistant Fire Chief	Caddo Parish Fire District 1
Ernest Mitchell	Fire Chief	Caddo Parish Fire District 3
DE Stevens	Chief Deputy	Caddo Parish Sheriff's Office
Steve Prator	Sheriff	Caddo Parish Sheriff's Office
Lisa Carmack	Homeland Security Manager	Caddo Parish Sheriff's Office OHSEP
Robert Jump	Deputy Director	Caddo Parish Sheriff's Office OHSEP
Tony LeBlanc	Field Operations Manager	Caddo Parish Sheriff's Office OHSEP
Barbara Featherson	Director, Water & Sewerage	City of Shreveport
Brian Crawford	CAO	City of Shreveport
Patrick Furlong	Engineer	City of Shreveport
Ollie Tyler	Mayor	City of Shreveport
Shayne Gibson	Chief of Police	Greenwood Police Department
Whitlow Giles	Chief of Police	Hosston Police Department
David Austin	Chief of Police	Ida Police Department
Knox Andress	HRSA Region 7 Coordinator	Louisiana Poison Control Center
Tabitha Dendy	Water Clerk	Mooringsport
Tom Bass	Chief of Police	Oil City Police Department
Kisha McDow	Town Hall	Oil City Town Hall
Patrick Card	Emergency Manager	Overton Brooks VA
Cecil Littlejohn	Chief of Police	Rodessa Police Department
Scott Wolverton	Fire Chief	Shreveport Fire Department
Skip Pinkston	Chief of Specials Ops and Safety	Shreveport Fire Department
Bill Goodin	Chief Administrative Assistant	Shreveport Police Department
Willie Shaw	Chief of Police	Shreveport Police Department
Ryan Nelson	Chief of Police	Vivian Police Department
Helen Adger	Mayor	Village of Gilliam

Meeting #4: Public Meeting

Date: June 16, 2016

Location: Shreveport, LA

Purpose: The public meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the Caddo Parish communities were provided for the meeting attendees to identify specific areas where localized hazards occur.

Public Initiation: Yes

Invitees Included:

Name	Title	Agency
John Fourcade	Supervisor	Belcher Police Department
Major Fant	Chief of Police	Belcher Police Department
Debra Smith	Town Clerk	Blanchard
Gary Presswood	Chief of Police	Blanchard Police Department
Bryant Williams	Fire Chief	Caddo Fire District 4
Keith Harris	Fire Chief	Caddo Fire District 5
Damon Johnson	Fire Chief	Caddo Fire District 6
Danny Richardson	Fire Chief	Caddo Fire District 7
Jay Paulette	Fire Chief	Caddo Fire District 8
Ali Mustapha	Administrator	Caddo Levee Board
James Demouchet	Environmental Service Control	Caddo Parish
Tim Weaver	Public Works	Caddo Parish
Randy Lucky	Assistant Administrator	Caddo Parish Commission
Woody Wilson	Parish Administrator	Caddo Parish Commission
Dan Cotten	Fire Chief	Caddo Parish Fire District 1
Jeff Akes	Assistant Fire Chief	Caddo Parish Fire District 1
Ernest Mitchell	Fire Chief	Caddo Parish Fire District 3
DE Stevens	Chief Deputy	Caddo Parish Sheriff's Office
Steve Prator	Sheriff	Caddo Parish Sheriff's Office
Lisa Carmack	Homeland Security Manager	Caddo Parish Sheriff's Office OHSEP
Robert Jump	Deputy Director	Caddo Parish Sheriff's Office OHSEP
Tony LeBlanc	Field Operations Manager	Caddo Parish Sheriff's Office OHSEP
Barbara Featherson	Director, Water & Sewerage	City of Shreveport
Brian Crawford	CAO	City of Shreveport
Patrick Furlong	Engineer	City of Shreveport
Ollie Tyler	Mayor	City of Shreveport
Shayne Gibson	Chief of Police	Greenwood Police Department
Whitlow Giles	Chief of Police	Hosston Police Department
David Austin	Chief of Police	Ida Police Department
Knox Andress	HRSA Region 7 Coordinator	Louisiana Poison Control Center
Tabitha Dendy	Water Clerk	Mooringsport
Tom Bass	Chief of Police	Oil City Police Department
Kisha McDow	Town Hall	Oil City Town Hall
Patrick Card	Emergency Manager	Overton Brooks VA
Cecil Littlejohn	Chief of Police	Rodessa Police Department
Scott Wolverton	Fire Chief	Shreveport Fire Department
Skip Pinkston	Chief of Specials Ops and Safety	Shreveport Fire Department
Bill Goodin	Chief Administrative Assistant	Shreveport Police Department
Willie Shaw	Chief of Police	Shreveport Police Department
Ryan Nelson	Chief of Police	Vivian Police Department
Helen Adger	Mayor	Village of Gilliam

Subject Matter Experts from parish government were present to answer specific questions about proposed projects from any citizens

Meeting Public Notice

LSU STEPHENSON DISASTER MANAGEMENT INSTITUTE

CADDO PARISH OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

MEETING NOTICE – June 16, 2016

Caddo Parish to hold Public Meetings for Hazard Mitigation Plan Update

Shreveport, LA – Caddo Parish Office of Homeland Security & Emergency Preparedness is in the process of updating the Caddo Parish Hazard Mitigation Plan and are required to hold public meetings on the plan update. The Public meeting will be held on May 19th, in the Caddo Parish Emergency Operations Center located at 1144 Texas Ave, Shreveport, LA, from 9:30AM to 10:30AM.

Natural hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery (the actions that a community takes to repair damages), an equally important aspect of emergency management involves hazard mitigation - sustained actions taken to reduce long-term risk to life and property. They are things we do today to be more protected in the future. For example, elevating buildings in flood hazard areas, installing hurricane clips and storm shutters, relocating critical facilities out of hazard areas, using fire-resistant construction materials in wildfire hazard areas, etc. Hazard mitigation actions are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, they can be long-term, cost-effective means of reducing risk and helping to create a more sustainable and disaster-resilient community.

A hazard mitigation plan describes an area's vulnerability to the various natural hazards that are typically present, along with an array of actions and projects for reducing key risks. While natural disasters cannot be prevented from occurring, the continued implementation of mitigation strategies identified in the plan will gradually, but steadily, make our communities more sustainable and disaster-resilient.

The Disaster Mitigation Act of 2000 (DMA 2000) requires all states and local governments to have a hazard mitigation plan in order to be eligible to apply for certain types of federal hazard mitigation project grants. Hazard mitigation plans must be: (a) implemented on an ongoing basis, and (b) updated every five years to ensure that they remain applicable representations of local risk and locally-preferred risk reduction strategies.

Caddo Parish is in the stages of updating its hazard mitigation plan. Public meeting will be held on June 16th for all citizens interested in learning about and participating in discussions concerning the Caddo Parish Hazard Mitigation Plan.

Residents of Caddo Parish are asked to participate in a survey about public perceptions and opinions regarding natural hazards in the parish. The survey results will be used in the development of the plan. This short web-based survey can be found at https://www.surveymonkey.com/r/CaddoParish

For more information, please contact: Caddo Parish OHSEP Office

Stephenson Disaster Management Institute
Louisiana State University • 3000 Business Education Complex • Baton Rouge, Louisiana 70803

Outreach Activity #1: Public Opinion Survey

Date: Ongoing throughout planning process
Location: Web Survey
Public Initiation: Yes

Outreach Activity #2: Incident Questionnaire

Date: Public Meeting Activity
Location: Public Meeting
Public Initiation: Yes

Outreach Activity #3: Mapping Activities

Public meeting attendees were asked to identify areas on jurisdictional maps provided that were "problem areas". They were also asked to indicate any areas of new development. This activity gave the public an opportunity to interact with SDMI's GIS Mapping section, as well as provide valuable input on areas that may flood repeatedly during rain events that may not get reported to local emergency managers as significant events.

Public Plan Review Documentation

The Caddo Parish Hazard Mitigation Draft Plan was placed on the Caddo Parish website to collect comments and feedback from the public. This outreach provided the public an opportunity to comment on the plan during the drafting stage and prior to plan approval. No feedback or public comment was received during this time.

Appendix B: Plan Maintenance

Purpose

The section of the Code of Federal Regulations (CFR) pertaining to Local Mitigation Plans lists five required components for each plan: a description of the planning process; risk assessments; mitigation strategies; a method and system for plan maintenance; and documentation of plan adoption. This section details the method and system for plan maintenance, following the CFR's guidelines that the Plan Update must include (1) "a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle," (2) "a process by which local governments incorporated the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans", and (3) "discussion on how the community will continue public participation in the plan maintenance process."

Monitoring, Evaluating, and Updating the Plan

The Caddo Parish Planning Committee will be responsible for monitoring, evaluating, and documenting the plan's progress throughout the year. Part of the plan maintenance process should include a system by which local governing bodies incorporate the HMP into the parish's comprehensive or capital improvement plans. This process provides for continued public participation through the diverse resources of the parish to help in achieving the goals and objectives of the plan. Public participation will be achieved through availability of copies of HMP in parish public library and parish website. This section describes the whole update process which includes the following:

- Responsible parties
- Methods to be used
- Evaluation criteria to be applied
- Scheduling for monitoring and evaluating the plan

Responsible Parties

Caddo Parish has developed a method to ensure that a regular review and update of the Hazard Mitigation Plan occurs. This will be the responsibility of the steering committee, which consists of representatives from governmental organizations, local businesses, and private citizens, who will be involved in the process of monitoring, evaluating and updating the plan. All committee members in this plan will remain active in the steering committee.

Although the people filling the positions may change from year to year, the parish and its stakeholders will have representatives on the Steering Committee. The future Steering Committee will continue to be comprised of the same job functions as currently evident in the Steering Committee. However, the decision of specific job duties will be left to the Parish OHSEP Director to be assigned as deemed appropriate.

Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria

Caddo Parish has developed a method to ensure monitoring, evaluating, and updating of the HMP occurs during the five-year cycle of the plan. The planning committee will become a permanent body and will be responsible for monitoring, evaluating, and updating of the plan. The planning committee meeting will be held annually in order to monitor, evaluate, and update the plan. The Caddo Parish OHSEP Director will be responsible for conducting the annual planning committee meetings.

The lead person of the agency responsible for the implementation of a specific mitigation action will submit a progress report to the Director at least thirty days prior to the planning committee meeting. The progress report will provide project status monitoring to include the following: whether the project has started; if not started, reason for not starting; if started, status of the project; if the project is completed, whether it has eliminated the problem; and any changes recommended to improve the implementation of the project etc. In addition, the progress report will provide status monitoring on the plan evaluation, changes to the hazard profile, changes to the risk assessment, and public input on the Hazard Mitigation Plan updates and reviews.

Progress on the mitigation action items and projects will be reviewed during the annual planning committee meeting. The criteria that would be utilized in the project review will include the following:

1) Whether the action was implemented and reasons, if the action was not implemented

2) What were the results of the implemented action

3) Were the outcomes as expected, and reasons if the outcomes were not as expected

4) Did the results achieve the stated goals and objectives

5) Was the action cost-effective

6) What were the losses avoided after completion of the project

7) In case of a structural project, did it change the hazard profile

In addition to monitoring and evaluating the progress of the mitigation plan actions and projects, the mitigation plan is required to be maintained and monitored annually, and updated every five years. The annual maintenance, monitoring and evaluation of the plan will be conducted in the annual planning committee meeting. The planning committee will review each goal and objective to determine their relevance to changing situations in the parish, as well as changes to state or federal policy, and to ensure that they are addressing current and expected conditions. The planning committee will evaluate if any change in hazard profile and risk in the parish occurred during the past year. In addition, the evaluation will include the following criteria in respect of plan implementation:

1) Any local staffing changes that would warrant inviting different members to the planning committee

2) Any new organizations that would be valuable in the planning process or project implementation need to be included in the planning committee

3) Are there any procedures that can be done more efficiently

4) Are there more ways to gain more diverse and widespread cooperation

5) Are there any different or additional funding sources available for mitigation planning and implementation

The HMP will be updated every five years to remain eligible for continued HMGP funding. The planning committee will be responsible for updating the HMP. The OHSEP Director will be the lead person for the HMP update. The HMP update process will commence at least one year prior to the expiration of the plan. The HMP will be updated after a major disaster if an annual evaluation of the plan indicate a substantial change in hazard profile and risk assessment in the parish.

Additionally, the public will be canvassed to solicit public input to continue Caddo Parish's dedication to involving the public directly in review and updates of the Hazard Mitigation Plan. Meetings will be scheduled as needed by the plan administrator to provide a forum for which the public can express their concerns, opinions, and/or ideas about the plan. The plan administrator will be responsible for using parish resources to publicize the annual public meetings and maintain public involvement through the newspapers, radio, and public access television channels. Copies of the plan will be catalogued and kept at all appropriate agencies in the city government, as well as at the Public Library.

The review by the steering committee and input from the public will determine whether a plan update is needed prior to the required five-year update.

Annual Reports on the progress of actions, plan maintenance, monitoring, evaluation, incorporation into existing planning programs, and continued public involvement will be documented at each annual meeting of the committee and kept by the Parish OHSEP Director. The Steering Committee will work together as a team, with each member sharing responsibility for completing the monitoring, evaluation and updates. It is the responsibility of the Parish OHSEP Director for contacting committee members, organizing the meeting and providing public noticing for the meeting to solicit public input.

2016 Plan Version Plan Method and Schedule Evaluation

For the current plan update, the previously approved plan's method and schedule were evaluated to determine if the elements and processes involved in the required 2016 update. Based on this analysis, the method and schedule were deemed to be acceptable, and nothing was changed for this update.

Incorporation into Existing Planning Programs

It is and has been the responsibility of the Caddo Parish Hazard Mitigation Plan Steering Committee and participating jurisdictions to determine additional implementation procedures when appropriate. This may include integrating the requirements of the Caddo Parish Hazard Mitigation Plan into each jurisdiction's planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances
- Comprehensive Master Plan
- Capital Improvements Plan
- Economic Development Plan
- Emergency Operations Plan
- Continuity of Operations Plan
- Transportation Plan
- Stormwater Management Plan
- Community Wildfire Protection Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the Caddo Parish Hazard Mitigation Steering Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.). The members of the steering committee will meet with Department Heads to discuss what should be included in the changes

that are necessary before the changes are introduced to the city council or police jury meetings. Steering committee members will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Caddo Parish Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability within the parish.

During the planning process for new and updated local planning documents at the parish and jurisdiction level, such as a risk assessment, comprehensive plan, capital improvements plan, or emergency operations plan, the jurisdictions will provide a copy of the Parish Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Parish Hazard Mitigation Plan and will not contribute to increased hazards.

Although it is recognized that there are many possible benefits to integrating components of this plan into other parish and jurisdiction planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the steering committee to be the most effective and appropriate method to ensure implementation of parish and local hazard mitigation actions.

On behalf of the jurisdictions of the Village of Belcher, Town of Blanchard, Village of Gilliam, Town of Greenwood, Village of Hosston, Town of Ida, Town of Mooringsport, Town of Oil City, Village of Rodessa, City of Shreveport, and Town of Vivian, Caddo Parish has the authority to incorporate the contents of the Hazard Mitigation Plan into the parish's existing regulatory mechanisms. Agreements are currently in place with jurisdictions to allow for the parish incorporation mechanisms to take place.

The following parish and local plans incorporate requirements of this HMP Update as follows through steering committee member and jurisdiction representation throughout the planning process as described above:

Unincorporated Caddo Parish
Comprehensive Master Plan/Updated as needed/Caddo Parish Commission
Capital Improvements Plan/Updated as needed/Caddo Parish Commission
Economic Development Plan/Updated as needed/Caddo Parish Commission
Local Emergency Operations Plan/Updated as needed/Caddo Parish OHSEP
Continuity of Operations Plan/Updated as needed/Caddo Parish OHSEP
Stormwater Management Plan/Updated as needed/Caddo Parish Commission
Community Wildfire Plan/Updated as needed/Caddo Parish OHSEP

Village of Belcher
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Town of Blanchard
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Village of Gilliam
Continuity of Operations Plan/Updated as needed/Caddo Parish OHSEP and Mayor of Gilliam

Town of Greenwood
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Village of Hosston
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Town of Ida
Stormwater Management Plan/Updated as needed/Caddo Parish Commission and Mayor of Ida

Town of Mooringsport
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Town of Oil City
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Village of Rodessa
Comprehensive Master Plan/Updated as needed/Caddo Parish Commission and Mayor of Rodessa
Local Emergency Operations Plan/Updated as needed/Caddo Parish OHSEP and Mayor of Rodessa

City of Shreveport
Comprehensive Master Plan/Updated as needed/Caddo Parish Commission and Mayor of Shreveport
Capital Improvements Plan/Updated as needed/Caddo Parish Commission and Mayor of Shreveport
Economic Development Plan/Updated as needed/Caddo Parish Commission and Mayor of Shreveport
Local Emergency Operations Plan/Updated as needed/Caddo Parish OHSEP and Mayor of Shreveport
Continuity of Operations Plan/Updated as needed/Caddo Parish OHSEP and Mayor of Shreveport
Transportation Plan/Update as needed/ Caddo Parish Commission and Mayor of Shreveport
Stormwater Management Plan/Updated as needed/ Caddo Parish Commission and Mayor of Shreveport

Town of Vivian
There are no additional plans within this jurisdiction for the Hazard Mitigation Plan to be integrated.

Continued Public Participation

Public participation is an integral component of the mitigation planning process and will continue to be essential as this plan evolves over time. Significant changes or amendments to the plan require a public hearing prior to any adoption procedures. Other efforts to involve the public in the maintenance, evaluation, and revision process will be made as necessary. These efforts will include at least one of the following:

- Advertising meetings of the Mitigation Committee in the local newspaper, public bulletin boards, and/or city and county office buildings
- Designating willing and voluntary citizens and private sector representatives as official members of the Mitigation Committee
- Utilizing local media to update the public of any maintenance and/or periodic review activities taking place
- Utilizing city and parish web sites to advertise any maintenance and/or periodic review activities taking place
- Keeping copies of the plan in appropriate public locations

This Page Left Intentionally Blank

Appendix C: Essential Facilities

Caddo Parish Essential Facilities – All Jurisdictions

Caddo Parish Unincorporated Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire Department Station 4				X	X	X	X	X	X			
	Caddo Fire District 1 Blanchard Station				X	X	X	X	X	X			
	Caddo Fire District 1 Longwood Station				X	X	X	X	X	X			
	Caddo Fire District 5 Central Station				X	X	X	X	X				
	Caddo Fire Protection District 1				X	X	X	X	X	X			
	Caddo Fire District 1 Central Fire Station				X	X	X	X	X	X			
	Caddo Fire District 3 Station 2				X	X	X	X	X	X			
	Caddo Fire District 3 Station 3				X	X	X	X	X	X			
	Caddo Fire District 4 Central Station				X	X	X	X	X	X			
	Caddo Fire District 4 Station 2				X	X	X	X	X	X			
	Caddo Fire District 4 Station 3				X	X	X	X	X				
	Caddo Fire District 4 Station 4				X	X	X	X	X	X			
	Caddo Fire District 6 Central Station				X	X	X	X	X	X			
	Caddo Fire District 6 Station				X	X	X	X	X	X			
	Caddo Fire District 7 Station 3			X	X	X	X	X	X	X			
	Caddo Fire District Station 3				X	X	X	X	X	X			
	Fire Station				X	X	X	X	X	X			

Caddo Parish Unincorporated Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Rodessa Fire Station				X	X	X	X	X				
	Vivian Fire Department				X	X	X	X	X	X			
Government	Caddo Highway Dept. South Camp			X	X	X	X	X	X	X			
	Caddo Parish Holdings			X	X	X	X	X	X				
	Caddo Parish Public Works Longwood			X	X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center			X	X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center			X	X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center			X	X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center			X	X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center			X	X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center			X	X	X	X	X	X	X			
	Caddo Schools Warehouse			X	X	X	X	X	X				
	Caddo Sewer District 2			X	X	X	X	X	X	X			
	Eagle Water			X	X	X	X	X	X	X			
	Water District 7			X	X	X	X	X	X	X			
	Woolworth Road Landfill			X	X	X	X	X	X				

Caddo Parish Unincorporated Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Law Enforcement	Caddo Parish Sheriff's Office				X	X	X	X	X	X			
	Caddo Parish Sheriff's Office				X	X	X	X	X	X			
	Caddo Sheriff's Office - Investigation				X	X	X	X	X	X			
	Caddo Sheriff's Office - Training				X	X	X	X	X				
	Caddo Sheriff's Office Substation				X	X	X	X	X	X			
Corrections	David Wade Correctional Facility				X	X	X	X	X				
Schools	Donnie Bickham Middle School				X	X	X	X	X	X			
	Herndon Magnet School				X	X	X	X	X				
	Jack P. Timmons Elementary School				X	X	X	X	X				
	Keithville Elementary Middle School				X	X	X	X	X	X			
	University Christian Prep School - Vacant				X	X	X	X	X	X			

Belcher Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire District 7 Station 4				X	X	X	X	X				
Government	Caddo Parish Residential Waste Disposal and Recycling Center				X	X	X	X	X				

Blanchard Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire District 1 Station 2				X	X	X	X	X				
	Caddo Fire District 1 Station 3				X	X	X	X	X	X			
Government	Blanchard Town Hall				X	X	X	X	X	X			
	Blanchard Utilities				X	X	X	X	X	X			
	Caddo Parish Residential Waste Disposal and Recycling Center				X	X	X	X	X	X			
Law Enforcement	Blanchard Police				X	X	X	X	X	X			
Schools	Blanchard Elementary School												
	Northwood High School				X	X	X	X	X	X			

Gilliam Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Gilliam Fire Station				X	X	X	X	X				
Government	Caddo Parish Residential Waste Disposal and Recycling Center				X	X	X	X	X	X			
	Gilliam Village Hall				X	X	X	X	X	X			

Greenwood Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire District 3 Station				X	X	X	X	X				
Law Enforcement	Greenwood Police Department				X	X	X	X	X	X			
Government	Greenwood Town hall			X	X	X	X	X	X	X			
	Greenwood Water Department			X	X	X	X	X	X	X			

Hosston Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Hosston Fire Station				X	X	X	X	X				
Government	Caddo Parish Residential Waste Disposal and Recycling Center				X	X	X	X	X	X			
	Hosston Village Hall				X	X	X	X	X	X			

Ida Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Ida Fire Station				X	X	X	X	X				
Government	Ida Town Hall				X	X	X	X	X				
	Ida Waste Disposal				X	X	X	X	X	X			

Mooringsport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire District 7 Station 5				X	X	X	X	X				
Government	Caddo Public Works Trash Repository				X	X	X	X	X	X			
	Mooringsport Town Hall				X	X	X	X	X	X			
Schools	Mooringsport Elementary School				X	X	X	X	X	X			

Oil City Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire District 7 Station 1				X	X	X	X	X				
Government	Caddo Parish Residential Waste Disposal and Recycling Center				X	X	X	X	X				
	Oil City Municipal Complex				X	X	X	X	X	X			
Schools	Oil city Elementary School				X	X	X	X	X	X			

Rodessa Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Government	Rodessa Residential Waste and Storage				X	X	X	X	X	X			
	Rodessa Village Hall				X	X	X	X	X	X			

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Caddo Fire Department Station 17				X	X	X	X	X	X			
	Caddo Parish Fire Department				X	X	X	X	X				
	Caddo Parish Fire District 5				X	X	X	X	X	X			
	City of Shreveport Fire Station 22				X	X	X	X	X				
	Dallas W. Greene Central Fire Station				X	X	X	X	X				
	Fire Station 13				X	X	X	X	X				
	Fire Station 14				X	X	X	X	X				
	Fire Station 19				X	X	X	X	X				
	Fire Station 20				X	X	X	X	X	X			
	Fire Station 3			X	X	X	X	X	X				
	Fire Station 7				X	X	X	X	X				
	Shreveport Fire Department Engine Co 8				X	X	X	X	X				
	Shreveport Fire Department 4				X	X	X	X	X				
	Shreveport Fire Department Prevention Bureau				X	X	X	X	X				
	Shreveport Fire Department Station				X	X	X	X	X				
	Shreveport Fire Department Station 18				X	X	X	X	X	X			
	Shreveport Fire Department Station 2				X	X	X	X	X	X			
	Shreveport Fire Department Station 5				X	X	X	X	X				
	Vivian Fire Department 18				X	X	X	X	X	X			
Government	Better Business Bureau				X	X	X	X	X				
	Caddo Commission				X	X	X	X	X				
	Caddo Levee District				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Caddo Parish Animal Shelter				X	X	X	X	X				
	Caddo Parish Communications District				X	X	X	X	X				
	Caddo Parish Council on Aging				X	X	X	X	X				
	Caddo Parish Courthouse				X	X	X	X	X				
	Caddo Parish School Board				X	X	X	X	X				
	Caddo Parish Schools Transportation Department				X	X	X	X	X				
	Caddo Parish Truancy Center				X	X	X	X	X				
	Caddo Parish Warehouse				X	X	X	X	X				
	Caddo-Shreveport Sales & Use Tax Commission				X	X	X	X	X				
	Chamber of Commerce				X	X	X	X	X				
	City of Shreveport Dept. of Public Works			X	X	X	X	X	X				
	City of Shreveport Property Standards				X	X	X	X	X				
	City of Shreveport Recreation Department				X	X	X	X	X				
	City of Shreveport Water & Sewerage				X	X	X	X	X				
	City Vehicle Shed				X	X	X	X	X				
	Council on Alcoholism & Drug Abuse of Northwest Louisiana				X	X	X	X	X				
	Department of Community Development				X	X	X	X	X				
	Department of Public Works Traffic Engineering Division				X	X	X	X	X				
	DOTD - Project Engineers Office				X	X	X	X	X				
	DOTD Project Engineer's Office				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Downtown Development Authority				X	X	X	X	X				
	Employee Assistance Program of Louisiana				X	X	X	X	X				
	Farm Bureau Caddo Parish			X	X	X	X	X	X				
	Farm Bureau Caddo Parish			X	X	X	X	X	X				
	Francis P. Bickham Building				X	X	X	X	X				
	Government Plaza				X	X	X	X	X				
	Housing Authority of Shreveport				X	X	X	X	X				
	Internal Revenue Service				X	X	X	X	X				
	Juvenile Justice Complex - Juvenile Services				X	X	X	X	X				
	Louisiana Department of Veteran Affairs				X	X	X	X	X				
	Louisiana Office of Motor Vehicles				X	X	X	X	X	X			
	Louisiana State Office Building				X	X	X	X	X				
	Louisiana State Senate Office				X	X	X	X	X	X			
	Louisiana Workforce Commission				X	X	X	X	X	X			
	Louisiana Workforce Commission				X	X	X	X	X				
	Maintenance Facility Housing Authority				X	X	X	X	X				
	Northwest Louisiana Human Services District				X	X	X	X	X				
	Old Municipal Building				X	X	X	X	X				
	Shreveport African American Chamber of Commerce				X	X	X	X	X				
	Shreveport City Courthouse				X	X	X	X	X				
	Shreveport Metal Building Association				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Shreveport Public Assembly & Recreation Department				X	X	X	X	X				
	Social Security Administration				X	X	X	X	X				
	State of Louisiana Probation & Parole Office			X	X	X	X	X	X				
	State of Louisiana Second Circuit Court of Appeal				X	X	X	X	X				
	U.S. Army Corps of Engineers				X	X	X	X	X				
	U.S. Department of Veteran Affairs				X	X	X	X	X				
	United States Courthouse				X	X	X	X	X				
	Wanda L. Gunn Professional Development Center, Caddo Parish Schools				X	X	X	X	X				
Law Enforcement	Caddo Sheriff's Department				X	X	X	X	X				
	Caddo Sheriff's Department - Marine			X	X	X	X	X	X				
	North Louisiana Crime Lab				X	X	X	X	X				
	Shreveport Police				X	X	X	X	X				
	Shreveport Police - Cross Lake Patrol				X	X	X	X	X	X			
	Shreveport Police Department - Mounted Police				X	X	X	X	X				
	Shreveport Police Department				X	X	X	X	X				
	Shreveport Police Department - Downtown Unit				X	X	X	X	X				
	Shreveport Police Department - Neighborhood Assistance Team				X	X	X	X	X				
Corrections	Caddo Parish Correctional Center				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Caddo Sheriff's Work Release Facility				X	X	X	X	X				
	Caddo Truancy Center and Misdemeanor Program				X	X	X	X	X				
	Juvenile Justice Complex				X	X	X	X	X				
	Shreveport City Jail				X	X	X	X	X				
Public Health	Christus Schumpert Healthplex			X	X	X	X	X	X				
	Doctor's Hospital				X	X	X	X	X				
	Overton Brooks VA Medical Center				X	X	X	X	X				
	Promise Hospital of Louisiana				X	X	X	X	X				
	St. Jude Children's Research Hospital				X	X	X	X	X				
	Stonewall Hospital				X	X	X	X	X				
	VA Medical Center Annex				X	X	X	X	X				
Schools	Atkins Literacy				X	X	X	X	X				
	Barret Paideia Academy				X	X	X	X	X				
	Booker T. Washington High School				X	X	X	X	X				
	Broadmoor Middle Laboratory School				X	X	X	X	X				
	C.E. Byrd High School				X	X	X	X	X				
	Caddo Heights Math/Science Elementary School				X	X	X	X	X				
	Caddo Middle Magnet				X	X	X	X	X				
	Caddo Parish Magnet High School				X	X	X	X	X				
	Calvary				X	X	X	X	X				
	Captain Shreve High School				X	X	X	X	X				
	Central Elementary VACANT				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Cherokee Park Elementary School				X	X	X	X	X				
	Claiborne Fundamental Magnet Elementary				X	X	X	X	X				
	Colquitt Christian Academy				X	X	X	X	X	X			
	Creswell Elementary				X	X	X	X	X				
	Creswell Elementary				X	X	X	X	X				
	E. B. Williams Stoner Hill Elementary School				X	X	X	X	X				
	Eden Gardens Magnet				X	X	X	X	X				
	Evangel Christian Academy				X	X	X	X	X	X			
	Fairfield Elementary Magnet School				X	X	X	X	X				
	Fairpark High				X	X	X	X	X				
	First Baptist School				X	X	X	X	X				
	Forest Hill Elementary School				X	X	X	X	X	X			
	George P. Hendrix Elementary - Vacant				X	X	X	X	X				
	Green Oaks Performing Arts Academy				X	X	X	X	X	X			
	Hamilton Terrace Learning Center				X	X	X	X	X				
	Huntington High				X	X	X	X	X	X			
	J.S. Clark Elementary School				X	X	X	X	X				
	Judson Elementary				X	X	X	X	X				
	Linear Leadership Academy				X	X	X	X	X	X			
	Linwood Public Charter				X	X	X	X	X				
	M.J. Moore Middle School				X	X	X	X	X	X			
	Magnolia School of Excellence				X	X	X	X	X				
	Midway Elementary				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Mooretown Elementary				X	X	X	X	X				
	Newton Smith 6th Grade Center				X	X	X	X	X	X			
	North Highlands Multimedia Performing Arts School				X	X	X	X	X	X			
	Northside Elementary				X	X	X	X	X	X			
	Oak Park Elementary				X	X	X	X	X				
	Pine Grove Elementary				X	X	X	X	X	X			
	Queensborough Elementary School				X	X	X	X	X				
	Ridgewood Middle School				X	X	X	X	X	X			
	Riverside Elementary				X	X	X	X	X				
	SH Magnet				X	X	X	X	X				
	Shreve Island Elementary				X	X	X	X	X				
	Southern Hills Elementary School				X	X	X	X	X	X			
	Southwood High				X	X	X	X	X	X			
	St. John Berchmans Catholic School				X	X	X	X	X				
	St. Mark's Cathedral School				X	X	X	X	X				
	St. Mark's Cathedral School				X	X	X	X	X				
	Summer Grove Elementary				X	X	X	X	X	X			
	Summerfield Elementary School				X	X	X	X	X	X			
	Sunset Acres Elementary				X	X	X	X	X				
	The Goldman School				X	X	X	X	X				
	Turner Elementary / Middle School				X	X	X	X	X	X			
	University Elementary				X	X	X	X	X	X			
	University Montessori School				X	X	X	X	X				
	Unknown School				X	X	X	X	X				

Shreveport Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
	Walnut Hill Middle				X	X	X	X	X				
	Werner Park Elementary				X	X	X	X	X				
	West Shreveport Elementary School				X	X	X	X	X				
	Westwood Elementary				X	X	X	X	X				
	Word of God Academy				X	X	X	X	X	X			
	Youree Drive Middle School				X	X	X	X	X				

Vivian Essential Facilities													
Type	Name	Drought*	Extreme Heat*	Flooding	Hail	Lightning	Wind	Tornado	Tropical Cyclone	Wildfire	Winter Storms*	Dam Failure+	Levee Failure+
Fire and Rescue	Vivian Fire Department				X	X	X	X	X	X			
	Vivian Fire Department 2				X	X	X	X	X	X			
Law Enforcement	Vivian Police Department				X	X	X	X	X	X			
	Vivian Police Training Facility				X	X	X	X	X				
Public Health	North Caddo Medical Hospital				X	X	X	X	X				
Government	Caddo Parish Highway Department				X	X	X	X	X	X			
	Department of Public Safety				X	X	X	X	X				
	Vivian Maintenance Unit				X	X	X	X	X	X			
	Vivian Town Hall				X	X	X	X	X	X			
Schools	North Caddo High School				X	X	X	X	X	X			
	Vivian Elementary and Middle School				X	X	X	X	X	X			

*No critical facilities are vulnerable to the hazard

+Unknown due to data deficiency

Appendix D: Plan Adoption

Mike Spence, Caddo Clerk of Court
2634913
02/13/2017 03:09 PM
Number of Pages: 1

RESOLUTION NO. 10 OF 2017

BY THE CADDO PARISH COMMISSION:

A RESOLUTION, RELATIVE TO HAZARD MITIGATION, TO ADOPT AN UPDATED HAZARD MITIGATION PLAN, AND OTHERWISE PROVIDING WITH RESPECT THERETO.

WHEREAS, the Parish of Caddo has prepared a multi-hazard mitigation plan hereby known as the Caddo Parish Hazard Mitigation Plan Update 2016 in accordance with the Disaster Mitigation Act of 2000;

WHEREAS, the Parish of Caddo has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS, the Parish of Caddo is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS, the Parish of Caddo and local city representatives and governments have participated in the mitigation planning process;

WHEREAS, appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS, the Caddo Parish Hazard Mitigation Plan 2016 has been recommended for adoption by the Steering Committee;

WHEREAS, the Caddo Parish Hazard Mitigation Plan 2016 has been favorably reviewed by the Governor's Office of Homeland Security and Federal Emergency Management Agency; and

WHEREAS, adoption of the Plan is required prior to further consideration for FEMA funding under the following programs: Pre-Disaster Mitigation, Hazard Mitigation Grant Program, and Flood Mitigation Assistance Program;

NOW, THEREFORE, BE IT RESOLVED by the Caddo Parish Commission in due, regular and legal session convened, that the Caddo Parish Commission does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2016.

BE IT FURTHER RESOLVED that the Parish Administrator is authorized to take any and all action to execute documents necessary to submit and effectuate the Caddo Parish Hazard Mitigation Plan Update 2016.

BE IT FURTHER RESOLVED if any provision or item of this resolution or the application thereof is held invalid, such invalidity shall not affect other provisions, items or applications which can be given effect without the invalid provisions, items or applications, and to this end, the provisions of this resolution are hereby declared severable.

BE IT FURTHER RESOLVED that this resolution shall take effect immediately.

BE IT FURTHER RESOLVED that all resolutions or parts thereof in conflict herewith are hereby repealed.

Approved as to legal form:

Parish Attorney

January 23, 2017

Date

I, Todd Hopkins, Clerk to the Caddo Parish Commission, hereby certify that the foregoing is a true copy of the transaction of said body in regular session convened on the 19th day of January, 2017, and is so recorded in Minute Book No. 67, at Page 206.

Given under my hand and seal of office this 10th day of February, 2017.

Clerk of Parish Commission
Caddo Parish, Louisiana

Village of Belcher

RESOLUTION 1 OF 2017

A RESOLUTION ADOPTING THE

CADDO PARISH HAZARD MITIGATION PLAN 2016

WHEREAS the Village of Belcher has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the Village of Belcher has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS the Village of Belcher is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of the Steering Committee comprised of Parish-Wide representatives;

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS the Plan has been recommended for adoption by the steering committee;

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

Therefore, the Village of Belcher does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2016.

ADOPTED by vote of two in favor and none against, and none abstaining, on this the 6th day of February, 2017.

VILLAGE OF BELCHER

Jennifer C. Fant, Mayor

Dianna H. White, Clerk

Resolution 5 of 2017

Resolution Adopting the Caddo Parish Hazard Mitigation Plan 2017

WHEREAS, the Town of Blanchard Mayor and Council recognize the threat that natural hazards pose to people and property within Blanchard; and

WHEREAS, the Caddo Parish Commission has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH HAZARD MITIGATION PLAN 2017 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, Caddo Parish Hazard Mitigation Plan 2017 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Blanchard from the impacts of future hazards and disasters; and

WHEREAS, the Town of Blanchard is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives; and

WHEREAS, the Plan has been recommended for adoption by the steering committee;

WHEREAS, adoption by the Town of Blanchard Council demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Caddo Parish Hazard Mitigation Plan 2017; and

WHEREAS, adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

NOW THEREFORE, BE IT RESOLVED that the Town of Blanchard Council hereby adopts the Caddo Parish Hazard Mitigation Plan 2017.

Motion to accept Resolution 5 of 2017 made by Whittington, second by Fuller. All voted yea. And Resolution 5 of 2017 was adopted on this 14th day of February, 2017.

Jim Galambos, Mayor

Candy Foshee, Asst. to Town Clerk

VILLAGE OF GILLIAM

RESOLUTION 1 OF 2017

A RESOLUTION ADOPTING THE

CADDO PARISH HAZARD MITIGATION PLAN 2016

WHEREAS the **Village of Gilliam** has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the **Village of Gilliam** has participated in the process to prepare a DMA compliant hazard Mitigation Plan based in the FEMA guidance available in the How to Guides; and

WHEREAS the **Village of Gilliam** is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of the Steering Committee comprised of Parish-Wide representatives; and

WHEREAS the Caddo Parish and local city representatives and governments have participated in the mitigation planning process; and

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, openmeetings and availability of draft documents; and

WHEREAS the Plan has been recommended for adoption by the steering committee; and

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

Pre-disaster Mitigation
Hazard mitigation Grant Program
Flood Mitigation Assistance Program

Therefore, the Village of Gilliam does hereby adopt the Caddo parish Hazard Mitigation Plan Update 2016.

ADOPTED by vote of 3 in favor and 0 against, and 0 obstaining, on the 3rd day of October, 2017.

VILLAGE OF GILLIAM

Helen Adger, Mayor

Daliah Godfrey, Clerk

TOWN OF GREENWOOD
PARISH OF CADDO
STATE OF LOUISIANA

RESOLUTION NO. 1 OF 2017

Title: **A RESOLUTION ADOPTING THE CADDO PARISH-WIDE HAZARD MITIGATION PLAN**

WHEREAS, the Caddo Parish Commission has prepared a multi-hazard mitigation plan herby known as the Caddo Parish Hazard Mitigation Plan 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, The Town of Greenwood has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based on the FEMA guidance available in the How to Guides; and,

WHEREAS, The Town of Greenwood is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government authority under the oversight of a Steering Committee comprised of Parish- wide representatives;

WHEREAS, Caddo Parish and local representatives and governments have participated in the mitigation planning process; and,

WHEREAS, Appropriate opportunity for input by public and community officials has been provided through press releases, open meetings and availability of draft documents; and,

WHEREAS, The Plan has been recommended for adoption by the Steering Committee; and

WHEREAS, Adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

NOW, THEREFORE, BE IT RESOLVED by the Town of Greenwood that the Mayor and through its governing authority, The Board of Alderman, hereby adopts the Caddo Parish Hazard Mitigation Plan 2016.

Certificate

I, Veronica Brown, Clerk for the Town of Greenwood hereby certify that the above constitutes true and accurate copy of a Resolution, which UPON MOTION of Alderman Robinson, and seconded by Alderman Newsom. Approved by the following Roll call vote:

YEAS:	(5) Robinson, Ilgenfritz, Newsom, Edwardes, Larsen
NAYS:	(0)
ABSENT:	(0)
ABSTAIN:	(0)

And the same declared adopted by the Mayor this 17th day of January, 2017.

ATTEST:

Veronica Brown, Town Clerk
Greenwood, LA

RESOLUTION #6 OF 2017

A RESOLUTION ADOPTING THE

CADDO PARISH PARISH HAZARD MITIGATION PLAN 2017

WHEREAS the Caddo Parish Parish Commission has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH HAZARD MITIGATION PLAN 2017 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the Village of Hosston has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS the Village of Hosston is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS the Plan has been recommended for adoption by the steering committee;

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

Therefore, the Village of Hosston does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2017.

I, Daphanie Heldebrandt, Clerk of the Village of Hosston, Louisiana, hereby certify the above constitutes a true and accurate copy of a resolution, which was read, introduced, and adopted on September 11, 2017, and after discussion and considered on motion made by Alderman Charlie Giles and seconded by Alderman Emmett Carter to adopt the said resolution, a record vote was taken and the following result was: passed by the following vote. YEAS: 2 NAYS: 0 ABSENT: 0

Motion carried with all Yeas.

Daphanie Heldebrandt, Town Clerk

Susie Giles, Mayor

VILLAGE OF HOSSTON SEAL 1966 LOUISIANA

Village Ida

RESOLUTION 4 OF 2017

A RESOLUTION ADOPTING THE

CADDO PARISH HAZARD MITIGATION PLAN 2016

WHEREAS the Village of Ida has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the Village of Ida has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides; and

WHEREAS the Village of Ida is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of the Steering Committee comprised of Parish-Wide representatives; and

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process; and

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents; and

WHEREAS the Plan has been recommended for adoption by the steering committee; and

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

Therefore, the Village of Ida does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2016.

ADOPTED by vote of 3 in favor and 0 against, and 0 abstaining, on this the 11th day of September, 2017.

Village of Ida

Kenneth Shaw

Kenneth Shaw, Mayor

Jimmie Kay

Jimmie Kay, Clerk

TOWN OF MOORINGSPORT
PARISH OF CADDO
STATE OF LOUISIANA

RESOLUTION NO.4 OF 2017

Title: A RESOLUTION ADOPTING THE CADDO PARISH-WIDE HAZARD MITIGATION PLAN

WHEREAS, the Caddo Parish Commission has prepared a multi-hazard mitigation plan hereby known as the Caddo Parish Hazard Mitigation Plan 2017 in accordance with the Disaster Mitigation Act of 2000; and,

WHEREAS, The Town of Mooringsport has participated in the process to prepare a DMA Compliant Hazard Mitigation Plan based on the FEMA guidance available in the How to Guides; and,

WHEREAS, The Town of Mooringsport is participating in the Hazard Mitigation Plan prepared by the Caddo Parish government authority under the oversight of a Steering Committee comprised of Parish-wide representatives;

WHEREAS, Caddo Parish and local representatives and governments have participated In the mitigation planning process; and,

WHEREAS, Appropriate opportunity for input by public and community officials has been provided through press releases, open meetings and availability of draft documents; and,

WHEREAS, The Plan has been recommended for adoption by the Steering Committee; and,

WHEREAS, Adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

NOW, THEREFORE, BE IT RESOLVED by the Town of Mooringsport that the Mayor and through its governing authority, The Council, hereby adopts the Caddo Parish Hazard Mitigation Plan 2017.

I, Jackie Drane, Clerk for the Town of Mooringsport hereby certify that the above Constitutes true and accurate copy of a Resolution, which UPON MOTION of PW, and seconded by TT. Approved by the following Roll call

Vote:

YEAS:
NAYS:
ABSENT:
ABSTAIN:

And the same declared adopted by this Mayor 11th day of May, 2017.

ATTEST: Ann Dearing

MAYOR ANN DEARING
Mooringsport, LA 71060

Jackie Drane

Jackie Drane
Town Clerk

RESOLUTION #5 of 2017

A RESOLUTION ADOPTING THE
CADDO PARISH PARISH HAZARD MITIGATION PLAN 2016

WHEREAS the Caddo Parish Commission has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the Town of Oil City has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS the Town of Oil City is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS the Plan has been recommended for adoption by the steering committee;

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

Therefore, the Town of Oil City does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2016.

I, Kisha McDow, Clerk of the Town of Oil City, Louisiana, hereby certify the above constitutes a true and accurate copy of a resolution, which was read, introduced and adopted on May 16th, 2017, and after discussion and considered on motion Barkschat and seconded by Jackson to adopt the said resolution, a record vote was taken and the following result was: passed by the following YEA and Nay vote.

YEAS: 5 NAYS: 0 ABSENT: 0

SEAL:

Kisha McDow, Town Clerk

James T. Sims, Mayor

From the Mayor's Office

Village of Rodessa

Post Office Box 336

Rodessa, Louisiana 71069

Phone (318)223-4211 Fax (318) 223-4214

RESOLUTION #3 of 2017

A RESOLUTION ADOPTING THE
CADDO PARISH PARISH HAZARD MITIGATION PLAN 2016

On a motion duly made by Alderman Sid Falgout and seconded by Alderman Dan Harville, the foregoing resolution was unanimously adopted at a regular scheduled public meeting of the Board of Aldermen of the Village of Rodessa, State of Louisiana, Parish of Caddo, held on the 13th day of March, 2017 at the Village Hall, pursuant to due notice according to the law and open to the public, at which meeting the majority of the members of the Board of Aldermen were present.

WHEREAS the Village of Rodessa has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH PARISH HAZARD MITIGATION PLAN 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the Village of Rodessa has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS the Village of Rodessa is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS the Plan has been recommended for adoption by the steering committee;

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs: Pre-Disaster Mitigation

- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

On a motion duly made by Alderman Sid Falgout and seconded by Alderman Dan Harville, the foregoing resolution was unanimously adopted at a regular scheduled public meeting of the Board of Aldermen of the Village of Rodessa, State of Louisiana, Parish of Caddo, held on the 13th day of March, 2017 at the Village Hall, pursuant to due notice according to the law and open to the public, at which meeting the majority of the members of the Board of Aldermen were present.

Therefore, the Village of Rodessa does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2016.

ADOPTED by a vote of 2 in favor and 0 against, and 0 abstaining, on this the 13th day of March, 2017.

CERTIFICATE

I hereby certify that the foregoing is a true and exact copy of the resolution adopted at the board meeting held on March 13, 2017 at which meeting a quorum was present and voting.

Village of Rodessa, Louisiana, this 13th day of March, 2017.

Paul W. Lockard, Mayor

RESOLUTION NO. 34 OF 2017

A RESOLUTION TO ADOPT THE CADDO PARISH HAZARD MITIGATION PLAN UPDATE AND OTHERWISE PROVIDING WITH RESPECT THERETO.

BY: COUNCILMAN CORBIN

WHEREAS the City of Shreveport has prepared a multi-hazard mitigation plan hereby known as the Caddo Parish Hazard Mitigation Plan 2016 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the City of Shreveport has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS the City of Shreveport is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS the Plan has been recommended for adoption by the steering committee;

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the Pre-Disaster Mitigation, the Hazard Mitigation Grant Program, and the Flood Mitigation Assistance Program.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Shreveport in due, legal and regular session convened, that the attached Caddo Hazard Mitigation Plan Update be and the same his hereby adopted.

BE IT FURTHER RESOLVED that if any provision or item of this resolution or the application thereof is held invalid, such invalidity shall not affect other provisions, items or applications of this resolution which can be given effect without the invalid provisions, items or applications; and to this end, the provisions of this resolution are hereby declared severable.

BE IT FURTHER RESOLVED that all ordinances or resolutions or parts thereof in conflict herewith are hereby repealed.

APPROVED AS TO LEGAL FORM:

_____
City Attorney's Office

RESOLUTION NO. 34 OF 2017

February 28, 2017

Read by title and as read motion by Councilman Corbin seconded by Councilman Bowman for Introduction. Approved by the following vote: Ayes: Councilmen Willie Bradford, Jeff Everson, Oliver Jenkins, Michael Corbin, James Flurry, Stephanie Lynch, and Jerry Bowman, Jr. 7. Nays: 0. Absent: 0. Out of the Chamber: 0. Abstentions: 0.

March 14, 2017

Read by title and as read motion by Councilman Corbin seconded by Councilman Bradford for adoption. Approved by the following vote: Ayes: Councilmen Willie Bradford, Jeff Everson, Oliver Jenkins, Michael Corbin, James Flurry, Stephanie Lynch, and Jerry Bowman, Jr. 7. Nays: 0. Absent: 0. Out of the Chamber: 0. Abstentions: 0.

James Flurry
James Flurry, Chairman

Approved:
Ollie S. Tyler
Ollie S. Tyler, Mayor

Approved by the City Council MAR 14 2017

Approved by the Mayor MAR 17 2017

And Effective on MAR 25 2017

at 12:01 O'clock A.M."

Arthur G. Thompson
Arthur G. Thompson, Clerk of Council

RESOLUTION OF THE BOARD OF ALDERMEN OF

TOWN OF VIVIAN

A RESOLUTION ADOPTING THE
CADDO PARISH HAZARD MITIGATION PLAN 2017

WHEREAS the Town of Vivian has prepared a multi-hazard mitigation plan hereby known as the CADDO PARISH HAZARD MITIGATION PLAN 2017 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the Town of Vivian has participated in the process to prepare a DMA compliant Hazard Mitigation Plan based in the FEMA guidance available in the How to Guides;

WHEREAS the Town of Vivian is participating in the Hazard Mitigation Plan prepared by the Caddo Parish Government under the oversight of a Steering Committee comprised of Parish-Wide representatives;

WHEREAS Caddo Parish and local city representatives and governments have participated in the mitigation planning process;

WHEREAS appropriate opportunity for input by public and community officials has been provided through meeting notices, open meetings and availability of draft documents;

WHEREAS the Plan has been recommended for adoption by the steering committee;

WHEREAS adoption of the Plan is required prior to further consideration for FEMA funding under the following programs:

- Pre-Disaster Mitigation
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program

Therefore, the Town of Vivian does hereby adopt the Caddo Parish Hazard Mitigation Plan Update 2016.

Motioned by Raymond Williams and seconded by Judy Wilson;

Yeas: Raymond Williams, Judy Wilson, Angela Channel, Mandi Burton, Denise Alexander.

Nays: None

Absent: None

This resolution was duly **PASSED** and **ADOPTED** this 11th day of September, 2017, and takes affect upon signing by the Mayor.

Sharleka Taylor, Town Clerk

Michael VanSchiock, Mayor

Appendix E: State Required Worksheets

During the planning process (Appendix A) the Hazard Mitigation Plan Update Steering Committee was provided state-required plan update process worksheets to be filled out by each jurisdiction. The worksheets were presented at the Kickoff Meeting by the contractor as tools for assisting in the update of the Hazard Mitigation Plan. The plan update worksheets allowed for collection of information such as planning team members, community capabilities, critical infrastructure and vulnerable populations and NFIP information. The following pages contain documentation of the worksheets.

Mitigation Planning Team

Name	Title	Agency	Address	Email	Phone
John Fourcade	Supervisor	Belcher Police Department	411 Charles Street Belcher, LA 71004	john.fourcade@caddosheriff.org	318-681-1117
Major Fant	Chief of Police	Belcher Police Department	411 Charles Street Belcher, LA 71004	majorfant@gmail.com	318-378-4209
Debra Smith	Town Clerk	Town of Blanchard	110 Main St Blanchard, LA 71009	debra@blanchardla.org	318-929-7593
Gary Presswood	Chief of Police	Blanchard Police Department	314 W Alexander Ave Blanchard, LA 71009	chiefpresswood@blanchardla.org	318-929-3700
Bryant Williams	Fire Chief	Caddo Fire District 4	8240 Colquitt Rd Keithville, LA 71047	caddofire4@aol.com	318-925-2200
Keith Harris	Fire Chief	Caddo Fire District 5	1675 Leonard Rd Shreveport, LA 71115	gkharris60@yahoo.com	318-797-4111
Damon Johnson	Fire Chief	Caddo Fire District 6	11450 Old Mansfield Rd Keithville, LA 71047	deezpc@aol.com	318-925-8791
Danny Richardson	Fire Chief	Caddo Fire District 7	300 Hwy 1 North Oil City, LA 71061	dannycfd7@bluebirdwireless.com	318-995-7114
Jay Paulette	Fire Chief	Caddo Fire District 8	1007 S Spruce Vivian, LA 71082	chiefjfw40@hotmail.com	318-375-3233
Ali Mustapha	Administrator	Caddo Levee Board	1320 Grimmett Dr Shreveport, LA 71107	amustapha@caddolevee.org	318-221-2654
James Demouchet	Environmental Service Control	Caddo Parish	505 Travis St, Suite 820 Shreveport, LA 71101	jdemouchet@caddo.org	318-226-6932

Tim Weaver	Public Works	Caddo Parish	505 Travis St Shreveport, LA 71101	tweaver@ caddo.org	318-226-6934
Randy Lucky	Assistant Administrator	Caddo Parish Commission	505 Travis St, Suite 800 Shreveport, LA 71101	rlucky@ caddo.org	318-226-6900
Woody Wilson	Parish Administrator	Caddo Parish Commission	505 Travis St, Suite 800 Shreveport, LA 71101	wwilson@ caddo.org	318-226-6900
Dan Cotten	Fire Chief	Caddo Parish Fire District 1	7058 Old Mooringsport Rd Blanchard, LA 71107	dancfd1@ gmail.com	318-929-3575
Jeff Akes	Assistant Fire Chief	Caddo Parish Fire District 1	7058 Old Mooringsport Rd Blanchard, LA 71107	jeff.akes@ gmail.com	318-929-3575
Ernest Mitchell	Fire Chief	Caddo Parish Fire District 3	9081 Hwy 80 Greenwood, LA 71033	firechief@ cfd3.org	318-938-5290
DE Stevens	Chief Deputy	Caddo Parish Sheriff's Office	505 Texas St Shreveport, LA 71101	de.stevents@ caddosheriff.org	318-681-0632
Steve Prator	Sheriff	Caddo Parish Sheriff's Office	501 Texas St, Room 101 Shreveport, LA 71101	steve.prator@ caddosheriff.org	318-681-0812
Lisa Carmack	Homeland Security Manager	Caddo Parish Sheriff's Office OHSEP	1144 Texas Ave Shreveport, LA 71101	lisa.carmack@ caddosheriff.org	318-675-2255
Robert Jump	Deputy Director	Caddo Parish Sheriff's Office OHSEP	1144 Texas Ave Shreveport, LA 71101	robert.jump@ caddosheriff.org	318-675-2255
Tony LeBlanc	Field Operations Manager	Caddo Parish Sheriff's Office OHSEP	1144 Texas Ave Shreveport, LA 71101	tony.leblanc@ caddosheriff.org	318-675-2255
Barbara Featherson	Director, Water & Sewerage	City of Shreveport	505 Travis St, Suite 580 Shreveport, LA 71101	barbara.featherston@ shreveportla.gov	318-673-7660
Brian Crawford	CAO	City of Shreveport	505 Travis St Shreveport, LA 71101	brian.crawford@ shreveportla.gov	318-673-5010
Patrick Furlong	Engineer	City of Shreveport	505 Travis St Shreveport, LA 71101	patrick.furlong@ shreveportla.gov	318-673-6000
Ollie Tyler	Mayor	City of Shreveport	505 Travis St Shreveport, LA 71101	ollie.tyler@ shreveportla.gov	318-673-5050

Shayne Gibson	Chief of Police	Greenwood Police Department	9381 Greenwood Rd Greenwood, LA 71033	sgibson@ greenwoodla.org	318-938-5554
Whitlow Giles	Chief of Police	Hosston Police Department	15717 US71 Hosston, LA 71043	chiefhosston@ aolcom	318-617-3809
David Austin	Chief of Police	Ida Police Department			318-284-3231
Knox Andress	HRSA Region 7 Coordinator	Louisiana Poison Control Center	1455 Wilkinson St Shreveport, LA 71103	wandr1@ lsuhsc.edu	318-813-3311
Tabitha Dendy	Water Clerk	Mooringsport	119 Gremen St Mooringsport, LA 71060	mooringsport@ bellsouth.net	318-996-7661
Tom Bass	Chief of Police	Oil City Police Department	202 Allen St Oil City, LA 71061	chieftombass@ yahoo.com	318-995-6205
Kisha McDow	Town Hall	Oil City Town Hall	202 Allen St Oil City, LA 71061	kishamcdow@ yahoo.com	318-995-7177
Patrick Card	Emergency Manager	Overton Brooks VA	510 E. Stoner Ave Shreveport, LA 71101	patrick.card@ va.gov	318-221-8411
Cecil Littlejohn	Chief of Police	Rodessa Police Department		rodessa015@ centurytel.net	318-469-9741
Scott Wolverton	Fire Chief	Shreveport Fire Department	263 N Common St Shreveport, LA 71101	scott.wolverton@ shreveportla.gov	318-673-6760
Skip Pinkston	Chief of Specials Ops and Safety	Shreveport Fire Department	263 N Common St Shreveport, LA 71101	skip.pinkston@ shreveportla.gov	318-673-6760
Bill Goodin	Chief Administrative Assistant	Shreveport Police Department	1234 Texas Ave Shreveport, LA 71101	bill.goodin@ shreveportla.gov	318-673-6943
Willie Shaw	Chief of Police	Shreveport Police Department	1234 Texas Ave Shreveport, LA 71101	willie.shaw@ shreveportla.gov	318-673-6900
Ryan Nelson	Chief of Police	Vivian Police Department	121 N Pine St Vivian, LA 71082	viviandispatch@ centurylink.net	318-375-9214
Helen Adger	Mayor	Village of Gilliam	P. O. Box 247 Gilliam, LA 71029		318-296-4393

Capability Assessment

Caddo Unincorporated

Worksheet 4.1: Capability Assessment Worksheet		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Caddo Parish		
Plans	Yes/No	Comments
Comprehensive / Master Plan	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	No	
Stormwater Management Plan	Yes	
Community Wildfire Protection Plan	Yes	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	Yes	
Land Use Planning and Ordinances		
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff		
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	Yes	
Civil Engineer	No	
GIS Coordinator	Yes	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	Yes	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	Yes/No	Comments
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	
Stormwater Utility Fee	Yes	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	
Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.		
Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	Yes	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Belcher

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Belcher		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	

Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Town of Blanchard

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Blanchard		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	

Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	Relies on Parish
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Gilliam

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Gilliam		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	Yes	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	No	

Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	Yes	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	Yes	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Town of Greenwood

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Greenwood		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	Relies on Parish
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Hosston

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Hosston		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Town of Ida

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Ida		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	Yes	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	Yes	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	Yes	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Town of Mooringsport

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Mooringsport		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

Town of Oil City

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Oil City		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Village of Rodessa

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Rodessa		
Plans	Yes/No	Comments
Comprehensive / Master Plan	Yes	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	YEs	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	Yes	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	Yes	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

City of Shreveport

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Shreveport		
Plans	Yes/No	Comments
Comprehensive / Master Plan	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	Yes	
Stormwater Management Plan	Yes	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)		
Building Code, Permitting and Inspections		
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	
Fire Department ISO/PIAL rating	Yes	Class 1
Site plan review requirements	Yes	
Land Use Planning and Ordinances		
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff		
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	Yes	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	Yes	
Grant Writing	Yes	
Hazus Analysis	Yes	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	
Stormwater Utility Fee	Yes	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	CERT Training
Other	No	

Town of Vivian

Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

Vivian		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	

Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Comments
Planning Commission	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	
Other	No	

Building Inventory

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Caddo Parish									
	Gilliam Fire Station	Fire Search and Rescue	306 5th Street	Gilliam	32.82795647	-93.84444951	$389,760.00	1988	Concrete
	Caddo Parish Residential Waste Disposal and Recycling Center	Civil Government	Nearby: 5469 Sartor Road	Gilliam	32.82718253	-93.84377377	$1,439,475.00	1995	Metal Building
X	Caddo Parish Fire District 7 Station 4	Fire Search and Rescue	Nearby: 320 Gray Street	Belcher	32.74708095	-93.83254215	$470,350.00	1988	Brick Veneer
	Caddo Parish Residential Waste Disposal and Recycling Center	Civil Government	Nearby: 309 Foster Street	Belcher	32.75041471	-93.8338685	$100,000.00	2000	Metal Building
	Rodessa Fire Station	Caddo Parish Owned and Operated	United Gas Rd & Hwy 1 Intersect	Rodessa	32.980884	-94.000852	$300,000.00	1990	Metal Building
X	Caddo Levee District	Civil Government	1320 Grimmett Drive	Shreveport	32.53518675	-93.76470476	$37,500.00	1992	Metal
X	Caddo Levee District	Civil Government	1320 Grimmett Drive	Shreveport	32.535737	-93.76541083	$237,400.00	1990	Reinforced Masonry
	Caddo Parish Animal Shelter	Civil Government	1500 Monty Avenue	Shreveport	32.52553667	-93.76979999	$1,792,600.00	1985	Reinforced Masonry
X	Caddo Parish Communications District	Civil Government	1144 Texas Avenue	Shreveport	32.50283212	-93.75469212	$2,944,900.00	1988	Reinforced Masonry
X	Caddo Parish Courthouse	Civil Government	501 Texas Street #103	Shreveport	32.51212109	-93.74961578	$22,883,100.00	1838	Reinforced Masonry
	Caddo Parish Highway Dept. (South Camp)	Civil Government	Nearby: 11928 Greenwood Springridge Road	Shreveport	32.31418048	-93.94521479	$1,082,530.00	1984	Metal Building
	Caddo Parish Residential Waste Disposal and Recycling Center	Civil Government	Nearby: 10326 Norris Ferry Rd	Shreveport	32.36147312	-93.71343591	$100,000.00	1995	Metal Building
	Caddo Parish Residential Waste Disposal and Recycling Center	Civil Government	Nearby: 5115 North Lakeshore Drive	Shreveport	32.53940668	-93.84914309	$100,000.00	1995	Metal Building

	Caddo Parish Residential Waste Disposal and Recycling Center	Civil Government	Nearby: 11697-11973 Louisiana 169	Shreveport	32.31244793	-93.94385781	$100,000.00	1995	Metal Building
	Caddo Parish School Board	Civil Government	1961 Midway Avenue	Shreveport	32.47052001	-93.77177282	$4,079,400.00	1990	Concrete
	Caddo Parish School Board Instructional Center	Civil Government	1961 Midway Avenue	Shreveport	32.47050898	-93.7711565	same building as above	1990	Concrete
	Caddo Parish Truancy Center	Civil Government	1707 Line Avenue	Shreveport	32.45562781	-93.78584425	$2,584,500.00	1900	Concrete
	Caddo Parish Warehouse	Civil Government	235 Lynbrook Boulevard	Shreveport	32.51698186	-93.75503405	$63,100.00	1989	Metal
X	Caddo Schools Warehouse	Civil Government	235 Lynbrook Boulevard	Shreveport	32.43229003	-93.90141506	$3,127,600.00	1988	Metal
	Caddo Sewer District #2	Civil Government	4859 North Market Street # 4	Shreveport	32.52340919	-93.8244028	$33,830.00	2001	Concrete
X	Caddo-Shreveport Sales & Use Tax Commission	Civil Government	3707 Jewella Avenue	Shreveport	32.48513041	-93.70135805	$650,100.00	1994	Concrete
X	Department of Public Works Traffic Engineering Division	Civil Government	1731 Kings Highway	Shreveport	32.49203367	-93.7728385	$350,756.00	1963	Metal
	Water District #7	Civil Government	6836 COLQUITT ROAD	Keithville	32.33978794	-93.89505793	$150,000.00	2005	Metal
	Arthur Circle Elementary School	Education	261 Arthur Ave	Shreveport	32.459585	-93.718221	$4,644,000.00	1965	Reinforced Masonry
	Booker T. Washington High School	Education	2104 Milam Street	Shreveport	32.50444516	-93.77433244	$1,311,380.00	1950	Reinforced Masonry
	Broadmore Middle Laboratory School	Education	441 Atlantic Avenue	Shreveport	32.46304718	-93.731255	$1,170,400.00	1965	Reinforced Masonry
	C.E. Byrd High School	Education	3201 Line Avenue	Shreveport	32.47976426	-93.74481692	$29,328,600.00	1925	Reinforced Masonry
	Caddo Heights Math/Science Elementary School	Education	1702 Corbitt Street	Shreveport	32.46418432	-93.76513698	$9,077,800.00	1949	Concrete
	Caddo Magnet High School	Education	1700 Airline Drive	Shreveport	32.49437513	-93.79205462	$10,273,900.00	1980	Reinforced Masonry
	Caddo Middle Career and Technology School	Education	6310 Clift Ave	Shreveport	32.44750179	-93.76999749	$219,600.00	1970	Reinforced Masonry
	Caddo Middle Magnet	Education	7600 Cornelious Lane	Shreveport	32.43525026	-93.74247164	$12,259,900.00	1980	Reinforced Masonry
	Caddo Parish Magnet High School	Education	1601 Viking Drive	Shreveport	32.49705668	-93.71944765	$10,273,900.00	1980	Reinforced Masonry

	Caddo Parish Public Schools Student Services Center	Education	7300 West Bert Kouns Industrial Loop	Shreveport	32.50019825	-93.76414899	$1,899,600.00	1970	Concrete
	Caddo Public Schools, Special Programs Center	Education	1545 Coty Street	Shreveport	32.48080024	-93.70582296	$4,262,700.00	1950	Concrete
	Captain Shreve High School	Education	6115 East Kings Highway	Shreveport	32.44814191	-93.71256792	$21,045,600.00	1967	Reinforced Masonry
	Cherokee Park Elementary School	Education	2010 East Algonquin Trail	Shreveport	32.54297249	-93.75915821	$5,492,600.00	1980	Reinforced Masonry
	Claiborne Fundamental Magnet Elementary	Education	2345 Claiborne Avenue	Shreveport	32.47760627	-93.77516039	$2,092,500.00	1940	Reinforced Masonry
	Donnie Bickham Middle School	Education	7240 Old Mooringsport Road	Shreveport	32.60972923	-93.8728271	$6,190,600.00	1985	Concrete
	E. B. Williams Stoner Hill Elementary School	Education	2127 C E Galloway Boulevard	Shreveport	32.49037587	-93.7196286	$7,913,500.00	1965	Concrete
	Fairfield Elementary Magnet School	Education	6215 Fairfield Avenue	Shreveport	32.44854351	-93.74911226	$3,902,900.00	1940	Concrete
	Fairpark High School	Education	3222 Greenwood Road	Shreveport	32.47925605	-93.79081732	$27,941,900.00	1928	Concrete
	Forest Hill Elementary School	Education	2005 Francais Drive	Shreveport	32.39371909	-93.79081965	$4,734,300.00	1970	Concrete
	Huntington High School	Education	6801 Rasberry Lane	Shreveport	32.44765871	-93.8565917	$58,516,300.00	1960	Concrete
	J.S. Clark Elementary School	Education	351 Hearne Avenue	Shreveport	32.50947388	-93.77949236	$18,486,700.00	2000	Concrete
	Jack P. Timmons Elementary School	Education	1410 Greenwood Mooringsport Road	Shreveport	32.54696315	-93.97552432	$7,533,600.00	1960	Concrete
	Judson Elementary	Education	3809 Judson Street	Shreveport	32.48807962	-93.79891919	$4,064,000.00	1960	Concrete
	M.J. Moore Middle School	Education	6660 Quilen Road	Shreveport	32.44553376	-93.79412556	$8,654,100.00	1970	Concrete
	Midway Elementary	Education	3840 Greenwood Road	Shreveport	32.47240787	-93.80418964	$14,167,300.00	1950	Concrete
	Mooretown Elementary	Education	3913 Powell Street	Shreveport	32.45220891	-93.80200398	$10,622,550.00	1970	Concrete
	Northside Elementary	Education	1950 Northside Rd	Shreveport	32.54275057	-93.7989556	$4,584,100.00	1970	Concrete
	Northwood High School	Education	5939 Old Mooringsport Road	Shreveport	32.60121997	-93.85052473	$2,370,070.00	1967	Concrete
	Oak Park Elementary	Education	4941 McDaniel Drive	Shreveport	32.46377785	-93.81174907	$11,497,100.00	1970	Concrete
	Pine Grove Elementary	Education	1700 Caldwell St	Shreveport	32.54953126	-93.81576456	$4,099,300.00	1980	Concrete
	Queensborough Elementary School	Education	2701 Catherine Street	Shreveport	32.48635769	-93.78111581	$7,802,700.00	1950	Concrete
	Ridgewood Middle School	Education	2001 Ridgewood Drive	Shreveport	32.39917202	-93.79204097	$5,635,500.00	1965	Concrete

	Riverside Elementary	Education	625 Dixie Garden Drive	Shreveport	32.45945835	-93.7010557	$7,336,900.00	1957	Concrete
	Shreve Island Elementary	Education	Robards Street	Shreveport	32.47902577	-93.71169115	$445,000.00	1970	Concrete
	Shreveport Job Corps Center	Education	2815 Lillian Street	Shreveport	32.49143663	-93.78297828	$321,600.00	1960	Concrete
	Shreveport Pipe Trades Training School	Education	Nearby: 7109 West Bert Kouns Industrial Loop	Shreveport	32.4380934	-93.89873109	$1,675,500.00	1970	Metal
	Simpkins Education Center	Education	1327 Pierre Avenue	Shreveport	32.54518775	-93.83802516	$485,340.00	1960	Unreinforced Masonry
	Southern Hills Elementary School	Education	9075 Kingston Road	Shreveport	32.40267153	-93.77983937	$4,859,400.00	1960	Reinforced Masonry
	Southwood High	Education	9000 Walker Road	Shreveport	32.40885792	-93.81639496	$3,051,345.00	1970	Reinforced Masonry
	Summer Grove Elementary	Education	2955 West Bert Kouns Industrial Loop	Shreveport	32.40159304	-93.80931468	$3,112,000.00	1965	Concrete
	Summer Grove School	Education	9000 Walker Road	Shreveport	32.41431236	-93.8019133	$4,881,440.00	1960	Reinforced Masonry
	Summerfield Elementary School	Education	3131 Ardis Taylor Drive	Shreveport	32.38569055	-93.82164704	$5,073,700.00	1968	Reinforced Masonry
	Sunset Acres Elementary	Education	6514 West Canal Boulevard	Shreveport	32.4478222	-93.78692583	$9,373,360.00	1952	Unreinforced Masonry
	Walnut Hill Middle	Education	Nearby: 9360 Woolworth Road	Shreveport	32.3879707	-93.90185279	$9,108,200.00	1980	Reinforced Masonry
	Werner Park Elementary	Education	2715 Corbitt Street	Shreveport	32.46307745	-93.78056345	$11,739,000.00	1975	Reinforced Masonry
	West Shreveport Elementary School	Education	351 Hearne Avenue	Shreveport	32.50030429	-93.77510271	$11,739,000.00	1960	Reinforced Masonry
	Westwood Elementary	Education	7325 Jewella Avenue	Shreveport	32.43554019	-93.79582144	$4,629,000.00	1960	Reinforced Masonry
	Youree Drive Middle School	Education	6008 Youree Drive	Shreveport	32.4516418	-93.72299425	$12,054,200.00	1959	Reinforced Masonry
	Caddo Fire District 1 Blanchard Station	Fire Search and Rescue	4040 Shreveport Blanchard Highway	Shreveport	32.60706305	-93.8680556	$1,130,400.00	1995	Concrete
	Caddo Fire District 1 Station 2	Fire Search and Rescue	Nearby: 200 Main Street Blanchard La	Shreveport	32.57956677	-93.89091812	$475,700.00	1986	Brick Veneer
	Caddo Fire District 1 Station 3	Fire Search and Rescue	7058 Old Mooringsport Road	Shreveport	32.58136597	-93.89429307	$1,872,100.00	2013	Metal
	Caddo Fire Protection District 1	Fire Search and Rescue	Nearby: 5115 North Lakeshore Drive	Shreveport	32.53905267	-93.8496484	$227,520.00	1990	Metal
	Caddo Parish Fire Department District 5	Fire Search and Rescue	3206 West 70th St	Shreveport	32.44238005	-93.78919828	$299,870.00	1970	Concrete

	Caddo Parish Fire District 1 Central Fire Station	Fire Search and Rescue	4305 North Lakeshore Drive	Shreveport	32.526133	-93.8278434	$579,900.00	1986	Concrete
	Caddo Parish Fire District 3 Station	Fire Search and Rescue	4305 North Lakeshore Drive	Shreveport	32.44242186	-93.9645537	$1,114,500.00	1986	Concrete
	Caddo Parish Fire District 3 Station 2	Fire Search and Rescue	6440 Greenwood Road	Shreveport	32.37405095	-94.03014391	$223,630.00	1980	Metal
	Caddo Parish Fire District 4 Station No. 2	Fire Search and Rescue	6118 COLQUITT ROAD	Keithville	32.35499641	-93.87040548	$335,000.00	2015	Metal
	Caddo Parish Fire District 4 Station No. 3	Fire Search and Rescue	15137 FOUR FORKS ROAD	Keithville	32.22084603	-93.98468174	$64,000.00	1985	Metal
	Caddo Parish Fire District 4 Station No. 4	Fire Search and Rescue	11714 PROVIDENCE ROAD	Shreveport	32.31807095	-93.98439902	$88,000.00	1998	Metal
	Caddo Parish Fire District 5	Fire Search and Rescue	11938 GREENWOOD SPRINGRIDGE ROAD	Shreveport	32.31418048	-93.94521479	$300,000.00	1999	Metal
X	Shreveport Fire Department Fire Station No. 01	Fire Search and Rescue	263 North Common Street	Shreveport	32.44120024	-93.75841709	$1,484,200.00	1960	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 02	Fire Search and Rescue	4575 N. Market	Shreveport	32.58260945	-93.80489496	$3,000,000.00	1980	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 03	Fire Search and Rescue	1421 E. 70th St.	Shreveport	32.44309205	-93.7248947	$3,000,000.00	1966	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 04	Fire Search and Rescue	263 North Common Street	Shreveport	32.50379906	-93.77558136	$3,000,000.00	1981	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 05	Fire Search and Rescue	263 North Common Street	Shreveport	32.50016225	-93.72711846	$3,000,000.00	1969	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 06	Fire Search and Rescue	2027 David Raines	Shreveport			$3,000,000.00	1979	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 07	Fire Search and Rescue	263 North Common Street	Shreveport	32.48517533	-93.7457505	$3,000,000.00	1973	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 08	Fire Search and Rescue	6341 Westport Avenue	Shreveport	32.48023428	-93.78161006	$3,000,000.00	1928	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 09	Fire Search and Rescue	7009 St. Vincent	Shreveport			$3,000,000.00	1986	Reinforced Masonry

X	Shreveport Fire Department Fire Station No. 10	Fire Search and Rescue	763 Oneonta Street	Shreveport	32.39861323	-93.73378307	$3,000,000.00	1929	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 11	Fire Search and Rescue	3736 Youree Drive	Shreveport			$3,000,000.00	1943	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 12	Fire Search and Rescue	610 Woolworth Rd	Shreveport			$3,000,000.00	1980	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 13	Fire Search and Rescue	5915 W. 70th	Shreveport	32.52537952	-93.75928612	$3,000,000.00	2004	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 14	Fire Search and Rescue	3830 Greenwood Rd.	Shreveport	32.47190347	-93.80355791	$3,000,000.00	1961	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 15	Fire Search and Rescue	3206 W. 70th.	Shreveport			$3,000,000.00	1962	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 16	Fire Search and Rescue	5105 Hollywood	Shreveport			$3,000,000.00	1970	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 17	Fire Search and Rescue	2890 Southland Park Dr.	Shreveport			$3,000,000.00	1970	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 18	Fire Search and Rescue	3501 Pines Rd.	Shreveport	32.44165809	-93.85460414	$3,000,000.00	1973	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 19	Fire Search and Rescue	936 Ellerbe Rd.	Shreveport			$3,000,000.00	1986	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 20	Fire Search and Rescue	804 E. Flournoy-Lucas	Shreveport	32.40124816	-93.69287239	$3,000,000.00	1998	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 21	Fire Search and Rescue	5103 Hollywood Avenue	Shreveport			$4,000,000.00	1996	Reinforced Masonry
X	Shreveport Fire Department Fire Station No. 22	Fire Search and Rescue	2022 Southern Loop	Shreveport	32.35561381	-93.72806156	$3,000,000.00	2005	Reinforced Masonry
X	Shreveport Fire Department Maintenance Facility	Fire Search and Rescue	7300 Mansfield Road	Shreveport	32.43719329	-93.78383245	$5,000,000.00	2008	Reinforced Masonry

X	Shreveport Fire Department Prevention Bureau - Fire Investigations	Fire Search and Rescue	1700 Snow Street	Shreveport	32.50036135	-93.757971	$749,774.00	1970	Reinforced Masonry
	Vivian Fire Dept No. 18	Fire Search and Rescue	Nearby: 3501 Pines Road	Shreveport	32.48242519	-93.86646203	$578,100.00	1990	Concrete
X	Caddo Parish Sheriff's Department	Law Enforcement	Nearby: 1000 Grimmett Drive	Shreveport	32.53052308	-93.75855854	$571,200.00	1970	Concrete
X	Caddo Parish Sheriff's Department - Marine Patrol	Law Enforcement	Nearby: East Stoner Avenue	Shreveport	32.50081722	-93.71011452	$407,280.00	1990	Metal
	Caddo Parish Sheriff's Office	Law Enforcement	Nearby: 4910 North Market Street	Shreveport	32.58848838	-93.81451766	$1,978,950.00	1990	Concrete
	Caddo Parish Sheriff's Office - Investigations Division	Law Enforcement	Nearby: 5906 North Market Street	Shreveport	32.60337373	-93.84453676	$650,400.00	1970	Concrete
	Caddo Parish Sheriff's Office - Regional Training Academy	Law Enforcement	Nearby: Unnamed Road	Shreveport	32.24869447	-93.49969665	$6,337,200.00	1985	Concrete
X	North Louisiana Crime Lab	Law Enforcement	1115 Brooks Street	Shreveport	32.5013906	-93.74669664	$1,937,400.00	2012	Steel
X	Caddo Parish Correctional Center	Prisons and Correctional Facilities	Nearby: 1501 Corporate Drive	Shreveport	32.53232215	-93.78112787	$91,272,400.00	1970	Concrete
X	Caddo Parish Sheriff's Work Release Facility	Prisons and Correctional Facilities	Nearby: 1199 Forum Drive	Shreveport	32.53456919	-93.7823251	$2,567,300.00	2009	Concrete
	Caddo Truancy Center & Misdemeanor Program - Shreveport Curfew Center	Prisons and Correctional Facilities	Nearby: 225 Wyandotte Street	Shreveport	32.49516179	-93.73429931	$176,400.00	1970	Concrete
X	Juvenile Justice Complex - Juvenile Detention	Prisons and Correctional Facilities	Spring Street	Shreveport	32.50313662	-93.72997714	$13,923,000.00	1980	Concrete
	Keithville Elementary Middle School	Education	12201 Mansfield Road	Keithville	32.34261716	-93.8254541	$15,979,815.00	1970	Concrete
	Caddo Fire District 5 Central Station	Fire Search and Rescue	11450 Old Mansfield Road	Keithville	32.37415199	-93.67385339	$700,455.00	1970	Metal
	Caddo Parish Fire District 6 Station	Fire Search and Rescue	Nearby: 10355 Linwood Ave	Keithville	32.37309941	-93.76320157	$334,425.00	1985	Concrete
	Caddo Parish Fire District 4 Central Station	Fire Search and Rescue	8240 COLQUITT ROAD	Keithville	32.31219915	-93.94295254	$772,800.00	2001	Metal

	Caddo Parish Fire District 3 Station 3	Fire Search and Rescue	11450 Old Mansfield Road	Keithville	32.38527051	-93.97122032	$112,245.00		Metal
	Caddo Parish Fire District 6 Central Station	Fire Search and Rescue	11450 Old Mansfield Road	Keithville	32.32804272	-93.83515463	$446,985.00	1970	Metal
	Caddo Parish Fire District Station 3	Fire Search and Rescue	11450 Old Mansfield Road	Keithville	32.27170991	-93.86532516	$119,700.00	1970	Metal
	Caddo Parish Sheriff's Office Substation	Law Enforcement	Nearby: 334-346 Gitmer Place	Keithville	32.27196414	-93.82388023	$250,000.00	1970	Concrete
	David Wade Correctional Facility	Prisons and Correctional Facilities	7835 Caddo Drive	Keithville	32.26220585	-93.93510827	$12,109,095.00	1978	Concrete
	Caddo Parish Residential Waste Disposal and Recycling Center	Civil Government	Nearby: 5142 Keithville-Springridge Road	Keithville	32.33422614	-93.83801452	$490,425.00	1995	Concrete
	Eagle Water	Civil Government	6614 COLQUITT ROAD	Keithville	32.34455588	-93.88735132	$619,110.00	1987	Metal
Belcher									
	Belcher Village Hall	Mayor / Police/ Library	411 Charles St	Belcher	32.74881	-93.835247	$110,061.00	1979	Brick Veneer
Blanchard									
	Blanchard Town Hall	Civil Government	110 Main St	Blanchard	32.58134082	-93.89266704	$801,300.00	1980	Concrete
	Blanchard Police	Law Enforcement	Nearby: 101-119 North Attaway Street	Shreveport	32.5834216	-93.89079587	$835,500.00	1980	Concrete
	Blanchard Utilities	Civil Government	110 Main St	Blanchard	32.58106639	-93.89331201	$232,320.00	1980	Metal
Gilliam									
	Gilliam Village Hall	Civil Government	130009 Adger Road	Gilliam	32.82781232	-93.84475684	$290,925.00	1988	Concrete
Greenwood									
	Greenwood Police Department	Law Enforcement	9381 Greenwood Road	Greenwood	32.44338142	-93.97535527	$929,700.00	1990	Concrete
	Greenwood Water Department	Civil Government	9381 Greenwood Road	Greenwood	32.44338142	-93.9752377	same building as above	1990	same building as above
	Greenwood Town Hall	Civil Government	9381 Greenwood Road	Greenwood	32.44337631	-93.97512013	same building as above	1990	same building as above
Hosston									
	Hosston Village Hall	Civil Government	15669 U.S. 71	Hosston	32.89238666	-93.87786729	$360,300.00	1975	Concrete
Ida									
	Ida Fire Station	Fire Search and Rescue	6948 Cedar Ln	Ida	33.00455519	-93.89331	$326,865.00	1990	Metal

	Ida Town Hall	Civil Government	Nearby: 7016 East Magnolia Avenue	Ida	33.00428227	-93.89422113	$35,100.00	2002	Concrete
	Ida Waste Disposal	Civil Government	Nearby: 6910-6948 Cedar Lane	Ida	33.00482002	-93.8925493	$995,100.00	2003	Metal Building
Mooringsport									
	Mooringsport Town Hall	Civil Government	119 Gremen St	Mooringsport	32.69264379	-93.95969048	$174,560.00	1965	Concrete
Oil City									
	Oil City Municipal Complex	Civil Government	107 Furman Street	Oil City	32.746197	-93.97561426	$312,300.00	1970	Concrete
Rodessa									
	Rodessa Village Hall	Civil Government	10093 Main St	Rodessa	32.97153719	-93.99400194	$100,000.00	1973	Concrete
	Rodessa Residential Waste and Storage	Caddo Parish Owned and Operated	Nearby: 17720 Pitts Road	Rodessa	32.97120266	-93.99082281	$1,218,600.00	1993	Metal Building
	Rodessa Water Supply Building	Storage of Equipment, Chemicals and Tools	17591 Cypress St.	Rodessa			$40,000.00	1979	Metal Building
	Well #1 with Building	Water Supply and Pump Housing	17591 Cypress St.	Rodessa			$125,000.00	1974	Metal Building
	Well #3 with Building	Water Supply and Pump Housing	10153 Main St.	Rodessa			$250,000.00	2010	Metal Building
	Rodessa Oxidation Pong - No Bldg	Sewer Treatment	Bois D Arc SW Rodessa	Rodessa			$200,000.00	1968	
Shreveport									
X	Express Jet	Airports and Airfields	7099 Challenger Drive	Shreveport	32.44369587	-93.81973797	$15,081,860.00	1980	Steel
X	Shreveport Regional Airport	Airports and Airfields	5103 Hollywood Avenue	Shreveport	32.44999819	-93.83808789	$50,000,000.00	1949	Steel
	City of Shreveport	Civil Government	820 Cotton Street	Shreveport	32.50798374	-93.75091775	$68,346.00	1940	Metal
X	Caddo Commission (Fleet Services)	Civil Government	505 Travis Street # 110	Shreveport	32.52410056	-93.76881519	$25,000.00	1990	Concrete
X	City of Shreveport Dept. of Public Works	Civil Government	1731 Kings Highway	Shreveport	32.48135729	-93.76606906	$2,067,216.00	1976	Steel
X	City of Shreveport Office of Public Works Division of Streets & Drainage	Civil Government	1731 Kings Highway	Shreveport	32.47774341	-93.77076271	$419,276.00	1998	Steel

	City of Shreveport Property Standards	Civil Government	520 Olive Street	Shreveport	32.48314282	-93.70946114	$620,000.00	2010	Reinforced Masonry
	City of Shreveport Recreation Department	Civil Government	7401 Jewella Avenue	Shreveport	32.50633808	-93.74854548	$1,633,543.00	1989	Reinforced Masonry
X	City of Shreveport Water & Sewerage	Civil Government	2139 Greenwood Road	Shreveport	32.48517705	-93.77254471	$2,091,600.00	1980	Steel
	Francis P. Bickham Building	Civil Government	Nearby: 525 Marshall Street	Shreveport	32.5123815	-93.74891075	$2,002,100.00	1992	Concrete
X	Government Plaza	Civil Government	505 Travis Street	Shreveport	32.51302882	-93.75092964	$20,691,541.00	1981	Steel
	Maintenance Facility Housing Authority	Civil Government	3223 Old Shed Road	Shreveport	32.48376667	-93.75413887	$5,940.00	1994	Concrete
	Old Municipal Building	Civil Government	3223 Old Shed Road	Shreveport	32.50979644	-93.74852415	$771,210.00	1994	Concrete
	Shreveport African American Chamber of Commerce	Civil Government	1545 Line Avenue #330	Shreveport	32.50551388	-93.75657737	$372,210.00	1950	Reinforced Masonry
	Shreveport Public Assembly & Recreation Department	Civil Government	7401 Jewella Avenue	Shreveport	32.48350917	-93.70908014	$1,633,543.00	1989	Reinforced Masonry
X	City of Shreveport Fire & Police Training Academy	Fire Search and Rescue	6440 Greenwood Road	Shreveport	32.45362197	-93.87657667	$2,647,100.00	1960	Reinforced Masonry
X	Shreveport Police - Cross Lake Patrol	Law Enforcement	Nearby: 2901 Municipal Pier Road	Shreveport	32.49316976	-93.8454127	$564,000.00	2013	Wood
X	Shreveport Police - Mounted Patrol	Law Enforcement	Nearby: 501-599 Tomkies Street	Shreveport	32.51712238	-93.75418099	$200,000.00	1985	Wood
X	Shreveport Police Department - Downtown Unit	Law Enforcement	Nearby: 400 Clyde Fant Memorial Parkway	Shreveport	32.51726055	-93.74621934	$14,935,917.00	1980	Concrete
X	Shreveport Police Department - Neighborhood Assistance Team and Community Liaison Officers	Law Enforcement	Nearby: 6550-6598 Kennedy Drive	Shreveport	32.44858908	-93.81096407	$2,009,477.00	1976	Wood
X	Shreveport Police Patrol	Law Enforcement	Nearby: 1244 Texas Avenue	Shreveport	32.50126226	-93.75532011	$13,209,420.00	1958	Steel
X	Shreveport Police Property and Evidence Building	Law Enforcement	Nearby: 801-851 Hope Street	Shreveport	32.50308571	-93.75572873	$3,529,591.00	2014	Steel
X	Shreveport City Jail	Prisons and Correctional Facilities	Nearby: 1329 Oakland Street	Shreveport	32.50379594	-93.75575523	$7,000,000.00	2004	Reinforced Masonry

Vivian									
X	North Caddo Medical Center	Hospital or Medical Center	715 South Pine Street	Vivian	32.863848	-93.988462	$10,728,740.00	1965	Concrete
	Caddo Parish Highway Dept. North Camp)	Civil Government	108 Finley Dr	Vivian	32.862642	-93.986157	$935,550.00	1994	Concrete
Keithville									
	Woolworth Road Landfill	Civil Government	10580 WOOLWORTH ROAD	Keithville	32.35568237	-93.90526632	$405,270.00	1990	Concrete

Vulnerable Populations

Vulnerable Populations Worksheet

Caddo Parish

Name	Street	City	Zip Code	Latitude	Longitude
All Hospitals (Private or Public)					
Willis Knighton Heart Hospital	2715 Albert L Bicknell Drive	Shreveport	71103	32.48507578	-93.77987556
Willis Knighton	2715 Albert L Bicknell Drive	Shreveport	71103	32.49912507	-93.74760565
Doctor's Hospital	1541 Kings Highway	Shreveport	71103	32.50287229	-93.74545012
Shreveport Surgery Center	745 Olive Street # 100	Shreveport	71104	32.49243091	-93.7456908
Spine Institue of Louisiana	1500 Line Avenue # 100	Shreveport	71101	32.49734798	-93.74660218
Specialists Health System	1500 Line Avenue #206	Shreveport	71101	32.49761849	-93.74663276
Christus Schumpert	915 Margaret Place	Shreveport	71101	32.49546893	-93.75204433
Christus Schumpert	915 Margaret Place	Shreveport	71101	32.4946367	-93.75208216
Schumpert Cancer Treatment Center	1 Saint Mary Place	Shreveport	71101	32.49568514	-93.75087489
Christus Schumpert Medical Center	None	Shreveport	71101	32.4955726	-93.74992873
Promise Hospital of Louisiana	2525 Viking Drive	Shreveport	71111	32.49396265	-93.74497524
Christus Schumpert Breast Care Center	902 Olive Street	Shreveport	71104	32.49308056	-93.74936718
Christus Schumpert Outpatient Therapy Services	Nearby: 925 Olive Street	Shreveport	71104	32.49233726	-93.74995022
Overton Brooks VA Medical Center	510 East Stoner Avenue	Shreveport	71101	32.50314034	-93.7213082
Shriner's Hospitals for Children	3100 Samford Avenue	Shreveport	71103	32.48103506	-93.75759354
LSU Health Services Feist-Weller Cancer Center	Nearby: 1399-1493 Kings Highway	Shreveport	71104	32.48137048	-93.7591915
St. Jude Children's Research Hospital	Kings Highway	Shreveport	71111	32.48130408	-93.75920036
LSU Hospital	1501 Kings Highway	Shreveport	71103	32.48085872	-93.76102415
WK Cancer Center	Kings Highway	Shreveport	71111	32.48143961	-93.77925352
WK Proton Therapy Center	2600 Kings Highway #1	Shreveport	71103	32.4814429	-93.77931274
WK Medical Center	8001 Youree Drive	Shreveport	71115	32.48430783	-93.7794042

Nursing Homes (Private or Public)					
St. Joseph Hospice	668 Jordan Street	Shreveport	71101	32.49839868	-93.74410307
Christus Grace Home Hospice Center	1035 Margaret Place	Shreveport	71101	32.49573019	-93.75408937
WK Extended Care Center	2550 Kings Highway	Shreveport	71103	32.48200878	-93.77786842
Shreveport Manor	3302 Mansfield Road	Shreveport	71103	32.47952886	-93.7729661
Roseview Nursing Home	3405 Mansfield Road	Shreveport	71103	32.47862576	-93.77202982
Southern Oaks	1524 Glen Oak Place	Shreveport	71103	32.48372888	-93.76188704
Magnolia Manor	1411 Claiborne Avenue	Shreveport	71103	32.47761207	-93.75896607
Claiborne Healthcare Center	1536 Claiborne Avenue	Shreveport	71103	32.47853047	-93.76182631
Circle of Life Hospice LLC	900 Pierremont Road # 110	Shreveport	71106	32.44214968	-93.74000415
Life Path Hospice	8720 Quimper Place # 100	Shreveport	71105	32.42130152	-93.72717901
Regional Hospice	806 Brook Hollow Drive	Shreveport	71105	32.42321256	-93.72095719
Amedisys Home Health & Hospice	8508 Line Avenue	Shreveport	71106	32.41606366	-93.73422357
Mobile Home Parks					
Bellavista Mobile Home Village	2651 Barron Road	Keithville	71047	32.34861356	-93.80352415
C & H Mobile Home Park	Nearby: 12575 Mansfield Road	Keithville	71047	32.32023782	-93.82969552
Mobile Villa	915 Barron Road	Shreveport	71047	32.34533491	-93.77735614
Autumn Acres	949 Barron Road	Shreveport	71047	32.34633414	-93.77846671
Pinecrest Village Trailer Park	6700 Jefferson Paige Road # E	Shreveport	71119	32.48076261	-93.88482176
Stonegate Trailer Park	6801 West 70th Street	Shreveport	71129	32.44063945	-93.88653757
Glen Leaf Trailer Park	7400 Glenleaf Road	Shreveport	71129	32.43796593	-93.88605791
Shreveport/Bossier KOA Campground	6510 West 70th Street	Shreveport	71129	32.44376199	-93.87812929
Huntington Park Trailer Park	Nearby: Hereford Lane	Shreveport	71129	32.44515938	-93.87080731
Lotus Villa Mobile Home Park	Nearby: 7605 Lotus Lane	Shreveport	71108	32.43631856	-93.80535776
Evergreen Estates	5820 Old Mooringsport Road	Shreveport	71107	32.60444506	-93.84062282
Unknown Trailer Park	Nearby: 9813 Tourite Circle	Shreveport	71118	32.38144993	-93.82204308
Silent Cedars Mobile Home Park	Nearby: 998 Lacobee Road	Shreveport	71047	32.37001718	-93.82603574
Southview Estates	Nearby: 9973 Mansfield Road	Shreveport	71047	32.37029808	-93.82087742

Unknown Trailer Park	Nearby: 5827 West Canal Boulevard	Shreveport	71108	32.4552547	-93.78645271
Unknown Trailer Park	Nearby: 3315 West 70th Street	Shreveport	71108	32.44163454	-93.79231167
Unknown Trailer Park	Nearby: 4130 Hudson Avenue	Shreveport	71109	32.47344006	-93.78911939
Lakewood Village Mobile Home Park	9110 Linwood Avenue	Shreveport	71106	32.41691324	-93.76431379
Lin Mobile Home Park	324 Idema Street	Shreveport	71106	32.41910428	-93.76083518
Windsor Crest	Nearby: C K Carter Boulevard	Shreveport	71129	32.42971567	-93.86735693
Mobile Home Parks	7400 Glenleaf Road	Shreveport	71129	32.39862318	-93.87219126
Alpine Estates	Nearby: 7800-7898 Edelweiss Drive	Shreveport	71107	32.58261477	-93.85086403
Shadow Lake Mobile Home Park, LLC	710 Barron Road	Shreveport	71047	32.34903799	-93.77078469
Alpha Mobile Home Park	433 Flournoy Lucas Road #51	Shreveport	71106	32.38927449	-93.76655541
Unknown Trailer Park	Nearby: 10315 Linwood Avenue	Shreveport	71106	32.37489756	-93.76257444
Unknown RV Park	Nearby: 8138 South Lakeshore Drive	Shreveport	71119	32.5066263	-93.91874829
Unknown	Nearby: 1622 Gary Street	Shreveport	71103	32.4992837	-93.76444532

National Flood Insurance Program (NFIP)

Caddo Parish

ELEMENT F: STATE REQUIREMENT

National Flood Insurance Program (NFIP)

Caddo Parish

	Caddo Parish	Belcher	Blanchard	Gilliam	Greenwood	Hosston	Ida	Morningsport	Oil City	Rodessa	Shreveport	Vivian	
Insurance Summary													**Comments**
How many NFIP polices are in the community? What is the total premium and coverage?	697, $442,988 Premium, $168,828,400 Coverage	None	10, $4,987, $4,987 Premium, $1,520,500 Coverage	None	26, $19,420 Premium, $6,022,200 Coverage	None	None	None	None	None	4,604 policies, Premium: $3,068,857, Coverage: $1,022,089,000	None	
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	248, $5,027,758, Unknown	None	None	None	13, $562,394, Unknown	None	None	None	None	None	1432	None	
How many structures are exposed to flood risk with in the community?	697	0	10	0	26	0	0	0	0	0	Exact number unknown, several hundred	0	
Describe any areas of flood risk with limited NFIP policy coverage.	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	Unknown	None Known	
Staff Resources													
Is the Community FPA or NFIP Coordinator certified?	Yes	Yes - Parish provides	Yes - Parish provides	Yes - Parish provides	Yes - Parish provides	Yes - Parish provides	Yes	Yes - Parish provides	Yes - Parish provides	Yes - Parish provides	Yes	Yes - Parish provides	CFM's are Parish Personnel
Is flood plain management an auxiliary function?	Yes	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	No	N/A	Parish handles program
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish assigns 9-1-1 addresses; perform flood lane checks	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	The City of Shreveport adminsters the NFIP with permit review, GIS, outreach, map room, etc.	Parish performs the flood zone checks, administers the NFIP with GIS, outreach, and map storage	Parish has 3 Certified Floodplain Managers on Staff
What are the barriers to running an effective NFIP program in the community, if any?	None	None	None	None	None	None	N/A	None	None	None	Lack of staff	None	Parish has 3 CFMs on Staff
Compliance History													
Is the community in good standing with the NFIP?	Yes	No, Sanction Date 6/27/79	Yes	No, Sanction Date 9/1/76	Yes	No, Sanction Date 7/25/76	Yes	No, Sanction Date 6/25/77	No, Suspended 5/4/88	No, Suspended 5/20/14	Yes	No, Sanction Date 3/26/77	
Are there any outstanding compliance issues(i.e., current violations)?	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	None Known	No	None Known	
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	N/A	Unknown	Unknown	Unknown	Within past year	Unknown	
Is a CAV or CAC scheduled or needed? If so when?	No	No	No	No	No	No	N/A	No	No	No	No	No	
Regulation													
When did the community enter the NFIP?	9/5/1990	Not in NFIP	1/23/2012	Not in NFIP	8/3/1998	Not in NFIP	2/2/2012	Not in NFIP	Suspended from	Suspended from	6/6/1905	Not in NFIP	
Are the FIRMs digital or paper?	Both	Both	Both	Both	Both	Both	Both	Both	Both	Both	Digital	Both	
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Meets Minimum	N/A	Meets Minimum	N/A	Meets Minimum	N/A	Meets Minimum	N/A	N/A	N/A	Meet	N/A	
Community Rating System (CRS)													
Does the community participate in CRS?	Yes	No	No	No	No	No	No	No	No	No	Yes	No	
What is the community's CRS Class	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7	N/A	
Does the plan include CRS planning	No	No	No	No	No	No	No	No	No	No	Yes	No	