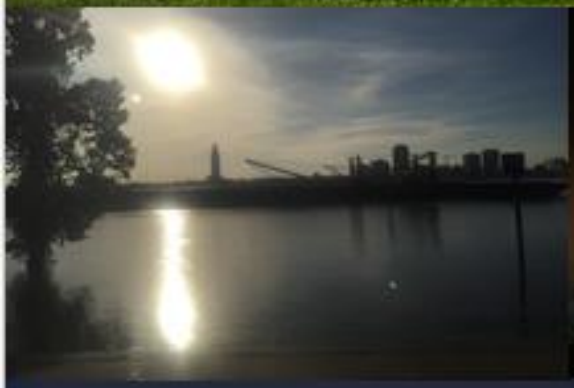

WEST BATON ROUGE
PARISH HAZARD MITIGATION UPDATE – 2016

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WEST BATON ROUGE PARISH

HAZARD MITIGATION PLAN UPDATE

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March 17, 2016

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ACKNOWLEDGMENTS

This 2016 West Baton Rouge Parish Hazard Mitigation Plan Update was coordinated by the West Baton Rouge 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:

West Baton Rouge Parish
City of Port Allen
Town of Brusly
Town of Addis

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

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The 2016 West Baton Rouge Parish Hazard Mitigation Plan Update was written by the Stephenson Disaster Management Institute, Louisiana State University. Further comments should be directed to the West Baton Rouge Parish Office of Homeland Security and Emergency Preparedness: 2413 Ernest Wilson Drive, Port Allen, LA, 70767.

Contents

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 West Baton Rouge Parish Hazard Mitigation Plan Update (HMPU) process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make West Baton Rouge Parish less vulnerable and more disaster resistant. Information in the plan will be used to help guide and coordinate mitigation activities and local policy decisions affecting future land use.

The West Baton Rouge Parish HMPU is a multi-jurisdictional plan that includes the unincorporated areas of the parish, as well as the following incorporated communities which participated in the planning process:

1. City of Port Allen
2. Town of Brusly
3. Town of Addis

Localized but unincorporated settlements within the parish are included in this plan, as well as additional intra-parish districts and organizations within West Baton Rouge Parish that participated in the planning process.

This plan addresses natural hazards only. The HMPU Committee agreed at its first meeting not to pursue human-caused hazards in this update. Although the Federal Emergency Management Agency (FEMA) encourages integration of human-caused hazards into the mitigation planning process, the scope of this effort did not address these human-caused hazards for two reasons. First, planning activities for mitigation of and emergency response to human-caused hazards are the responsibility of specially designated organizations. Second, the Disaster Mitigation Act of 2000 (DMA) requires extensive public information and input conflicting with security and confidentiality issues associated with elements such as chemical hazards deemed to be particularly vulnerable to terrorist acts.

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.

The DMA requires state and local governments to develop and periodically update hazard mitigation plans in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. Compliance with these requirements will maintain continued eligibility for certain hazard mitigation grant programs from FEMA for each organization participating in this planning process.

This plan will identify cost effective and environmentally sound mitigation strategies that will reduce or eliminate long-term risk to human life and property from natural hazards. Implementation of this plan can reduce the enormous cost of disasters to property owners and all levels of government. Mitigation strategies often include protecting critical community facilities, reducing exposure to liability, and minimizing community disruption. Land development planning, adoption of building codes, elevation of homes, and acquisition and relocation of homes away from floodplains are just a few examples of mitigation strategies.

Location, Demography, and Economy

Location

West Baton Rouge (WBR) Parish is located in central Louisiana and is the smallest parish in Louisiana by area. Land area in the parish is approximately 191.2 square miles; the water area is 12.4 square miles (7951 acres). Its eastern boundary is the Mississippi River. The parish is bordered by Iberville Parish to the south, East Baton Rouge Parish to the east, and West Feliciana and Pointe Coupee Parishes to the north. WBR is located on the west bank of the Mississippi River. The seat of government for WBR is in the city limits of the City of Port Allen and is also the site of the Port of Greater Baton Rouge.

Figure 1-1: West Baton Rouge Parish Highlight

West Baton Rouge Parish is located in Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 2.

Figure 1-2: Louisiana Homeland Security Regions

Table 1-1: West Baton Rouge Parish Population
(Source: U.S. Census Bureau)

	2010 Census	2013 Census	(Current Yr) Estimate	Percent Change 2010 -2013	Percent Change 2010 -(Current Year)
Total Population	23,788	24,555	25,085	3.20%	5.50%
Population Density (Pop/Sq Mi)	123.6	____	____	____	____
Total Households	8,820	8,820	____	____	____

While West Baton Rouge Parish is faced with a variety of natural hazards and all the problems that accompany growth and decline in growth, it also has the potential to mitigate their adverse effects through current and new programs and projects.

Economy

There is a low cost of living in West Baton Rouge Parish, ranging from real estate to utilities. Assessors are required by law to assess on improvements of industrial property at 15% of fair market value (land at 10%). Private residences are assessed at 10% of fair market value. There is no property tax on the first $75,000 because of the state's $75,000 homestead exemption.

The Port of Greater Baton Rouge, located at the head of deepwater navigation on the Mississippi, has import and export facilities for all types of cargo, and also has Foreign Trade Zone status. The Port Allen Lock provides boat and barge access to the Intracoastal Waterway.

Business patterns for West Baton Rouge Parish are as follows:

Table 1-2: Business Patterns in West Baton Rouge Parish
(Source: enstats.census.gov)

Business Description	Number of Employees	Number of Establishments	Annual Payroll ($1,000)
Retail Trade	1,132	88	24,350
Manufacturing	2,173	36	151,409
Health Care, Social Assistance	433	29	11,433
Mining, Oil and Gas Extraction	20-99	3	1,000
Transportation and Warehousing	1,244	51	58,386
Construction	2,654	71	135,307
Administration and Support and Waste Management and Remediation Services	401	21	15,273
Real Estate and Rental and Leasing	100-249	15	6,050
Wholesale Trade	864	49	43,762
Other Services (except Public Administration	358	48	12,617
Accommodation and Food Services	910	57	11,613
Finance and Insurance	194	24	8,767
Professional, Scientific, and Technical Services	190	27	8,062
Information	10	4	265
Educational Services	77	4	1,624
Arts, Entertainment, and Recreation	211	15	4,508
Utilities	20-99	2	1,000

This plan will discuss hazards affecting West Baton Rouge 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 West Baton Rouge 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, as well as 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 underscored 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 West Baton Rouge 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 West Baton Rouge Hazard Mitigation Plan were as follows:

- Section One Introduction
- Section Two West Baton Rouge Parish Profile
- Section Three Planning Process
- Section Four Risk Assessment
- Section Five Mitigation Strategy
- Section Six Plan Maintenance Procedures
- 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 West Baton Rouge 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 six previous goals of the West Baton Rouge Parish Hazard Mitigation Plan. The current goals are as follows:

1. Minimize human, economic, and environmental disruption from natural hazards
2. Protect life and property from the impacts of natural disasters
3. Enhance preparedness and emergency response to natural disasters
4. Enhance public awareness regarding understanding of risks associated with hazards and the need for hazard mitigation
5. Improve the disaster resistance of vulnerable structures and critical facilities through the development and implementation of cost-effective, technically feasible, and environmentally sound location mitigation actions
6. Promote the preservation or restoration of natural areas or natural functions of floodplain and watershed areas

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 Strategies
- 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 2: West Baton Rouge Parish Profile	Section 1: Introduction
Section 3: Planning Process	Appendix A: Planning Process
Section 4: Risk Assessment	Section 2: Hazard Identification and Parish-Wide Risk Assessment
Section 5: Mitigation Strategy	Section 3: Capability Assessment, Section 4: Mitigation Strategy
Section 6: Plan Maintenance Procedures	Appendix B: Plan Maintenance
Appendices	Appendix C: Essential Facilities, Appendix D: Plan Adoption, Appendix E: State Required Worksheets

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 West Baton Rouge Parish and its municipalities. The extent of this risk is dictated primarily by its geographic location. Most significantly, West Baton Rouge 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 West Baton Rouge 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 provided an overview of the hazards that had been previously profiled in the West Baton Rouge 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
Land Subsidence	X		Discounted
Drought	X		X
Earthquakes	X		Discounted
Expansive Soils			
Fog			
Flooding	X	X	X
Extreme Heat	X		Discounted
Sinkholes	X	X	X
Termites			
Thunderstorms (Hail, Lightning & Wind)	X	X	X
Tornadoes	X	X	X
Tropical Cyclones	X	X	X
Tsunamis			
Wildfires	X		X
Winter Storms	X		X

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, along with sinkholes.

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) Land Subsidence
f) Sinkholes
g) Thunderstorms (hail, lightning, wind)
h) Tornadoes
i) Tropical Cyclones (flooding and high winds)
j) Wildfires
k) Winter Storms

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

- Flooding from rivers and waterways, rain storms, tropical storms, 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 and wildfires

The potential destructive power of tropical cyclones and flooding were determined to be the most prevalent hazards to the parish. Thirteen of the fifteen Presidential Declarations that West Baton Rouge Parish has received have resulted from either tropical cyclones (9 declarations) or flooding (4 declarations), which validates these as the most significant hazards. Therefore, the issue 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, and 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 airborne debris. A wind map for West Baton Rouge Parish is included in the hurricane risk assessment.

West Baton Rouge Parish is also susceptible to tornadoes. Tornadoes can spawn from tropical cyclones or severe weather systems that pass through West Baton Rouge Parish. High winds produced by tornadoes have the potential to destroy residential and commercial buildings, as well as create

windborne objects from the debris produced from the destruction of the natural and human environment.

Previous Occurrences

Table 2-2 summarizes federal disaster declarations for West Baton Rouge Parish since 1965. Information includes disaster declaration numbers, dates, and types of disaster.

Table 2-2: West Baton Rouge Parish Major Disaster Declarations

Disaster Declaration Number	Date	Type of Disaster
208	9/10/1965	Tropical Cyclone – Hurricane Betsy
315	10/13/1971	Tropical Cyclone – Hurricane Edith
374	4/27/1973	Severe Storm, Flood
833	6/16/1989	Severe Storm, Tornado
956	8/26/1992	Tropical Cyclone – Hurricane Andrew
1380	6/11/2001	Tropical Cyclone – TS Allison
1437	10/3/2002	Tropical Cyclone – Hurricane Lili
3172	2/1/2003	Loss of Space Shuttle Columbia
1521	6/8/2004	Severe Storm, Flood
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Rita
1786	9/2/2008	Tropical Cyclone – Hurricane Gustav
4015	8/18/2011	Severe Storm, Flood
3322	5/6/2011	Severe Storm, Flood
4080	8/29/2012	Tropical Cyclone – Hurricane Isaac

Probability of Future Hazard Events

The probability of a hazard event occurring in West Baton Rouge 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 (1989 – 2014) in order to determine future probability of a hazard occurring. While the twenty five 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-HM 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 to inflation 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 as it contains specific data for cities, whereas SHELDUS is limited to parishes.

The table below shows the annual probability for each hazard occurring across the parish and in individual jurisdictions.

Table 2-3: Probability of Future Hazard Reoccurrence

Hazard	Probability			
	West Baton Rouge (Unincorporated)	Addis	Brusly	Port Allen
Drought	8%	8%	8%	8%
Flooding	24%	12%	16%	12%
Sinkholes	<1%	<1%	<1%	<1%
Thunderstorms (Hail)	<1%	<1%	<1%	<1%
Thunderstorms (Lightning)	<1%	<1%	<1%	<1%
Thunderstorms (Wind)	92%	92%	92%	92%
Tornadoes	16%	16%	16%	16%
Tropical Cyclones	28%	28%	28%	28%
Wildfires	<1%	<1%	<1%	<1%
Winter Storms	16%	16%	16%	16%

As shown in the table above, thunderstorm winds have the highest annual chance of occurrence in the parish (92%), followed by tropical cyclones (28%). Floods have an annual chance of occurrence of 24%, but these probability percentages decrease for the incorporated areas of the parish. Brusly has the highest annual chance of occurrence for a flood event at 16%, followed by Addis and Port Allen, who both have an annual chance of occurrence calculated at 12%. Tornadoes and winter storms both have a 16% annual chance of occurring in West Baton Rouge Parish, while drought has an 8% annual chance of occurring. Sinkholes, hail, lightning, and wildfires all have less than a 1% annual chance of occurrence. It was determined that land subsidence, earthquakes, and extreme heat have minimal impacts on the parish based on historical data. Therefore, they have been discounted and will not carried forward into risk assessment.

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 $2,174,975,000 in structures throughout the parish. The table on the following page provides the total estimated value for each structure by occupancy.

Table 2-4: Estimated Total of Potential Losses throughout West Baton Rouge Parish

Occupancy	West Baton Rouge Parish	Unincorporated West Baton Rouge	Addis	Brusly	Port Allen
Agricultural	$10,920,000	$9,665,000	$954,000	$71,000	$230,000
Commercial	$266,726,000	$149,642,000	$23,349,000	$12,781,000	$80,954,000
Government	$15,888,000	$9,058,000	$1,056,000	$684,000	$5,090,000
Industrial	$119,831,000	$84,922,000	$20,253,000	$1,061,000	$13,595,000
Religion	$41,779,000	$23,820,000	$2,154,000	$2,272,000	$13,533,000
Residential	$1,702,161,000	$810,795,000	$264,232,000	$243,991,000	$383,143,000
Education	$17,670,000	$9,707,000	$0	$2,000,000	$5,963,000
Total	$2,174,975,000	$1,097,609,000	$311,998,000	$262,860,000	$502,508,000

Essential Facilities of the Parish

The following pages contain maps which show the locations and names of the essential facilities within the parish.

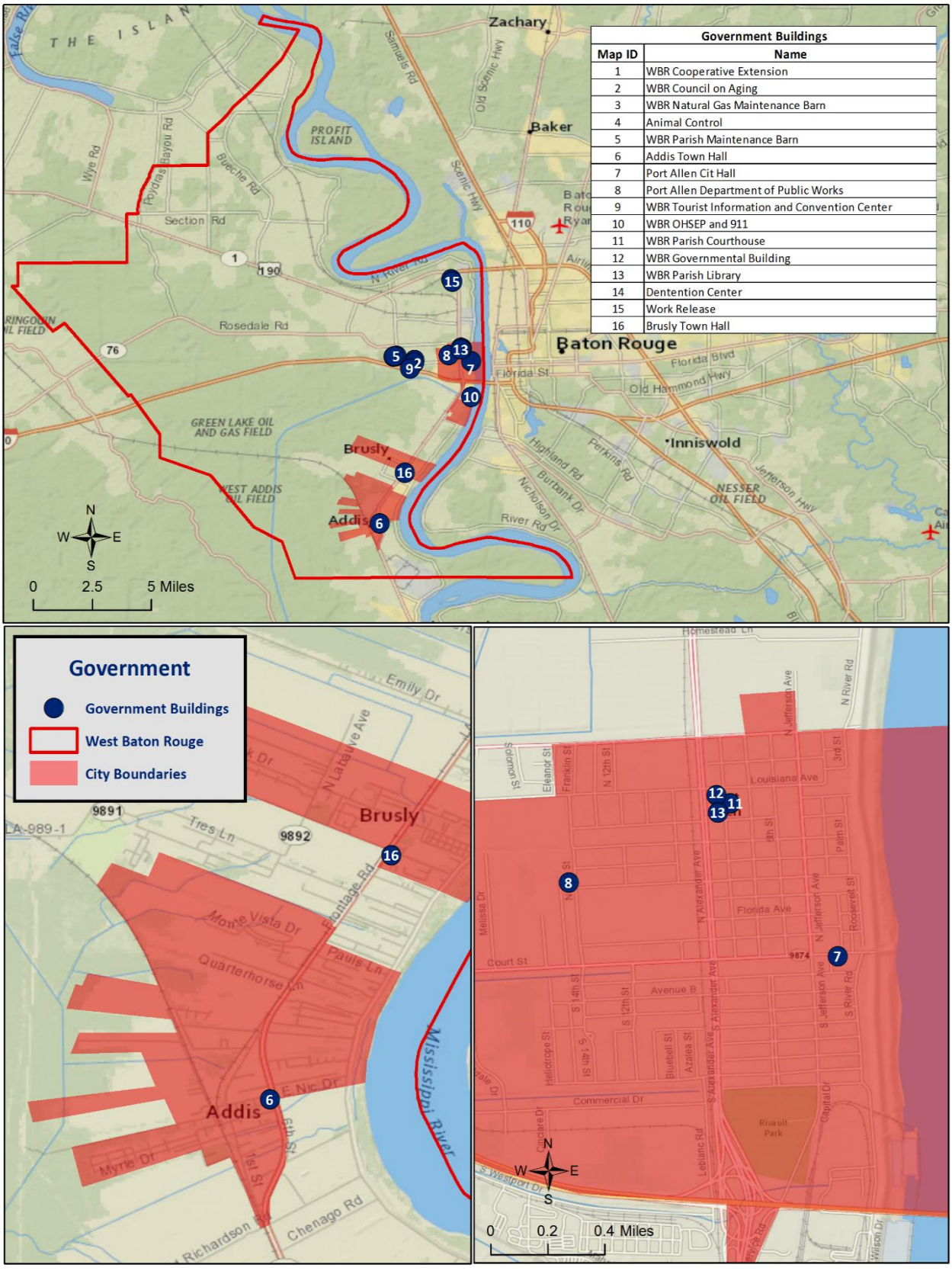


Figure 2-1: Government Buildings Located in West Baton Rouge Parish

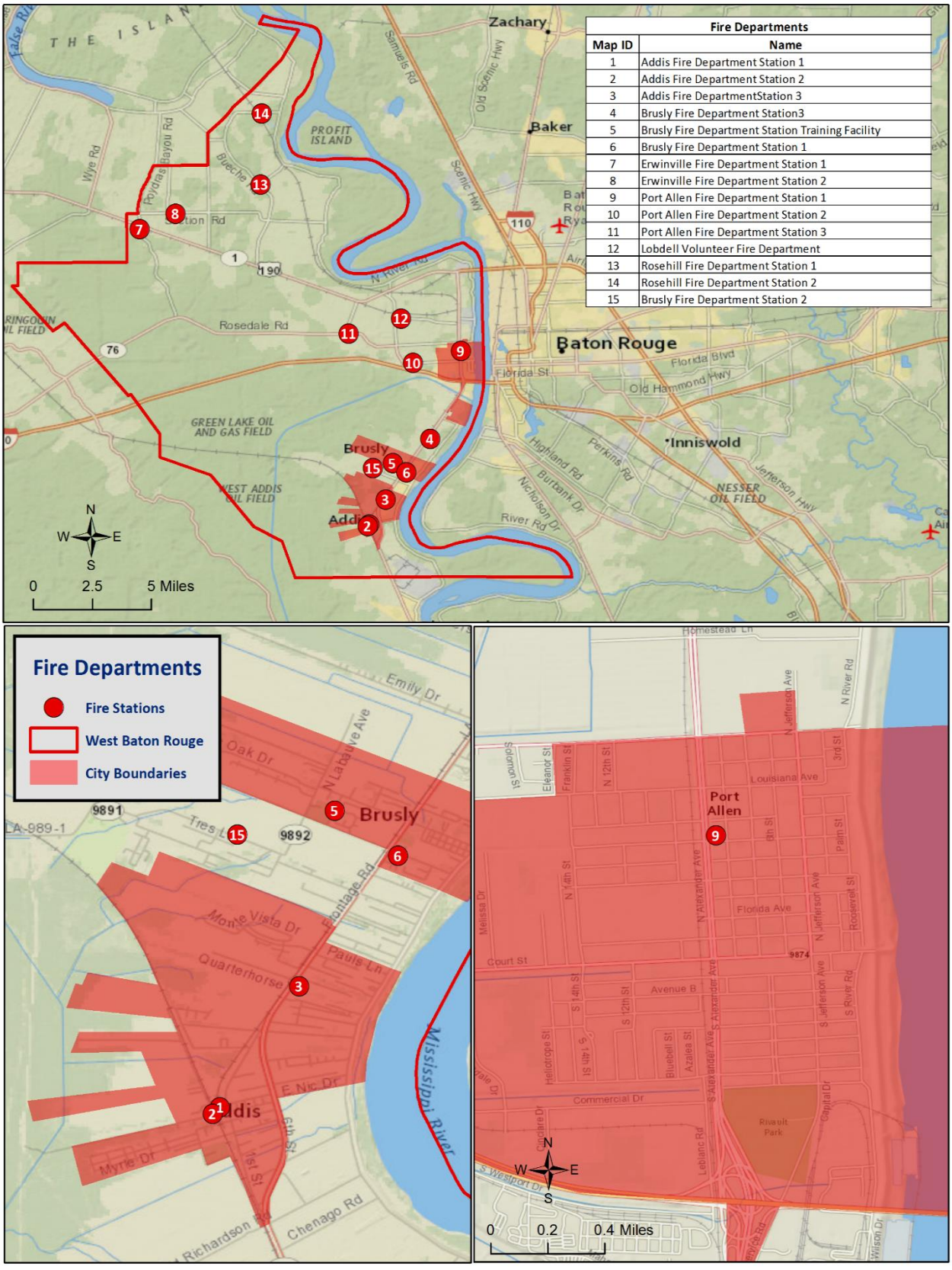


Figure 2-2: Fire Stations Located in West Baton Rouge Parish

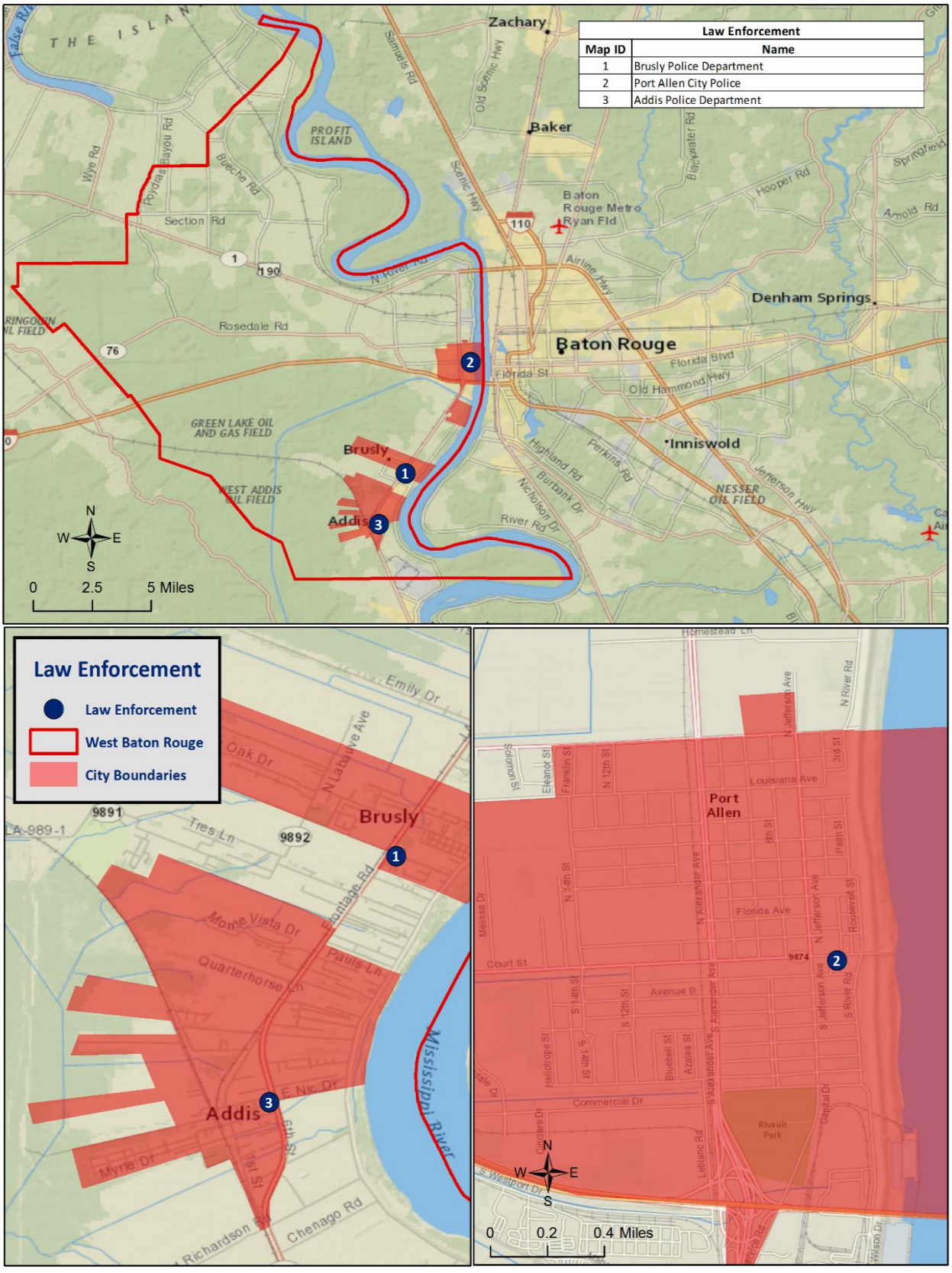


Figure 2-3: Law Enforcement Facilities Located in West Baton Rouge Parish

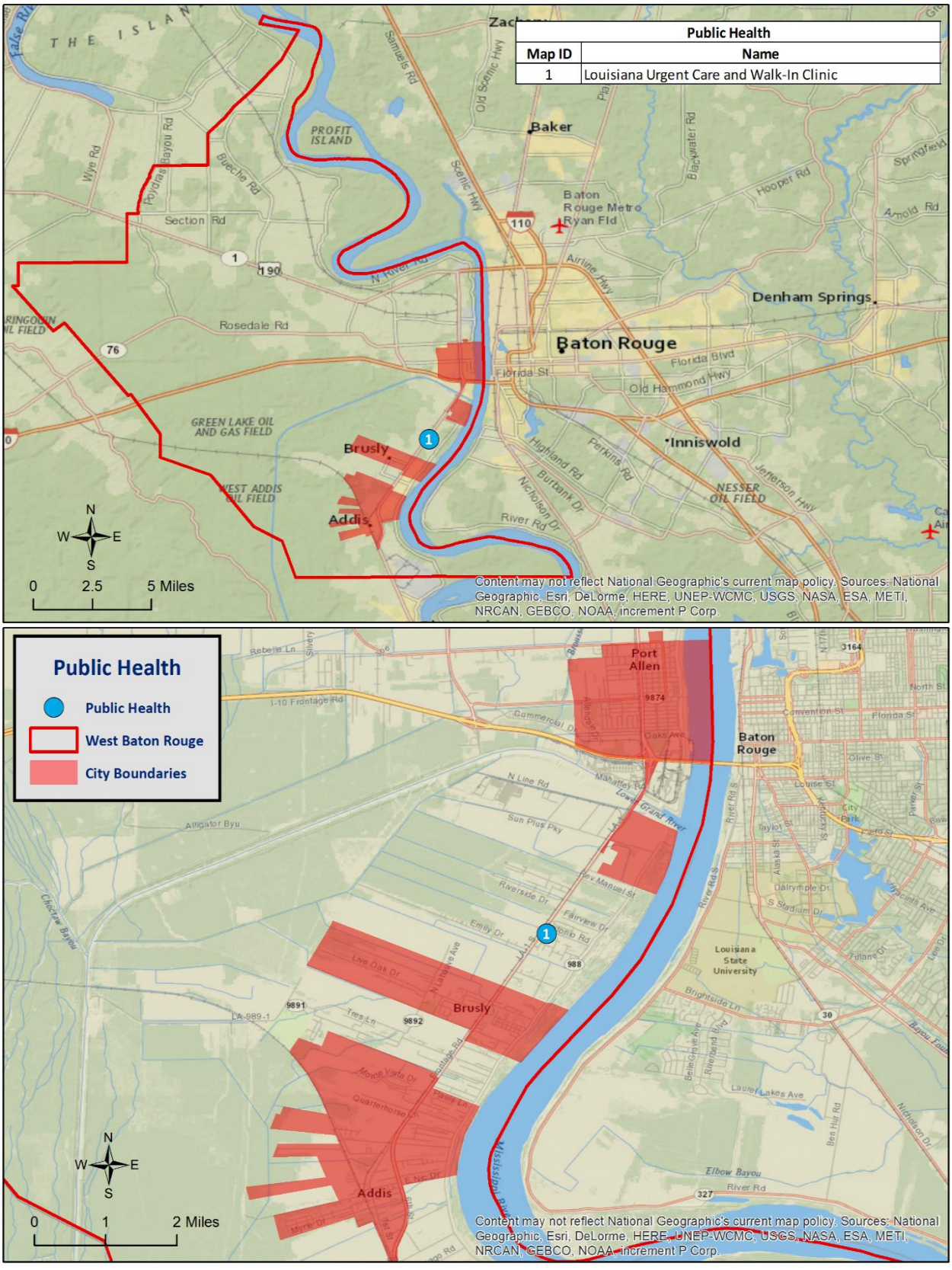


Figure 2-4: Public Health Facilities Located in West Baton Rouge Parish

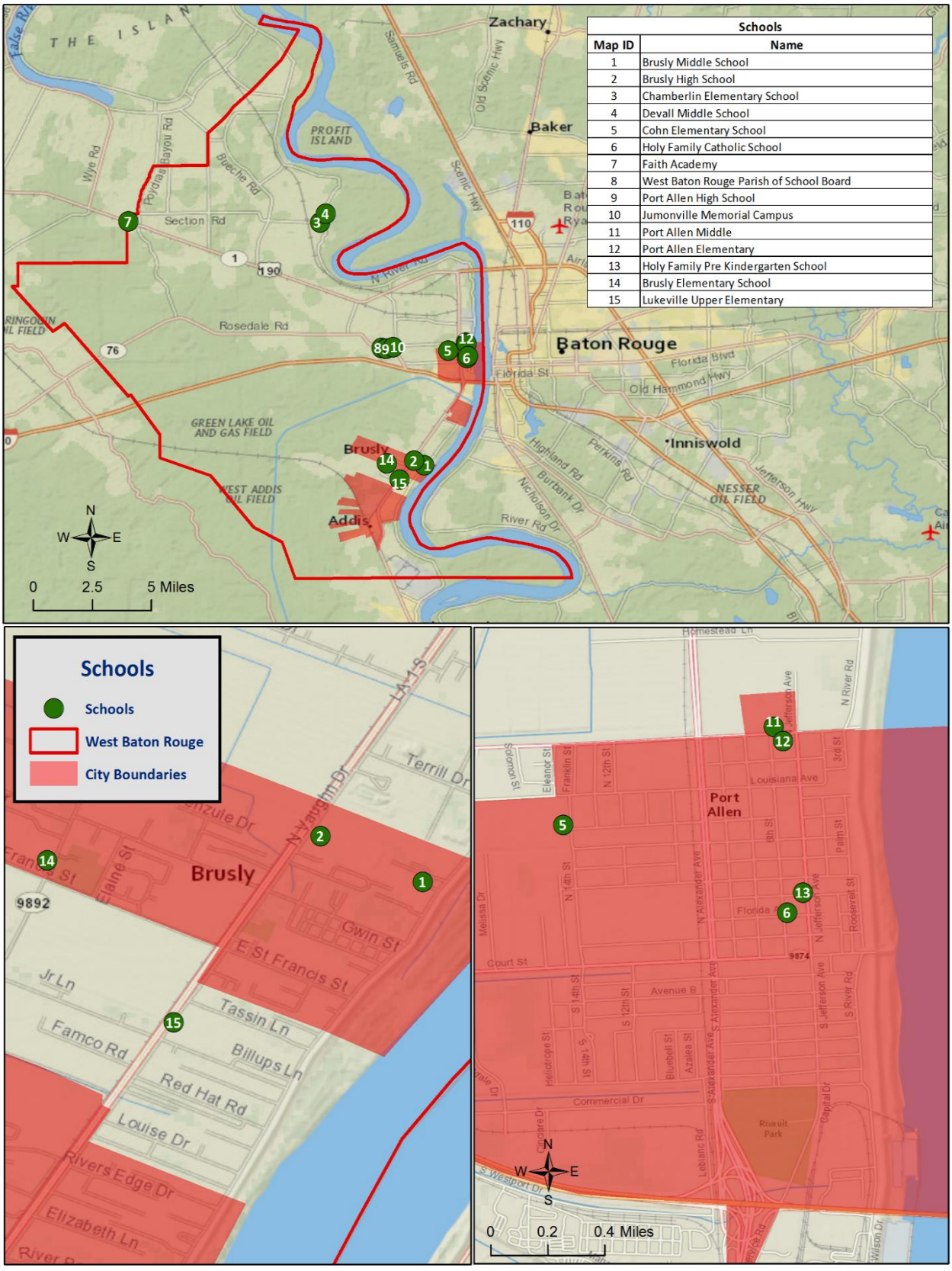


Figure 2-5: Educational Facilities Located in West Baton Rouge Parish

Future Development Trends

West Baton Rouge Parish experienced a small growth in population and housing between the years of 2000 and 2013, growing from a population of 21,601 with 8,370 housing units in 2000 to a population of 24,012 with 9,507 housing units in 2013. This growth was largely in the unincorporated areas of West Baton Rouge Parish and the incorporated area of Addis. The incorporated area of Brusly experienced a population increase from the years of 2000 to 2010, but population decreased from 2010 to 2013. The incorporated area of Port Allen is the only incorporated area that has experienced a decline in population from 2000 to 2013, yet during this same time frame, it experienced an increase in housing units. 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 2013.

Table 2-5: Population Growth Rate for West Baton Rouge Parish

Total Population	West Baton Rouge Parish	West Baton Rouge (Unincorporated)	Addis	Brusly	Port Allen
1-Apr-00	21,601	12,065	2,238	2,020	5,278
1-Apr-10	23,788	12,426	3,593	2,589	5,180
1-Jul-13	24,012	12,475	3,812	2,577	5,148
Population Growth between 2000 – 2010	10.1%	3.0%	60.5%	28.2%	-1.9%
Average Annual Growth Rate between 2000 – 2010	1.0%	0.3%	6.1%	2.8%	-0.2%
Population Growth between 2010 – 2013	0.9%	0.4%	6.1%	-0.5%	-0.6%
Average Annual Growth Rate between 2010 – 2013	0.31%	0.13%	2.03%	-0.15%	-0.21%

Table 2-6: Housing Growth Rate for West Baton Rouge Parish

Total Housing Units	West Baton Rouge Parish	West Baton Rouge (Unincorporated)	Addis	Brusly	Port Allen
1-Apr-00	8,370	4,565	864	783	2,158
1-Apr-10	9,324	4,688	1,441	989	2,206
1-Jul-13	9,507	4,728	1,517	919	2,343
Housing Growth between 2000 – 2010	11.4%	2.7%	66.8%	26.3%	2.2%
Average Annual Growth Rate between 2000 – 2010	1.1%	0.3%	6.7%	2.6%	0.2%
Housing Growth between 2010 – 2013	2.0%	0.9%	5.3%	-7.1%	6.2%
Average Annual Growth Rate between 2010 – 2013	0.7%	0.3%	1.8%	-2.4%	2.1%

As shown in *Table 2-5* and *Table 2-6*, West Baton Rouge Parish has experienced slight growth in both population and housing units. Population growth rates grew at 1% annually from 2000 to 2010, and at 0.31% annually from 2010 to 2013. Housing growth rates were slightly higher at 1.1% annually for the parish from 2000 to 2010, and 0.7% annually from 2010 to 2013. From 2000 to 2010, the town of Addis had the largest increase in population at 60.5%, followed by the town of Brusly at 28.2%. The unincorporated area of West Baton Rouge experienced a population increase from 2000 to 2013 at 10.1%, while the city of Port Allen experienced a decline in population of 1.9%. From 2010 to 2013, Addis' population increased by 2.03% annually, while the unincorporated area of West Baton Rouge increased by 0.13% annually. Brusly and Port Allen experienced declines in population during this time at annual rates of 0.15% and 0.21% respectively.

Housing growth from 2000 to 2010 and from 2010 to 2013 in West Baton Rouge Parish increased at a slightly higher rate than population. The only exception to this was the town of Brusly, who experienced a 7.1% decline in housing from 2010 to 2013.

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 and housing units will continue to grow significantly within West Baton Rouge Parish from the present until 2024. A summary of estimated future impacts is shown in the table below. 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	9,569	2,515	2,598	2,702
Value of Structures	$2,211,534,128	$581,145,949	$631,658,139	$698,101,151
# of People	24,087	6,330	6,430	6,552
Tropical Cyclone				
Structures	9,569	2,515	2,598	2,702
Value of Structures	$2,211,534,128	$581,145,949	$631,658,139	$698,101,151
# of People	24,087	6,330	6,430	6,552

Land Use

The West Baton Rouge Parish Land Use table is provided below. Residential, commercial, and industrial areas account for only 11% of the parish's land use. At 63,738 acres, wetlands account for 49% of parish land, making it the largest category. Agricultural land at 42,195 acres accounts for 32% of parish lands, while water areas at 7,370 acres accounts for 6% of parish lands. The parish also consists of 3,039 acres of forested areas, accounting for 2% of all parish lands.

Table 2-8: West Baton Rouge Parish Land Use
(Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	42,195	32%
Wetlands	63,738	49%
Forest land (not including forested wetlands)	3,039	2%
Urban/Development	14,105	11%
Water	7,370	6%

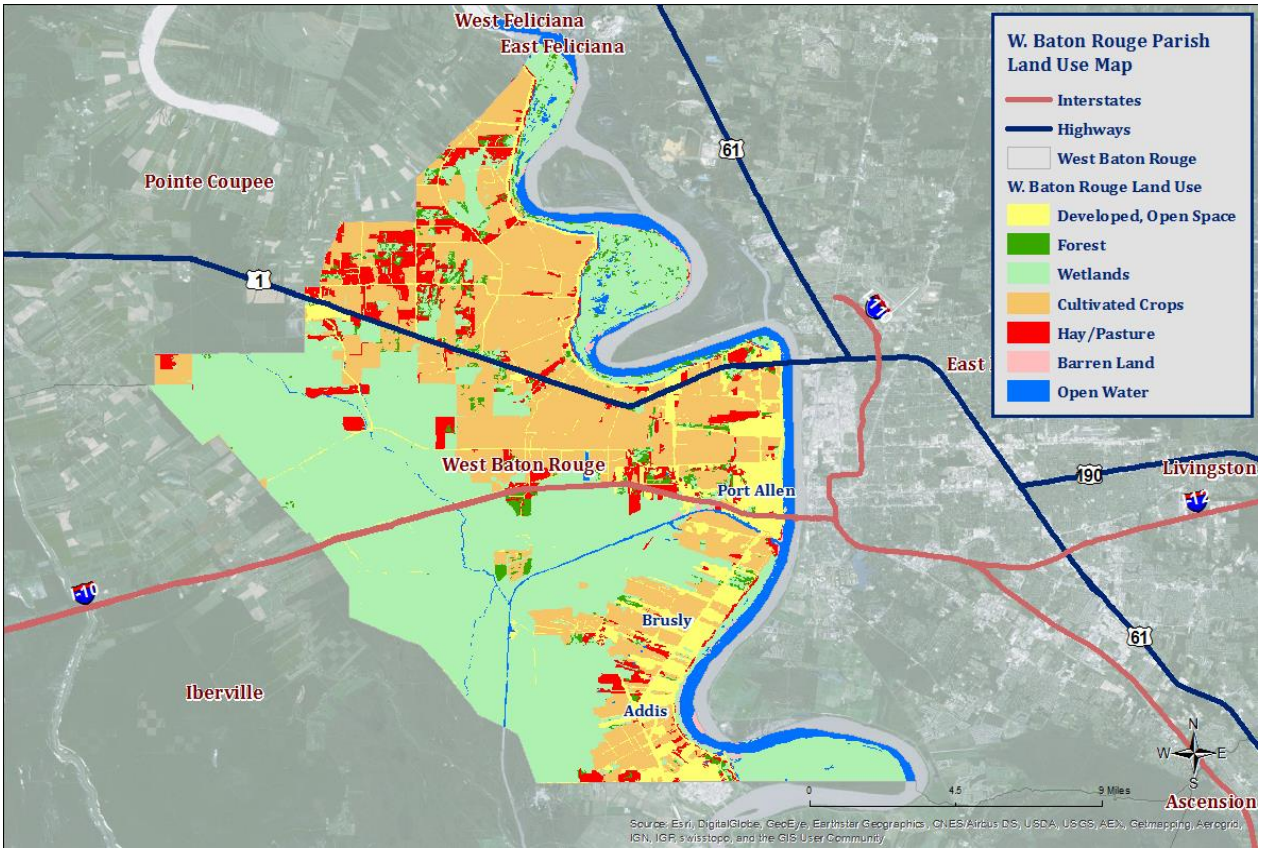


Figure 2-6: West Baton Rouge Parish Land Use Map
(Source: USGS Land Use Map)

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 or not 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. However, 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 tend to be associated with other hazards, such as wildfires and/or heat waves.

Drought is a slow onset event, causing less direct—but tremendous indirect—damage. Depletion of aquifers, increases in livestock and wildlife mortality rates, and crop loss 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 particular 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 ranges 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 or years. 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 West Baton Rouge Parish at the time this plan went to publication (*Figure 2-7*).

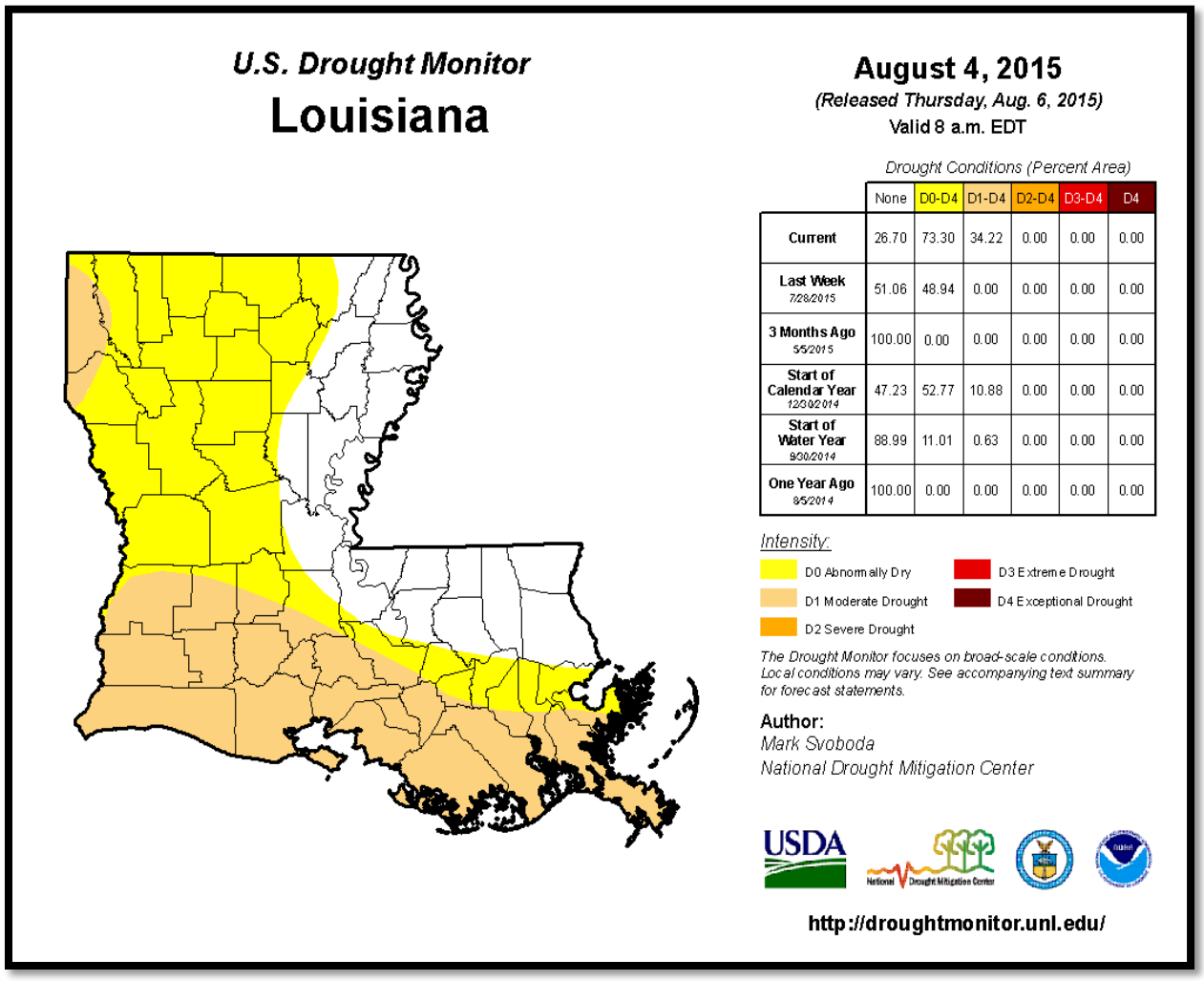


Figure 2-7: United States Drought Monitor for the State of Louisiana and its Parishes (Source: The National Drought Mitigation Center)

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 West Baton Rouge Parish is on the agricultural community.

Previous Occurrences / Extents

The SHELDUS database reports a total of two drought events occurring within the boundaries of West Baton Rouge Parish between the years of 1989 – 2014. *Table 2-10* identifies the date of occurrence, estimated crop damage, and severity of drought events that have occurred in West Baton Rouge Parish. Based on previous occurrences, the worst case scenarios for drought in West Baton Rouge Parish would be a severe drought event, based on the Palmer Classification.

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

Date	Crop Damage	Palmer Classification
August 1998	$5,034,626	Severe Drought
December 2000	$6,072,695	Severe Drought

Frequency / Probability

Based on previous occurrences of 2 drought events in 25 years, the probability of drought occurrence in the planning area in any given year is 8%.

Estimated Potential Losses

According to the SHELDUS database, there have been 3 drought events that have caused some level of crop damage. The total agricultural damage from these events is $11,107,321, with an average cost of $5,553,661 per drought event. When annualizing the total cost over the 25 year record, total annual losses based on drought is estimated to be $444,293. *Table 2-11* presents an analysis of agricultural exposure that is susceptible to droughts by major crop type for West Baton Rouge Parish.

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

Agricultural Exposure by Type for Drought					
Sugarcane	Soybeans	Pecans	Rice	Forestry	Total
$16,191,813	$6,742,570	$584,450	$543,059	$243,875	$24,305,767

There have been no reported injuries or deaths as a direct result to drought in West Baton Rouge 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. 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. *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.

Comparison of Earthquake Metrics			
PGA (%g)	Magnitude (Richter)	Intensity (MMI)	Description (MMI)
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 impacts a region, and not one specific parish or jurisdiction. Since earthquakes are a regional event, they have the same probability of occurrence throughout the entire planning area for West Baton Rouge Parish.

Previous Occurrences / Extents

Both the SHELDUS and National Climatic Data Center report no earthquake events occurring within the boundaries of West Baton Rouge Parish between the years of 1989 – 2014. The National Oceanic and Atmospheric Administration's (NOAA) National Geophysical Data Center reports one earthquake event occurring within the boundaries of West Baton Rouge Parish between the years 1811 – 2014. *Table 2-13* summarizes the earthquake event that occurred within West Baton Rouge Parish. *Figure 2-8* displays the location and intensity of each earthquake event in West Baton Rouge and surrounding parishes.

Table 2-13: Summary of Earthquakes in West Baton Rouge Parish

Date	Location	Intensity (MMI)
October 19, 1930	Port Allen	1

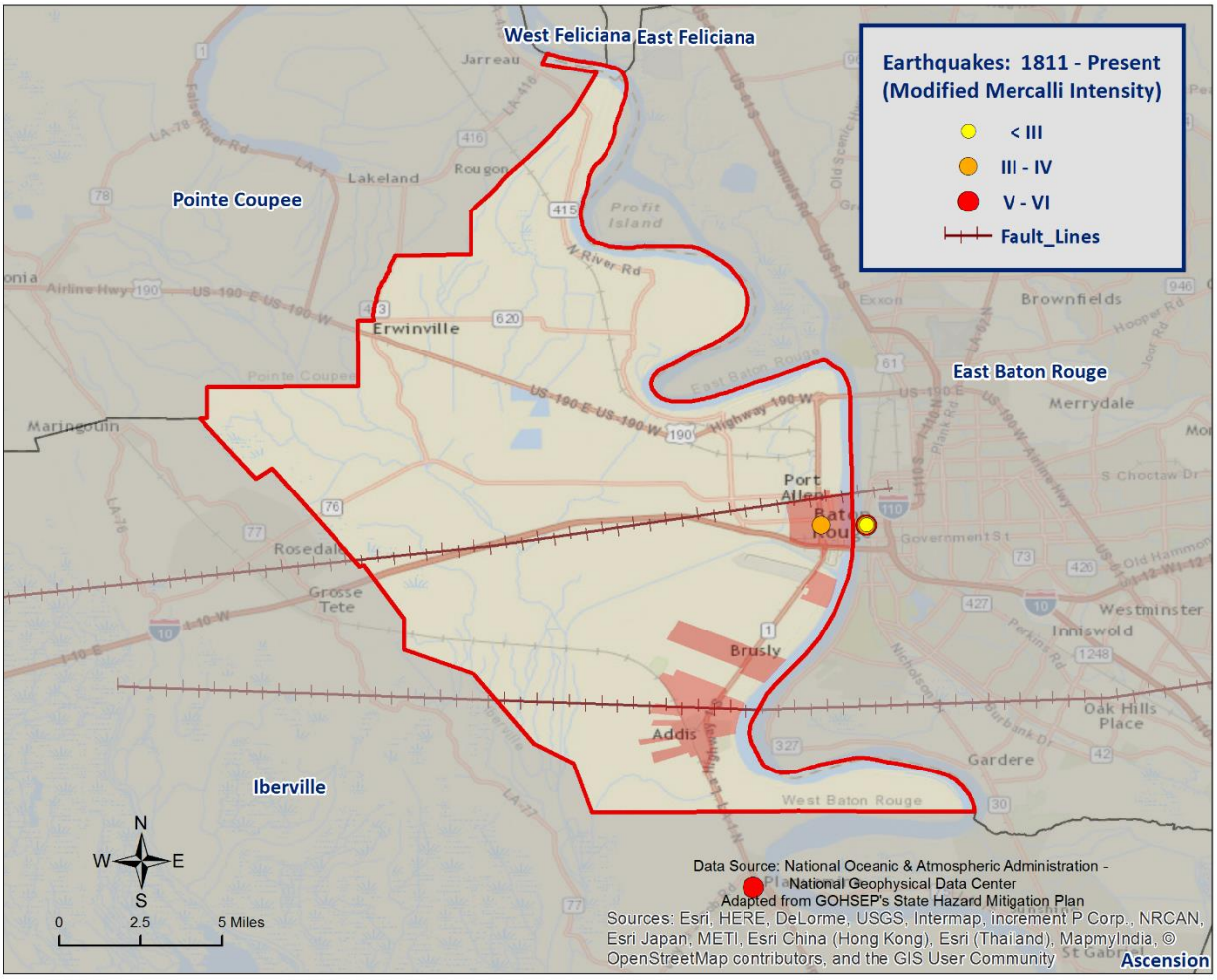


Figure 2-8: Location and Intensity (MMI) of Earthquakes in West Baton Rouge Parish

Frequency / Probability

Earthquakes are an extremely rare occurrence in the State of Louisiana and West Baton Rouge Parish, with one occurrence of an earthquake event within the boundaries of the parish from the years 1811 – 2014. Based on this historical record and Louisiana's State Hazard Mitigation Plan, it is determined that the risk associated with an earthquake event to people and property is low for the entire West Baton Rouge Parish planning area, 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 the 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, pipelines, utilities, and railroads. High temperatures can be partially responsible for deflection of rails and related railroad accidents.

According to NOAA, extreme heat is the leading weather-related cause of death in the United States. 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 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)

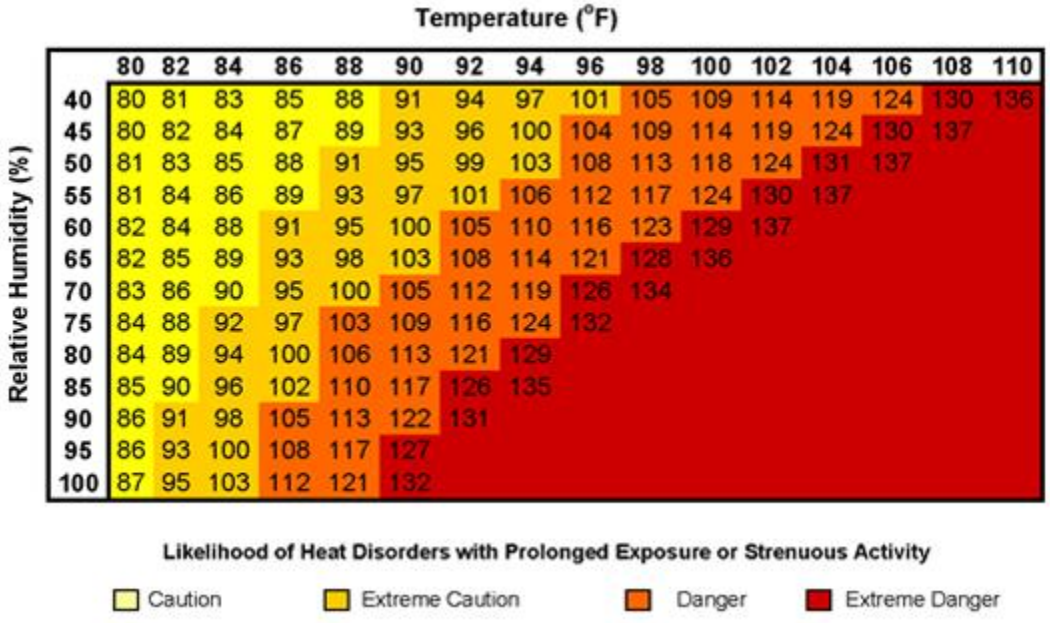


Table 2-15: Summary of Heat Index Risk Levels with Protective Measures (Source: National Weather Service)

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 West Baton Rouge Parish as all of the adjacent parishes, the entire planning area for West Baton Rouge Parish is equally at risk for extreme heat.

Previous Occurrences / Extents

The SHELDUS database reports no significant extreme heat events occurring within the boundaries of West Baton Rouge Parish between the years of 1989 - 2014.

Frequency / Probability

The SHELDUS database reports no extreme heat events occurring within the boundaries of West Baton Rouge Parish within the past 25 years. Based on this historical data, an extreme heat event is considered to be a rare event for the entire planning area in West Baton Rouge Parish.

Estimated Potential Losses

Because an extreme heat event that causes property or crop damage and injuries or loss of life has not occurred within the boundaries of West Baton Rouge Parish in the past 25 years, extreme heat events are not carried forward into risk assessment.

Flooding

A flood is the overflow of water onto land that is usually not inundated. The National Flood Insurance Program (NFIP) 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. Louisiana may experience 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 floods 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, including the contour 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.

In West Baton Rouge Parish, all six types of flooding have historically been observed. For purposes of this assessment, ponding, flash flooding, 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 primarily 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, a flood event of that magnitude can be expected 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. 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, 100-year flood events may 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 flood 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 flood 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 since 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 the Federal Emergency Management Agency (FEMA) suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in *Figure 2-9*.

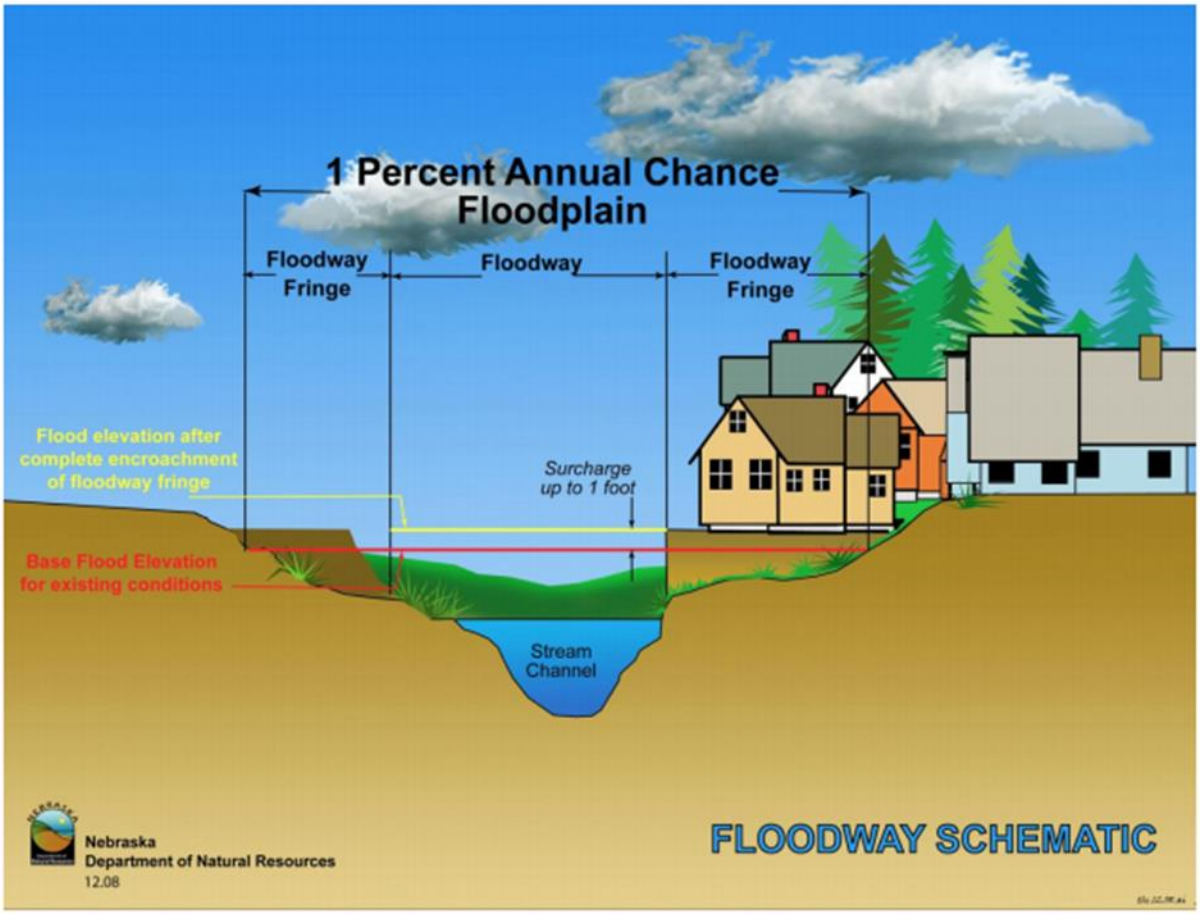


Figure 2-9: Schematic of 100-Year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.
(Source: Nebraska Department of Natural Resources)

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 certain circumstances, 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 to 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 usually

are 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. Is covered under a contract for flood insurance made available under the NFIP; and
b. 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.

Repetitive loss properties for West Baton Rouge Parish are provided below:

Table 2-16: Repetitive Loss Structures for West Baton Rouge Parish

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
West Baton Rouge Parish (Unincorporated)	10	9	1	0	25	$435,815	$17,433
Addis	0	0	0	0	0	$0	$0
Brusly	0	0	0	0	0	$0	$0
Port Allen	7	3	4	0	17	$316,435	$18,614
Total	17	12	5	0	42	$752,250	$17,911

All seventeen 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 seventeen structures, while *Figure 2-11* shows where the highest concentration of repetitive loss structures are located. Through the density loss map, it is clear that the primary concentrated area of repetitive loss structures are focused in the incorporated area of Port Allen.

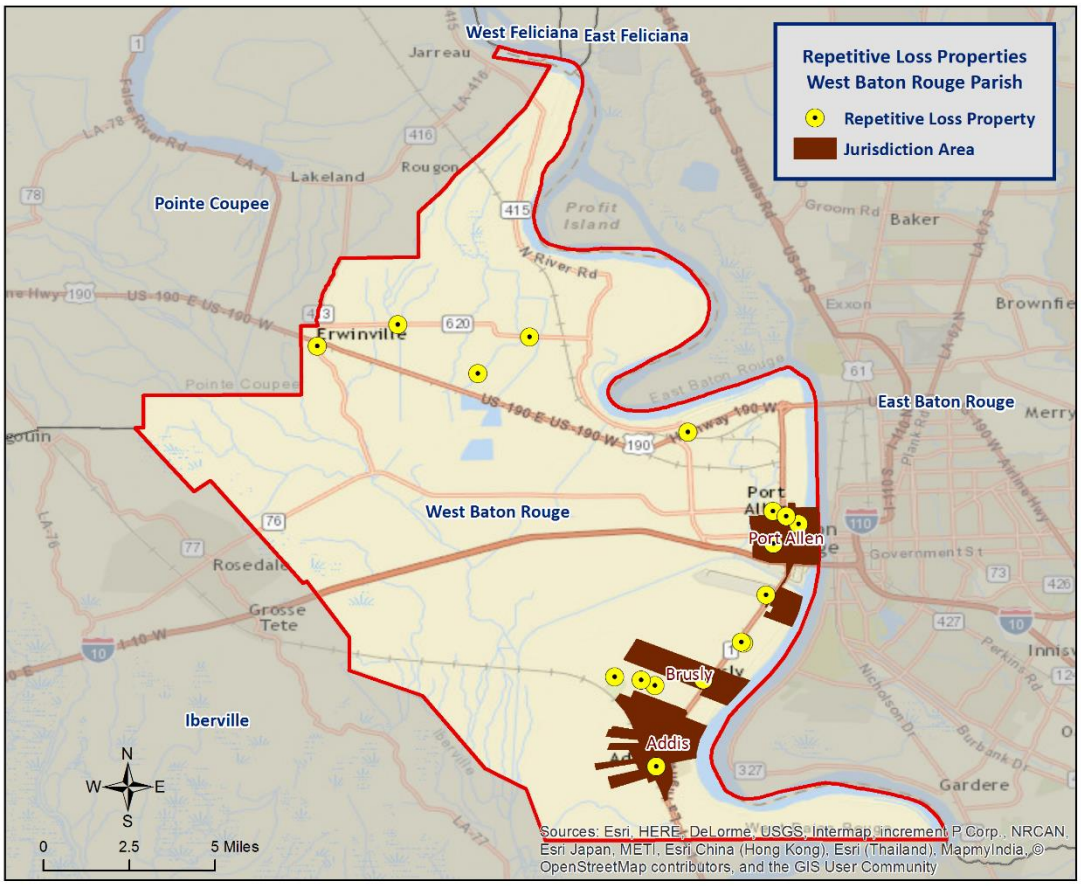


Figure 2-10: Repetitive Loss Properties in West Baton Rouge Parish

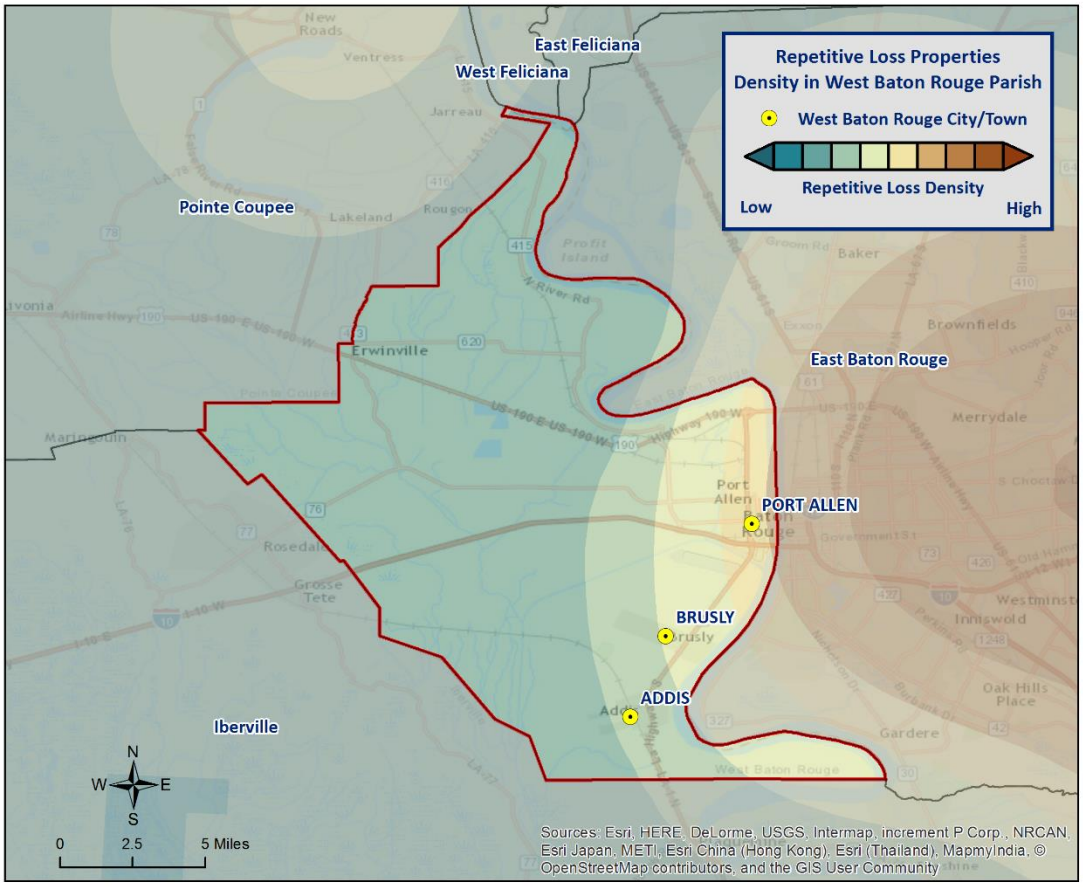


Figure 2-11: Repetitive Loss Property Densities in West Baton Rouge Parish

National Flood Insurance Program

Flood insurance statistics indicate that West Baton Rouge Parish has 968 flood insurance policies with the NFIP, with total annual premiums of $515,073. West Baton Rouge Parish, the city of Port Allen, and the towns of Addis and Brusly are all participants in the NFIP. West Baton Rouge Parish and each of the incorporated jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas, and will continue to monitor activities including local requests for map updates. Flood insurance statistics and additional NFIP participation details for West Baton Rouge Parish are provided in the tables to follow.

Table 2-17: Summary of NFIP Policies for West Baton Rouge Parish

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
West Baton Rouge Parish (Unincorporated)	697	$199,182,800	$381,395	97	$859,885
Addis	41	$10,051,900	$23,590	1	$42,034
Brusly	123	$3,724,400	$54,018	16	$162,026
Port Allen	107	$27,084,100	$56,070	25	$311,521
Total	968	$240,043,200	$515,073	139	$1,375,466

Table 2-18: Summary of Community Flood Maps for West Baton Rouge Parish

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
220240#	Addis, Town of	12/7/1973	8/15/1977	7/16/2014	8/15/1977	No
220241#	Brusly, Town of	6/28/1974	9/7/2000	7/16/2014	8/15/1977	No
220241	Port Allen, City of	6/28/1974	1/24/1978	7/16/2014	1/24/1978	No
220239#	West Baton Rouge Parish	-	4/3/1978	7/16/2014	4/3/1978	No

According to the Community Rating System (CRS) list of eligible communities dated June 1, 2014, West Baton Rouge Parish participates in the CRS, while the city of Port Allen, and the towns of Addis and Brusly do not participate.

Table 2-19: List of Areas within West Baton Rouge 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
220239	West Baton Rouge Parish	10/1/1993	10/1/1996	8	10%	5%	c

Threat to People

Similar to the effects on property, 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 the passengers within the vehicle. Victims of floods 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 West Baton Rouge Parish

By definition, flooding is caused by more water than the drainage system can convey. The following is a brief synopsis of the types of flooding events that affect West Baton Rouge Parish.

Flash Flooding: Flash flooding is characterized by a rapid rise in water level, high velocity, and large amounts of debris. It is capable of tearing out 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: Local 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: Riverine flooding, by definition, is river based. Most of the riverine flooding problems occur when the Mississippi River crests at flood stage levels causing extensive flooding in low-lying areas.

Fluctuating Lake Levels: Can occur on a short-term, seasonal basis or on a long-term basis over periods of months or years. Heavy seasonal rainfall can cause high lake levels for short periods of time. Not only does this cause lake levels to rise, it also prevents natural drainage and causes flooding.

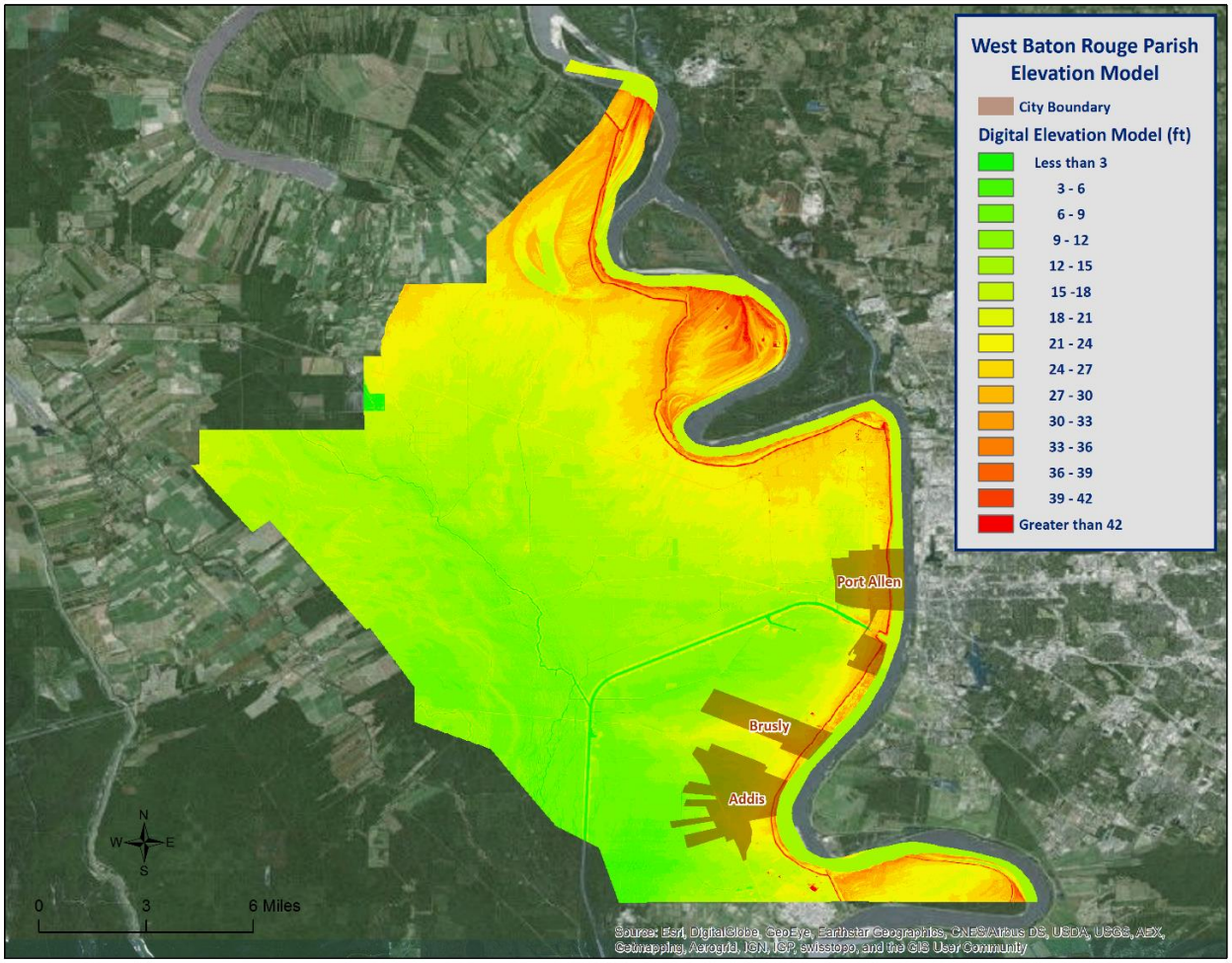


Figure 2-12: Elevation throughout West Baton Rouge Parish

Looking at the digital elevation model (DEM) in *Figure 2-12* for West Baton Rouge Parish is instructive in visualizing where the low lying and risk areas are for the parish. Elevations in the parish range from near sea level to 45 feet. The highest elevations in the parish are approximately 45 feet in the northern portion of the parish. The lowest elevations of the parish are located in the eastern and southern portions of the parish, and range from near sea level to approximately 6 feet. Port Allen has the highest average elevation of the incorporated areas at 26 feet, followed by Brusly at 23 feet, and Addis at twenty feet.

Location

Historically, West Baton Rouge Parish has flooded each time the Mississippi River reached flood stage. Presently, a system of levees constructed by the United States Army Corps of Engineers retains the Mississippi River waters. Only the extreme eastern strip of the parish, on the river or batture side of the levee, will be flooded by the river. Most of the flooded area in the parish is woodland, characterized as being rural in nature, and rather sparsely inhabited. Various problems are associated with the wetness of the alluvial soils in producing flood conditions in the parish. The loamy, natural levees along stream channels exhibit the most slope, and surface runoff is toward the lower, clayey areas between channels. Elevations of these broad, nearly level areas are not much above existing outlets. Gradients are not extreme, and water can stand on these broad lows for long periods. In addition to this broad drainage problem, micro-relief on alluvial surfaces impedes surface drainage and creates minor lows for water to

remain for long periods. Drainage ditches must be cleared of sediment periodically to maintain adequate flow. In general, the parish's channels are not adequate to either prevent frequent, direct overflow from flooding, or to allow drainage systems to function properly. Because of its land flatness, high annual rainfall, and soil wetness, the parish's water-problem sources are closely related. As flooding from storm runoff aggravates and prolongs wet soil conditions in the nearly level terrain, drainage and flood problems are inseparable.

The following pages contain enlarged maps of the incorporated areas showing the areas within each jurisdiction that are at risk to flooding.

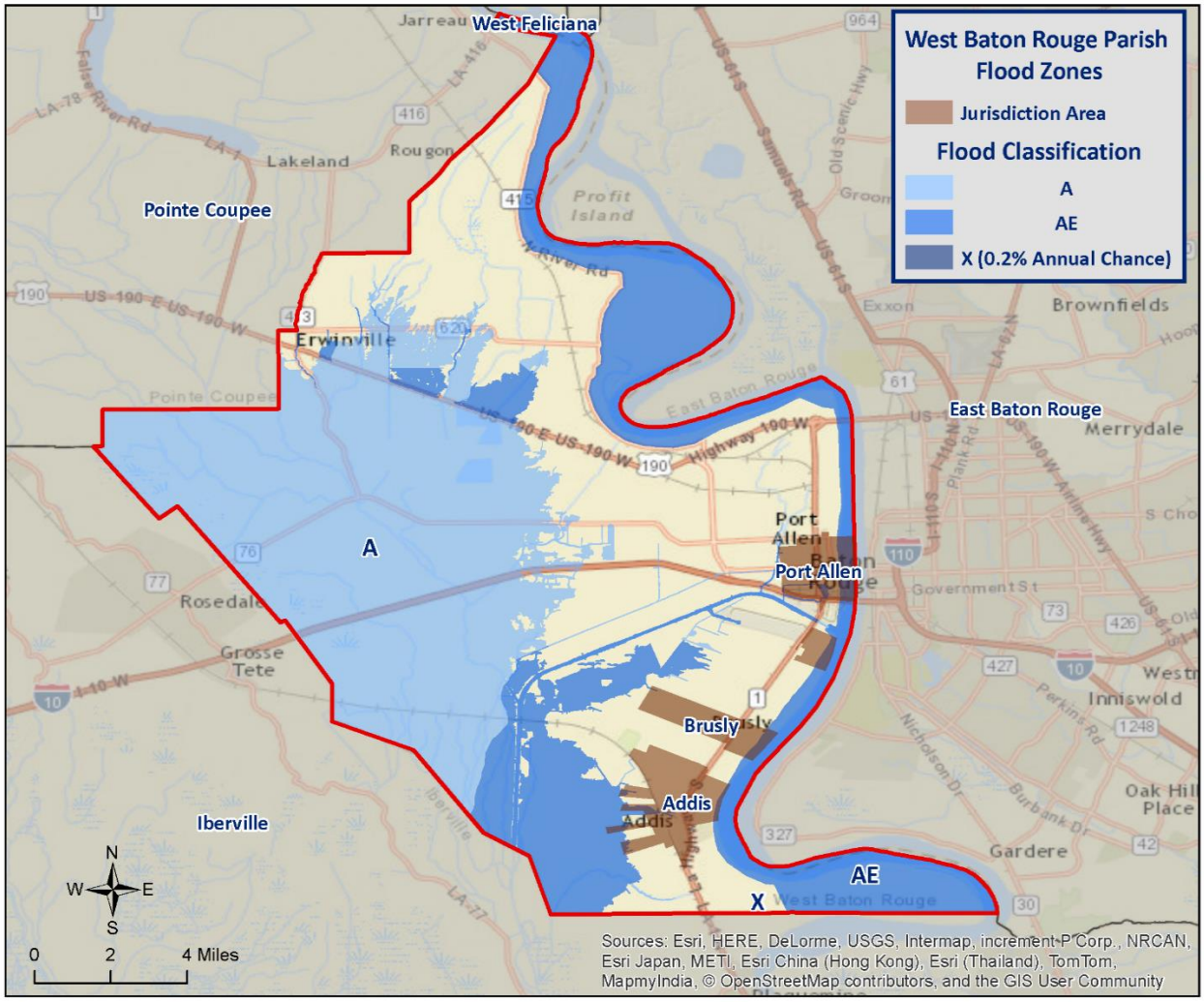


Figure 2-13: West Baton Rouge Parish Areas within the Flood Zones

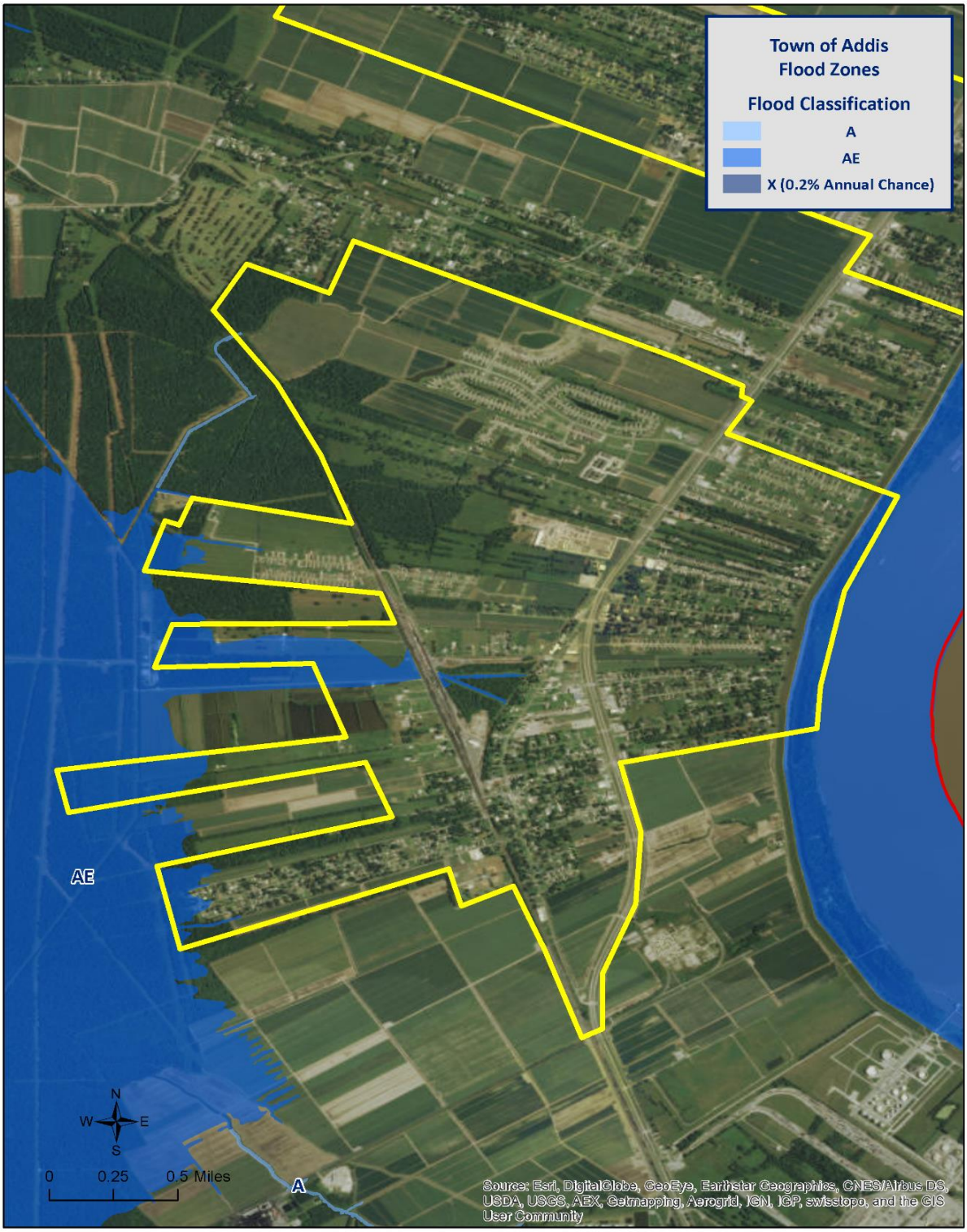


Figure 2-14: Town of Addis Areas within the Flood Zones

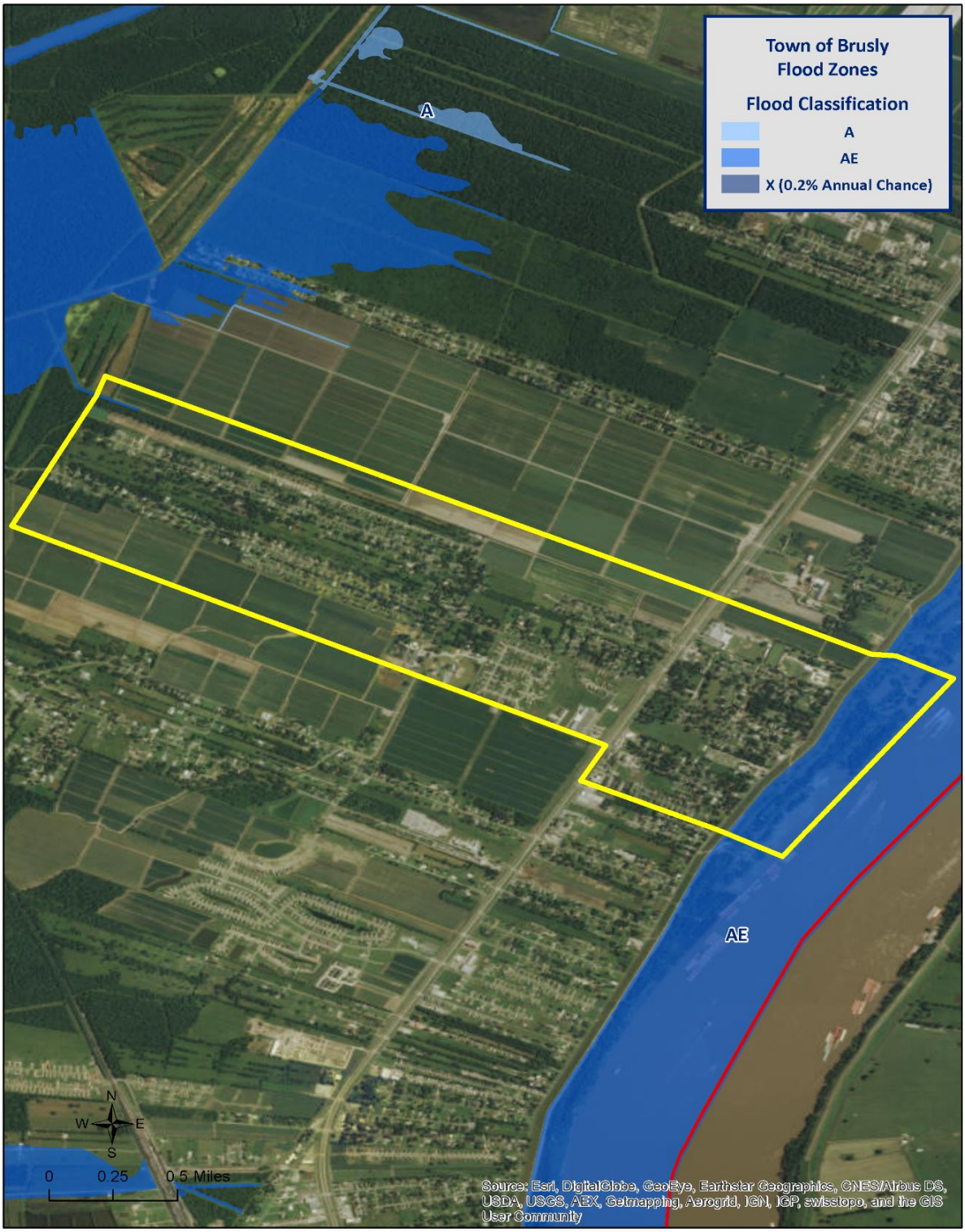


Figure 2-15: Town of Brusly Areas within the Flood Zones

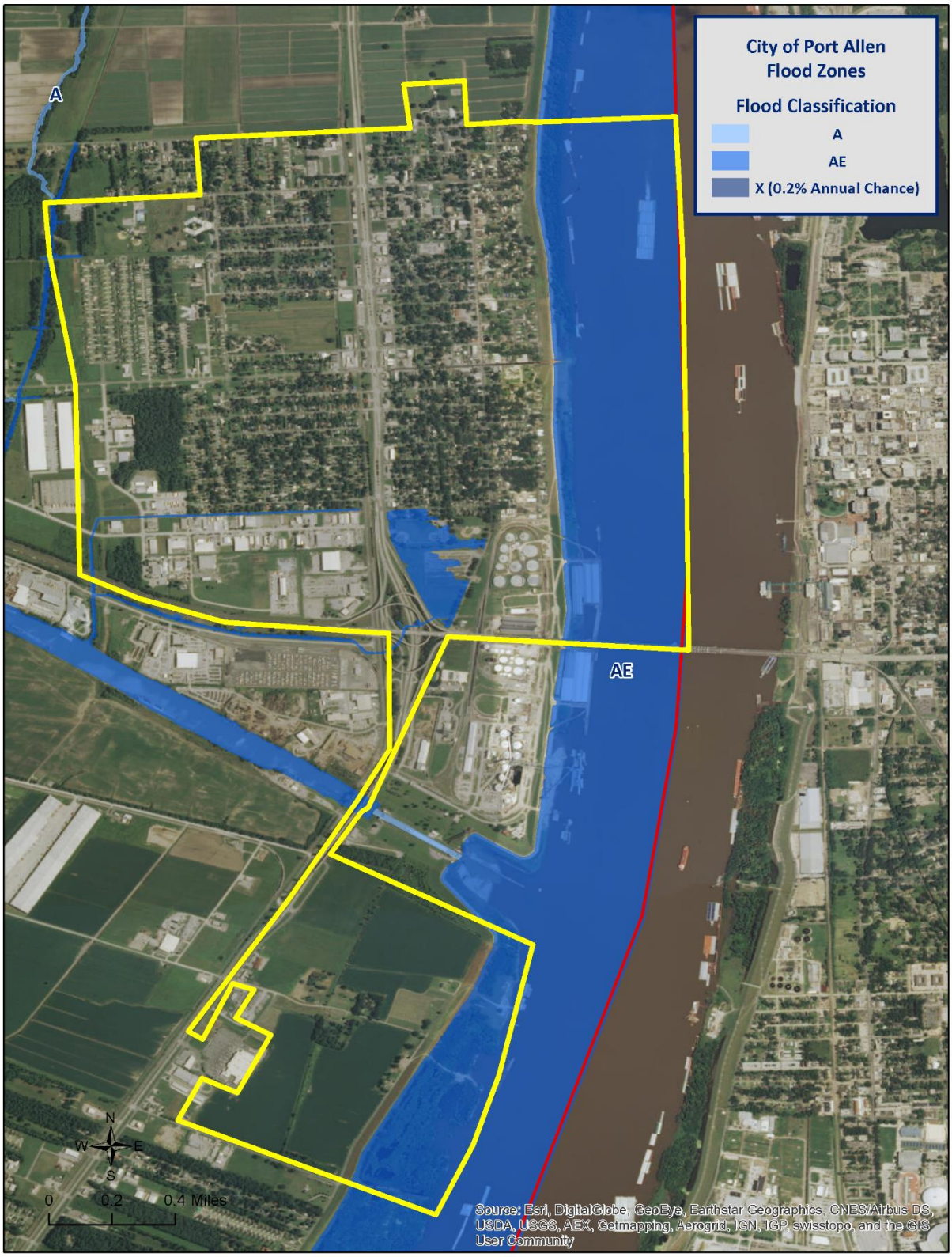


Figure 2-16: City of Port Allen Areas within the Flood Zones

Previous Occurrences and Extents

Historically, there have been six flood events that have created significant flooding in West Baton Rouge Parish between 1989 and 2014. Below is a brief synopsis of the five flooding events that have occurred since 1989, including each flooding event that has occurred since the parish's last planning update.

Table 2-20: Historical Floods in West Baton Rouge Parish with Locations from 2009 - 2014

Date	Extents	Type of Flooding	Estimated Damages	Location
March 10, 1997	The Mississippi River exceeded flood stage during the first half of the month. The high stages on the river greatly impacted barge and ship traffic with restrictions in place through most of the month of March.	Flood	$0	PARISH-WIDE
April 1, 1997	The Mississippi River crested in March and flood waters begin to recede by April. High water levels and greater than normal flow continued to restrict barge and ship traffic as well as contributed to several barge and ship accidents on the river.	Flood	$111,826	PARISH-WIDE
June 7, 2001	Outer rain bands from Tropical Storm Allison caused flash flooding throughout the parish. Three homes and several buildings were flooded.	Flash Flood	$32,885	PARISH-WIDE
December 30, 2006	Thunderstorms produced heavy rainfall that resulted in the flooding of some homes and numerous roadways.	Flash Flood	$0	ERWINVILLE
July 25, 2010	Remnants of Tropical Storm Bonnie produced as much as 8 inches of rain in approximately 90 minutes. 110 homes in the parish were flooded with 15 of those homes located in Brusly.	Flash Flood	$534,168	UNINCORPORATED AREA AND BRUSLY

There have been no significant flooding events in the incorporated areas of Addis, Brusly, and Port Allen since the plan was last updated in 2011.

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. The incorporated areas of Addis and Brusly

can expect flood depths of two to four feet. The worst-case scenario for the incorporated area of Port Allen is slightly higher, with flood depths ranging from three to five feet.

Frequency / Probability

While other parts of this plan, along with the state's Hazard Mitigation Plan, have relied on the SHELDUS database to provides the annual probability, due to West Baton Rouge Parish having multiple jurisdictions, it was necessary to assess the historical data found in the National Climatic Data Center for West Baton Rouge 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 2-21: Flood Annual Probabilities for West Baton Rouge Parish

Jurisdiction	Annual Probability	Return Frequency
West Baton Rouge Parish (Unincorporated)	24%	4 to 5 years
Addis	12%	8 to 9 years
Brusly	16%	6 to 7 years
Port Allen	12%	8 to 9 years

Based on historical record, the overall flooding probability for the entire West Baton Rouge Parish Planning area is 24%, with six 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. *Table 2-22* shows the total economic losses that would result from this occurrence.

Table 2-22: Estimated Losses in West Baton Rouge Parish from a 100-Year Flood Event (Source: Hazus 2.2)

Jurisdiction	Estimated total Losses from 100-Year Flood Event
West Baton Rouge Parish (Unincorporated)	$25,823,000
Addis	$374,000
Brusly	$121,000
Port Allen	$2,256,000
Total	$28,574,000

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 tables on the following pages.

Table 2-23: Estimated 100-Year Flood Losses for Unincorporated West Baton Rouge Parish by Sector (Source: Hazus 2.2)

West Baton Rouge Parish (Unincorporated)	Estimated total Losses from 100-Year Flood Event
Agricultural	$68,000
Commercial	$4,943,000
Government	$550,000
Industrial	$6,612,000
Religious / Non-Profit	$915,000
Residential	$12,645,000
Schools	$90,000
Total	$25,823,000

Table 2-24: Estimated 100-Year Flood Losses for Addis by Sector (Source: Hazus 2.2)

Addis	Estimated total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$10,000
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$364,000
Schools	$0
Total	$374,000

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

Brusly	Estimated total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$9,000
Government	$0
Industrial	$0
Religious / Non-Profit	$0
Residential	$112,000
Schools	$0
Total	$121,000

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

Port Allen	Estimated total Losses from 100-Year Flood Event
Agricultural	$0
Commercial	$403,000
Government	$41,000
Industrial	$8,000
Religious / Non-Profit	$42,000
Residential	$1,762,000
Schools	$0
Total	$2,256,000

Threat to People

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

Table 2-27: 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**
West Baton Rouge Parish (Unincorporated)	**12,426**	**3,912**	**31.5%**
Addis	**3,593**	**703**	**19.6%**
Brusly	**2,589**	**103**	**4.0%**
Port Allen	**5,180**	**1,533**	**29.6%**
Total	**23,788**	**6,251**	**26.3%**

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

Table 2-28: Vulnerable Populations Susceptible to a 100-Year Flood Event in Unincorporated West Baton Rouge Parish
(Source: Hazus 2.2)

West Baton Rouge Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	3,912	31.5%
Persons Under 5 Years	262	6.7%
Persons Under 18 Years	943	24.1%
Persons 65 Years and Over	462	11.8%
White	2,351	60.1%
Minority	1,561	39.9%

Table 2-29: Vulnerable Populations Susceptible to a 100-Year Flood Event in Addis
(Source: Hazus 2.2)

Addis		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	703	19.6%
Persons Under 5 Years	57	8.2%
Persons Under 18 Years	138	19.7%
Persons 65 Years and Over	58	8.3%
White	486	69.1%
Minority	217	30.9%

Table 2-30: Vulnerable Populations Susceptible to a 100-Year Flood Event in Brusly
(Source: Hazus 2.2)

Brusly		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	103	4.0%
Persons Under 5 Years	7	6.8%
Persons Under 18 Years	20	19.1%
Persons 65 Years and Over	13	12.4%
White	77	74.3%
Minority	26	25.7%

Table 2-31: Vulnerable Populations Susceptible to a 100-Year Flood Event in Port Allen (Source: Hazus 2.2)

Port Allen		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	1,533	29.6%
Persons Under 5 Years	115	7.5%
Persons Under 18 Years	235	15.3%
Persons 65 Years and Over	218	14.2%
White	612	39.9%
Minority	921	60.1%

Vulnerability

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

Land Subsidence

Coastal land loss is the loss of land (especially beach, shoreline, or dune material) by natural and/or human influences. Coastal land loss occurs through various means, including erosion, subsidence (the sinking of land over time as a result of natural and/or human-caused actions), saltwater intrusion, coastal storms, littoral drift, changing currents, manmade canals, rates of accretion, and sea level rise. The effects of these processes are difficult to differentiate because of their complexity and because they often occur simultaneously, with one influencing each of the others.

Some of the worst recent contributors to coastal land loss in the state are the tropical cyclones of the past decade. Two storms that stand out in this regard are Hurricanes Katrina and Rita. These powerful cyclones completely covered large tracts of land in a very brief period, permanently altering the landscape. The disastrous legacy of these storms galvanized already ongoing efforts to combat coastal land loss. Consistent with the 2014 State Hazard Mitigation Plan Update, coastal land loss is considered in terms of two of the most dominant factors: sea level rise and subsidence.

Sea level rise and subsidence impact Louisiana in a similar manner—again making it difficult to separate impacts. Together, rising sea level and subsidence—known together as relative sea level rise—can accelerate coastal erosion and wetland loss, exacerbate flooding, and increase the extent and frequency of storm impacts. According to NOAA, global sea level rise refers to the upward trend currently observed in the average global sea level. Local sea level rise is the level that the sea rises relative to a specific location (or, benchmark) at the coastline. The most prominent causes of sea level rise are thermal expansion, tectonic actions (such as sea floor spreading), and the melting of the Earth's glacial ice caps.

The current U.S. Environmental Protection Agency (EPA) estimate of global sea level rise is ten to twelve inches per century, while future sea level rise could be within the range of one to four feet by 2100. According to the U.S. Geological Survey (USGS), the Mississippi Delta plain is subject to the highest rate of relative sea level rise of any region in the nation largely due to rapid geologic subsidence.

Subsidence results from a number of factors including:

- Compaction/consolidation of shallow strata caused by the weight of sediment deposits, soil oxidation, and aquifer draw-down (shallow component)
- Gas/oil/resource extraction (shallow & intermediate component)
- Consolidation of deeper strata (intermediate components)
- Tectonic effects (deep component)

For the most part, subsidence is a slow-acting process with effects that are not as evident as hazards associated with discrete events. Although the impacts of subsidence can be readily seen in coastal parishes over the course of decades, subsidence is a "creeping" hazard. The highest rate of subsidence is occurring at the Mississippi River Delta (estimated at greater than 3.5 feet/century). Subsidence rates tend to decrease inland, and they also vary across the coast.

Overall, subsidence creates three distinct problems in Louisiana:

- By lowering elevations in coastal Louisiana, subsidence accelerates the effects of saltwater intrusion and other factors that contribute to land loss
- By lowering elevations, subsidence may make structures more vulnerable to flooding

- By destabilizing elevations, subsidence undermines the accuracy of surveying benchmarks (including those affecting levee heights, coastal restoration programs, surge modeling, BFEs, and other engineering inputs), which can contribute to additional flooding problems if construction occurs at lower elevations than anticipated or planned

Location

Historic areas of coastal land loss and gain (*Figure 2-17*) and subsidence rates (*Figure 2-18*) have been quantified for West Baton Rouge Parish using data from the U.S. Geologic Survey and Louisiana Coastal Protection and Restoration Authority (CPRA). Since 1932, the average annual land loss in Louisiana is 35 mi^2, while the average annual land gain has been 3 mi^2 for a net loss of 32 mi^2 per year. However, the models reflect no measurable land loss or subsidence currently in West Baton Rouge Parish (Figure 2-17 and *Figure 2-18*).

Previous Occurrences / Extent

Coastal land loss is an ongoing process, including discrete (hurricanes) and continuous (subsidence, sea level rise) processes. While historic flood loss data undoubtedly include the effects of coastal land loss, specific previous occurrences have not been identified as a source of direct disaster damage in Louisiana. In contrast, the effects of the underlying flood or hurricane storm surge hazard are recorded. Nevertheless, land loss is a significant hazard, and assessment of the added flood impacts caused by land loss is quantified in the following sections.

Frequency / Probability

Subsidence, sea level rise, and coastal land loss are ongoing hazards. Based on historical subsidence rates and land loss/gain trends, the probability of future land loss in Louisiana is 100% certain, but actual rates of subsidence and land loss/gain vary along the coast based on various meteorological, geological, and human-influenced dynamics (e.g., water/resource extraction, canal dredging, saltwater intrusion, marsh restoration projects, etc.). In West Baton Rouge, there have been no measurable loss estimates due to land subsidence in the parish (*Figure 2-19*). Therefore, land subsidence is not carried forward into risk assessment.

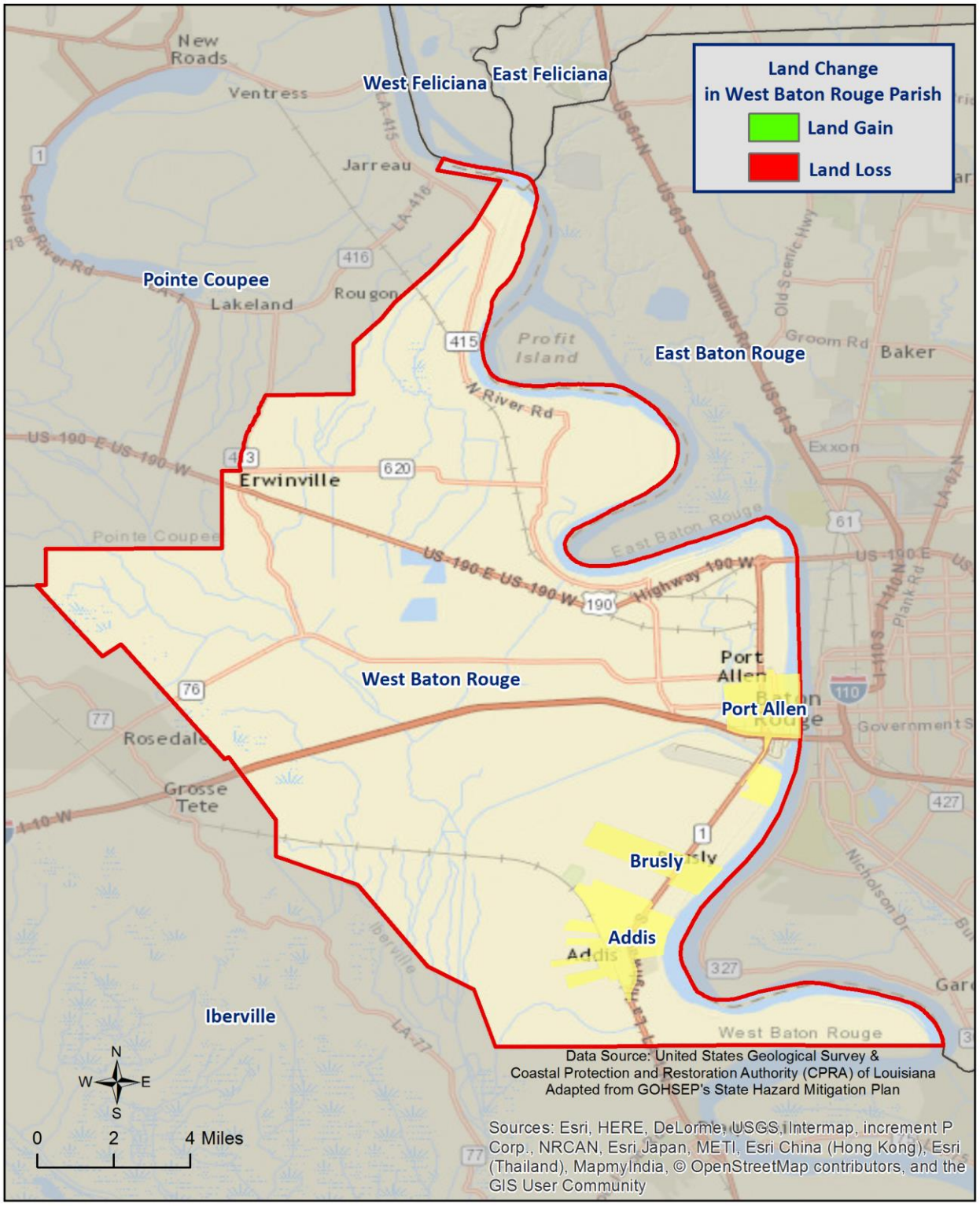


Figure 2-17: Historical Areas of Land Loss and Gain between 1932 and 2010 (Source: State of Louisiana Hazard Mitigation Plan)

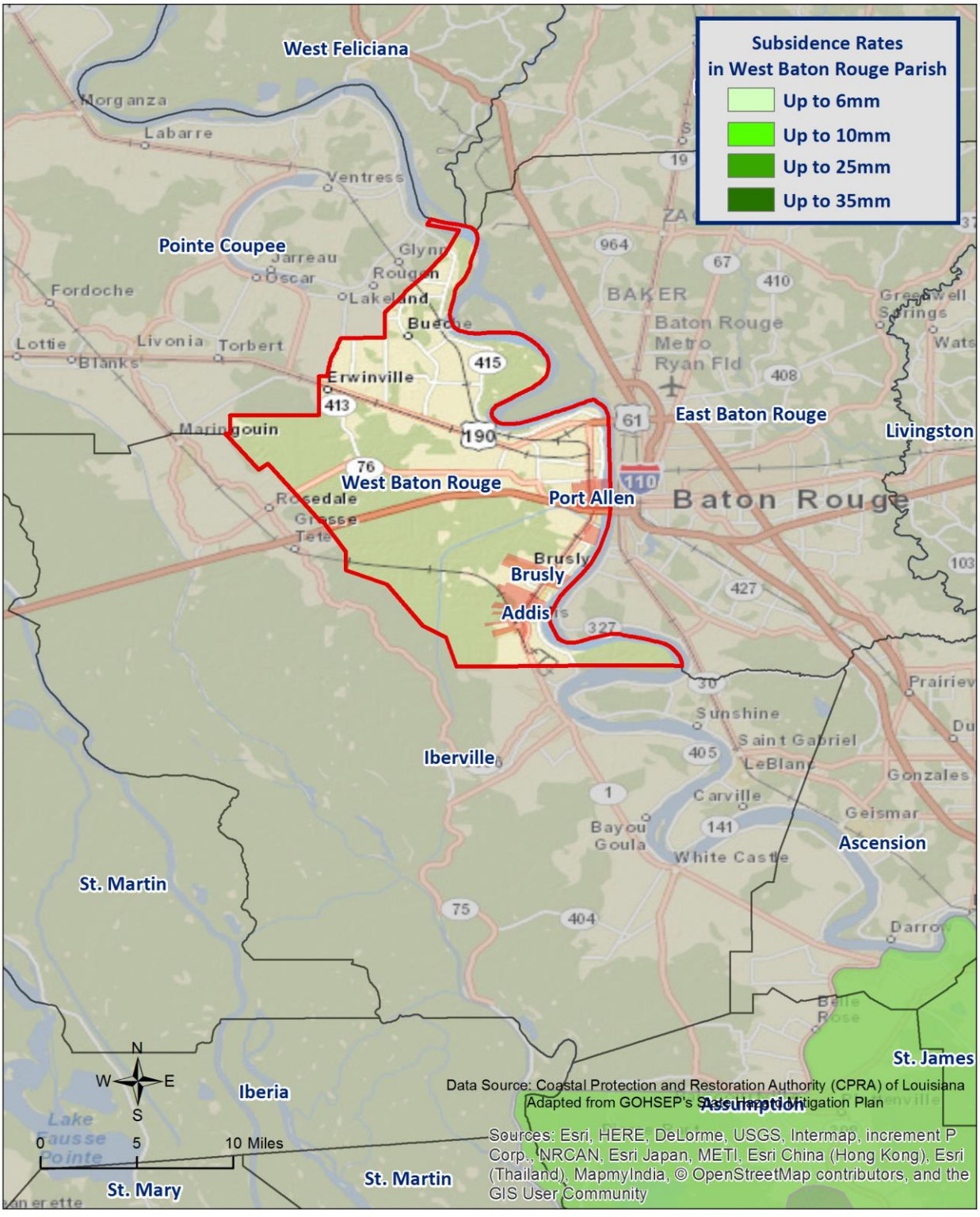


Figure 2-18: Maximum Annual Subsidence Rates Based on Subsidence Zones in Coastal Louisiana (Source: State of Louisiana Hazard Mitigation Plan)

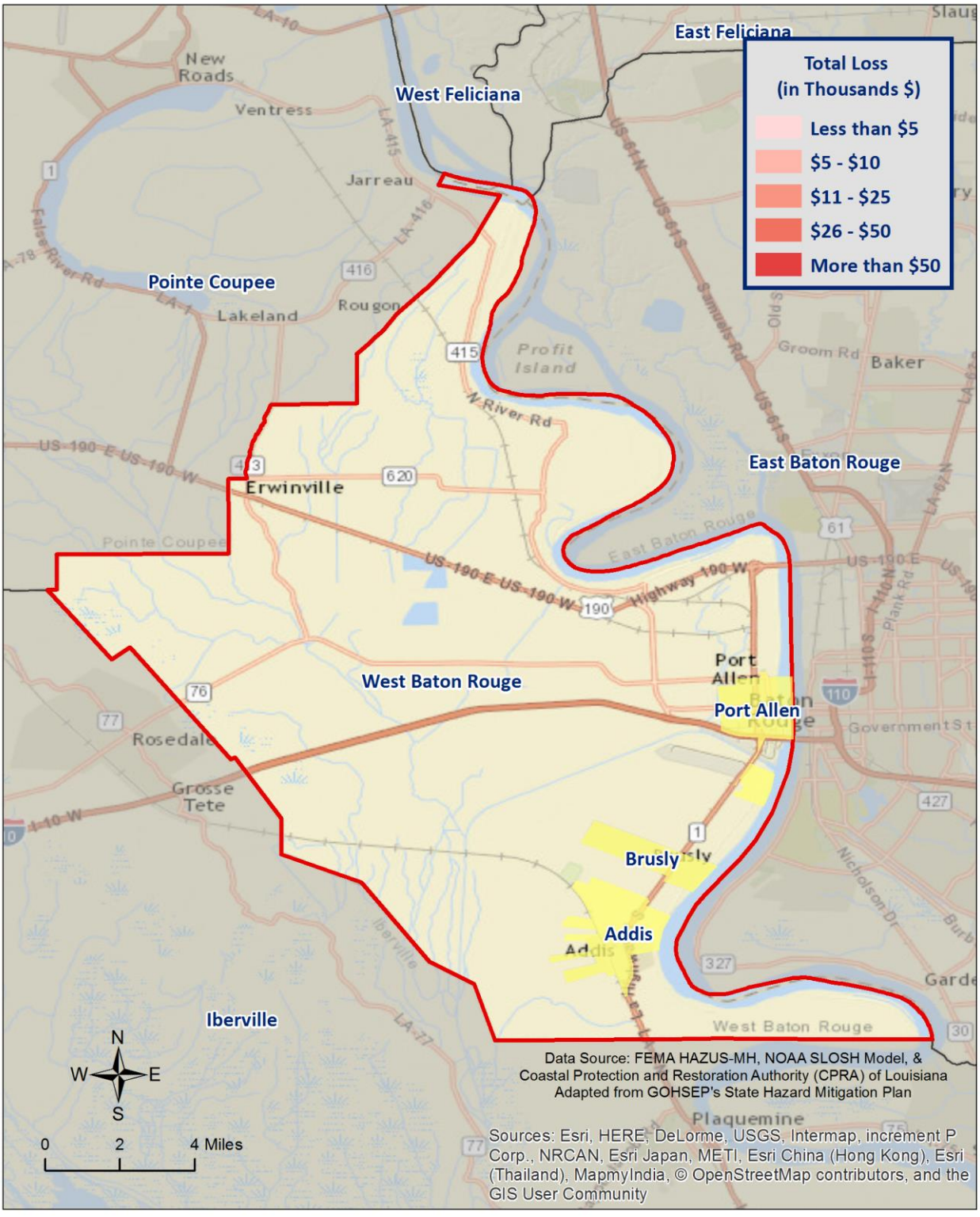


Figure 2-19: Increase in Total Loss Estimates in 2024 by Census Block Group Based on the HAZUS-MH Flood Model and NOAA SLOSH Model
(Source: State of Louisiana Hazard Mitigation Plan)

Sinkholes

Sinkholes are areas of ground with no natural external surface drainage. They can vary in size from a few square feet to hundreds of acres, and can reach depths of more than 100 feet. Sinkholes are usually found in karst terrain—that is, areas where limestone, carbonate rock, salt beds, and other water-soluble rocks lie below the Earth's surface. Karst terrain is marked by the presence of other uncommon geologic features, such as springs, caves, and dry streambeds that lose water into the ground. In general, sinkholes form gradually (in the case of cover-subsidence sinkholes), but they can also occur suddenly (in the case of cover-collapse sinkholes).

Sinkhole formation is a very simple process. Whenever water is absorbed through soil, it encounters water-soluble bedrock. The water then begins to dissolve the bedrock, forming sinkholes. The karst rock dissolves along cracks; as the fissures grow, soil and other particles fill the gaps, loosening the soil above the bedrock. *Figure 2-20* illustrates the development of a cover subsidence sinkhole. As the soil sinks from the surface, a depression forms, which draws in more water, funneling it down to the water-soluble rock. The increase of water and soil in the rock pushes open the cracks, again drawing more soil and water into it. This positive feedback loop continues, unless clay plugs into the cracks in the bedrock, at which time a pond may form. A sudden cover-collapse sinkhole occurs when the top soil above dissolving bedrock does not sink, but forms a bridge over the soil that is sinking beneath it. As *Figure 2-21* demonstrates, underground soil continues to fill the bedrock fissures, until finally the soil bridge collapses and fills the void beneath it.

Both kinds of sinkholes can occur naturally or through human influence. While sinkholes tend to form naturally in karst areas, sinkholes can form in other geological areas that have been altered by humans, by processes such as mining, sewers, hydraulic fracture drilling, groundwater pumping, irrigation, or storage ponds. In all of these cases, and others, the cause for the sinkhole is that support for surface soil has been weakened or substantially removed.

In the United States, 20% of the land is susceptible to sinkholes. Most of this area lies in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. In Louisiana, most of the sinkholes are precipitated by the human-influenced collapse of salt dome caverns. The collapse of a salt dome is usually a slow process. However, it may occur suddenly and without any advance warning.

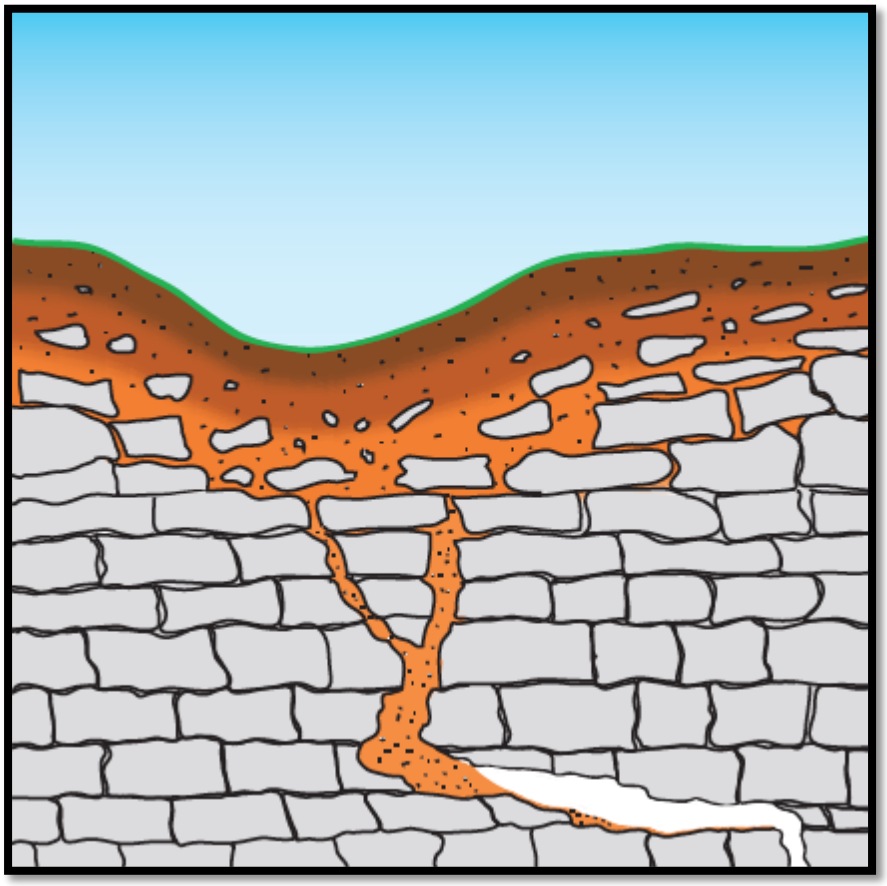


Figure 2-20: Cover-subsidencence Sinkole Formation from the Breaking Apart of Karst Bedrock by Soil Deposit
(Courtesy of USGS Sinkholes Fact Sheet)

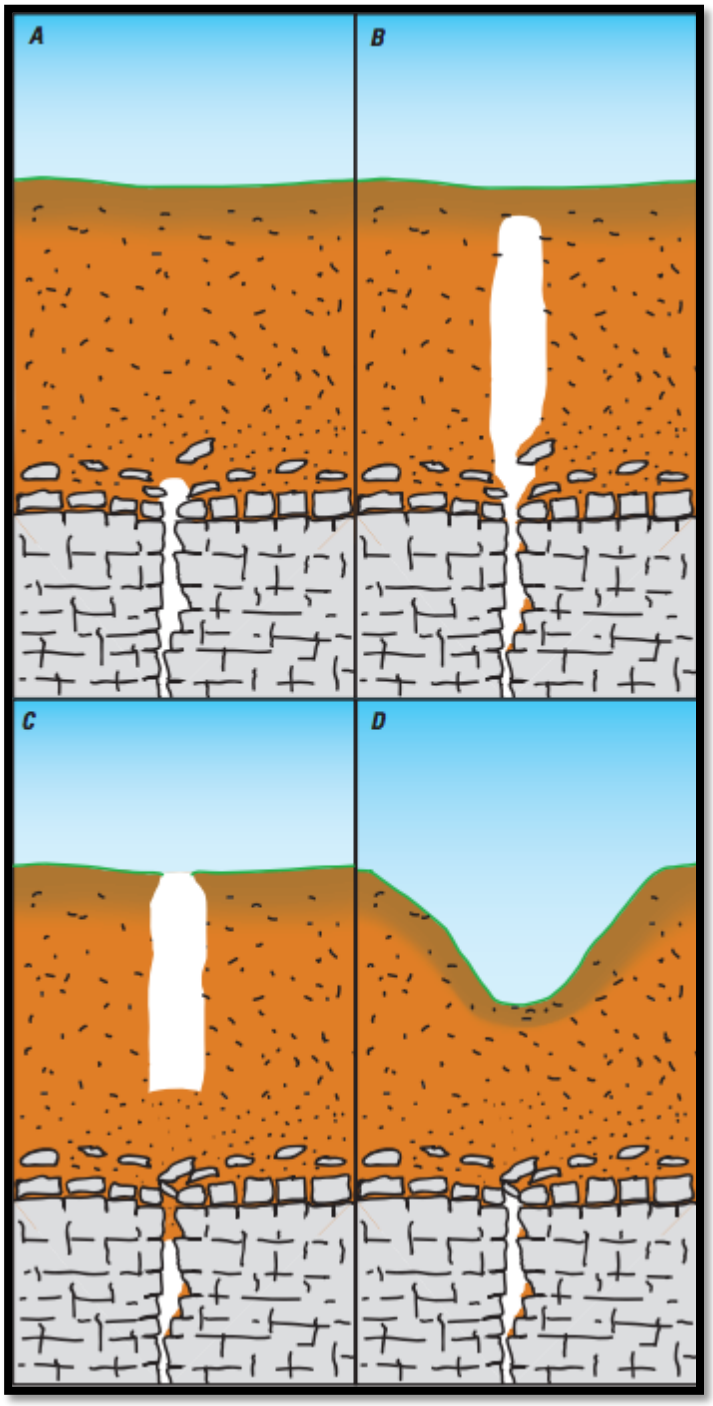


Figure 2-21: Formation of Cover-collapse Sinkhole after a Soil Bridge forms above Dissolving Bedrock (Courtesy of USGS Sinkhole Fact Sheet)

Location

Currently, there are no identifiable salt domes located within the boundaries of West Baton Rouge Parish; however, one salt dome location has a two mile buffer that extends into the southern boundary of the parish. *Figure 2-22* displays the location of the salt dome with the relative location to the nearest jurisdiction.

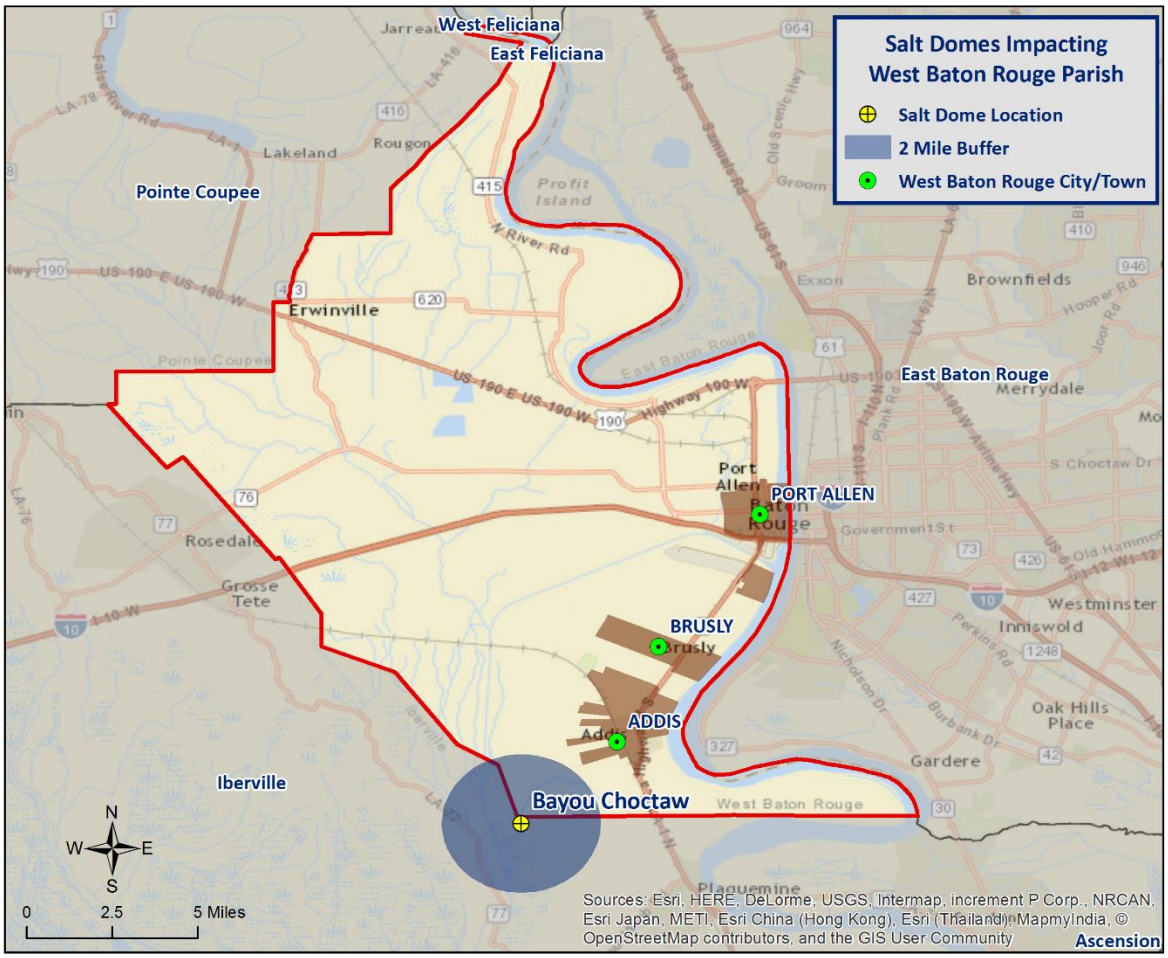


Figure 2-22: Salt Dome Locations in West Baton Rouge Parish Relative to Jurisdictions

Previous Occurrences / Extent

There have been no recorded incidents of sinkholes or salt dome collapses in West Baton Rouge Parish to date.

Frequency / Probability

Since there have been no recorded incidents of sinkhole or salt dome collapse in West Baton Rouge Parish, the annual chance of occurrence is calculated at less than 1%.

Estimated Potential Losses

The Bayou Choctaw Salt Dome was analyzed to determine the number of people and houses that are potentially susceptible to losses from a sinkhole materializing from the salt domes. The table on the following page is based on conducting a two mile buffer around the center of the salt dome. The values were determined by querying the 2010 U.S. Census block data to identify the number of houses and people were located within two miles of the salt dome. Critical facilities were also analyzed to determine if they fell within the two mile buffer of the salt dome. Total value for all occupancy group from HAZUS-MH was used to estimate a total loss of all facilities that were within two miles of the salt dome.

The Bayou Choctaw poses the greatest risk to West Baton Rouge Parish. The salt dome contains a total of six homes and 21 people within its two mile buffer with a total building exposure of approximately $73 million. The one critical facility that is located within the two mile buffer of the Bayou Choctaw Salt Dome is the Bayou Choctaw Strategic Petroleum Reserve.

Table 2-32: Estimated Potential Losses from a Sinkhole Formation
(Source: U.S. 2010 Census Data and HAZUS-MH)

Salt Dome Name	Total Building Exposure	Critical Infrastructure Exposure	Number of People Exposed	Number of Houses Exposed
Bayou Choctaw	$73,790,000	1	21	6

As a result of the isolated location of the salt dome, there is little to no risk to the majority of the populace with the exception of the 21 individuals that live within the two mile buffer of Bayou Choctaw Salt Dome.

Vulnerability

See Appendix C for parish and municipality building exposure to a sinkhole hazard.

Thunderstorms

The term "thunderstorm" is usually used as a catch-all term for several types 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 and to 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 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 all of 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 following page display the TORRO Hailstorm Intensity Scale, as well as a spectrum of hailstone diameters and their everyday equivalents.

Table 2-33: 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 2-34: 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”	Nickel
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 homes and other 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 *Table 2-35*.

Table 2-35: 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 mountainous areas of Louisiana where they occur. Nor'easters are cyclonic events that have at most a peripheral effect on Louisiana; none of which are associated with high winds. Winds associated with hurricanes and tornadoes will be considered in their respective sections.

Table 2-36 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 2-36: 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, 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 which is a measurement of lightning activity.

Table 2-37: 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 is a climatological based hazard, the entire planning area for West Baton Rouge Parish is equally at risk for hailstorms.

Previous Occurrences / Extents

The SHELDUS database reports no significant hailstorm events occurring within the boundaries of West Baton Rouge Parish between the years of 1989-2014. According to the National Climatic Data Center, the hailstorm diameters experienced in West Baton Rouge Parish have ranged from 0.75 inches to 2.75 inches since 1989. The most frequently recorded hail size has been one inch in diameter. *Figure 2-23* displays the density of hailstorms in West Baton Rouge Parish and adjacent parishes. *Table 2-38* provides an overview of hailstorms that have impacted the West Baton Rouge Parish Planning area since 1992, based on the National Climatic Data Center dataset. West Baton Rouge Parish can expect to experience hail up to 2.75 inches for future events. Per the SHELDUS database, there have been no recorded hailstorm events that have caused property or crop damage in the unincorporated areas of West Baton Rouge, the Towns of Brusly and Addis, and the City of Port Allen since the last update of the Hazard Mitigation Plan.

Table 2-38: Previous Occurrences of Hailstorms in West Baton Rouge Parish (Source: NCDC)

Date	Recorded Hail Size (inches)	Location
March 25, 1992	0.75	UNINCORPORATED WEST BATON ROUGE PARISH
March 7, 1995	0.75	ERWINVILLE
March 5, 1996	1	BRUSLY
September 30, 2006	0.75	ERWINVILLE
May 3, 2008	1	BRUSLY
May 14, 2008	2.75	ERWINVILLE
July 2, 2009	1.75	ERWINVILLE
February 1, 2011	0.88	ERWINVILLE
April 15, 2011	1	ADDIS
June 6, 2011	1	PORT ALLEN
February 18, 2012	1	PORT ALLEN
May 10, 2013	1	ADDIS

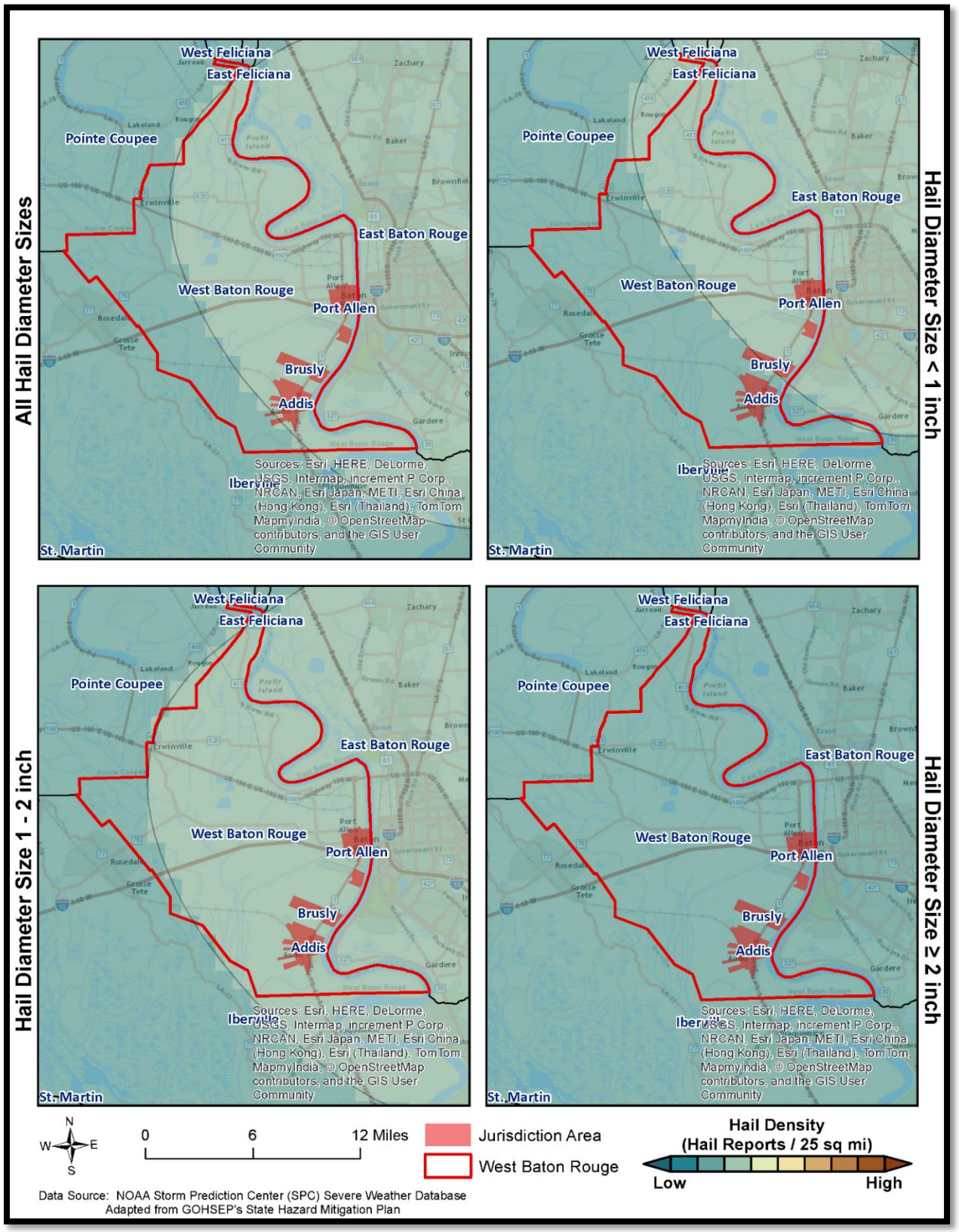


Figure 2-23: Density of Hailstorms by Diameter from 1950-2012
(Source: State of Louisiana Hazard Mitigation Plan 2014)

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 less than 1%. The probability was determined based on a review of significant hail data that has caused damages in the last twenty five years, in which West Baton Rouge Parish has had no recorded events.

Estimated Potential Losses

According to the SHELDUS database, there have been no recorded hailstorm events that have caused property damage in West Baton Rouge Parish. The parish has suffered no deaths or injuries due to hailstorms from 1989 – 2014.

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 West Baton Rouge Parish is equally at risk for high winds.

Previous Occurrences / Extents

The SHELDUS database reports a total of 23 thunderstorm wind events occurring within the boundaries of West Baton Rouge Parish between the years of 1989-2014. The significant thunderstorm wind events experienced in West Baton Rouge Parish have ranged from a wind speed of 57 mph to 75 mph. West Baton Rouge Parish can expect to receive thunderstorm winds up to 75 mph for future high wind events. There have been no thunderstorm high wind events in the town of Addis since 2009.

Table 2-39: Previous Occurrences for Thunderstorm High Wind Events
(Source: NCDC and SHELDUS)

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
BRUSLY	March 26, 2009	57	$8,144	$0
PORT ALLEN	July 2, 2009	57	$543	$0
LUKEVILLE	June 4, 2011	75	$38,837	$0

Frequency

High winds are a fairly common occurrence within West Baton Rouge Parish, with an annual chance of occurrence calculated at 92%.

Estimated Potential Losses

Since 1989, there have been 23 significant wind events that have resulted in property damages according to the SHELDUS database. The total property damages associated with those storms have totaled $132,818. To estimate the potential losses of a wind event on an annual basis, the total damages recorded

for wind events is divided by the total number of years of available wind data in SHELDUS (1989 – 2014). This provides an annual estimated potential loss of $5,313. The following table provides an estimate of potential property losses for West Baton Rouge Parish:

Table 2-40: Estimated Annual Property Losses in West Baton Rouge Parish Resulting from Wind Damage

Estimated Annual Potential Losses from Thunderstorm Winds for Assumption Parish			
Unincorporated West Baton Rouge (52.2% of Population)	**Addis (15.1% of Population)**	**Brusly (10.9% of Population)**	**Port Allen (21.8% of Population)**
$2,775	$802	$578	$1,157

There have been no reported injuries or fatalities 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 West Baton Rouge Parish.

Previous Occurrences / Extent

The SHELDUS database reports no lightning events occurring within the boundaries of West Baton Rouge Parish between the years of 1989-2014. 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 West Baton Rouge Parish, which occur on a nearly monthly basis. West Baton Rouge Parish can expect to experience lightning events at the lightning activity level of one. There have been no lightning events that have caused property damage in the unincorporated areas of West Baton Rouge, the Towns of Brusly and Addis, and the City of Port Allen since 2009.

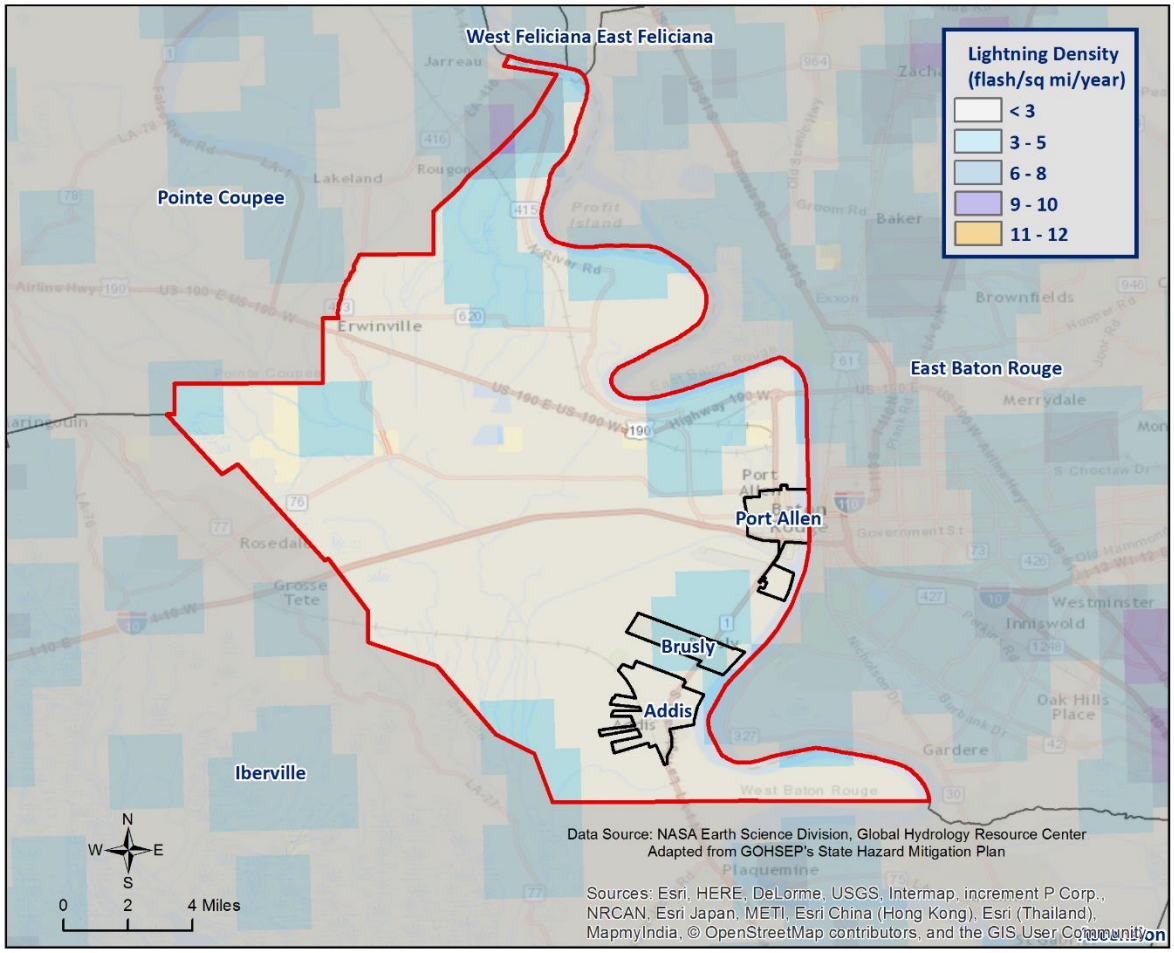


Figure 2-24: Lightning Density Reports for West Baton Rouge Parish

Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in West Baton Rouge 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 to people is a less likely event. SHELDUS reports no lightning events that have caused property damages or injuries over the last 25 years, establishing an annual probability of less than 1%.

Estimated Potential Losses

Since 1989, there have been no significant lightning that resulted in property damages according to the SHELDUS database. There also have been no reported injuries or fatalities in West Baton Rouge 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 direction 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 2-41* 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 2-41: 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 2-42: 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 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 Doppler 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 missiles 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 West Baton Rouge Parish with actual locations, tornadoes in general are a climatological based hazard and have the same approximate probability of occurring in West Baton Rouge Parish as all of its jurisdictions. Because a tornado has a similar probability of striking anywhere within the planning area for West Baton Rouge Parish, all jurisdictions are equally at risk for tornadoes.

Previous Occurrences / Extent

SHELDUS reports a total of 4 tornadoes or waterspouts occurring within the boundaries of West Baton Rouge Parish between the years of 1989-2014. The tornadoes experienced in West Baton Rouge Parish have ranged from F1 to F2 on the F scale. The worst case scenario West Baton Rouge Parish can expect in the future is an EF3 tornado.

The tornado event that caused the most damage to property occurred on June 8, 1989. An intense severe thunderstorm spawned three different F2 tornadoes as it moved from west of Grosse Tete across north

Baton Rouge and into St. Helena Parish. Approximately ninety houses and 35 mobile homes suffered extensive damage – mainly to roofs, siding, and windows. Falling trees and large tree branches also caused damage to several houses. Fifty-eight people suffered minor injuries due to flying glass and debris. Total damage was estimated at $2.5 million, with approximately $500,000 of that total occurring in West Baton Rouge Parish.

Table 2-43: Historical Tornadoes in West Baton Rouge Parish with Locations from 1989-2014

Date	Impacts	Property Damage	Location	Magnitude
June 8, 1989	5 mile path with a width of 77 yards. Part of a severe weather system that destroyed 90 houses and 35 mobile homes	$939,343	UNINCORPORATED AREA	F2
June 8, 1989	5 mile path with a width of 77 yards. Part of a severe weather system that destroyed 90 houses and 35 mobile homes.	$939,343	UNINCORPORATED AREA	F2
March 1, 1991	4 mile path with a width of 100 yards. A tornado touched down in Brusly Landing, causing roof damage to several homes and downing trees	$42,760	UNINCORPORATED AREA	F1
January 18, 1995	5 mile path with a width of 30 yards. Seven homes were damaged. Two tractor-semitrailers were overturned, and power lines downed.	$152,859	BRUSLY	F1

There have been no tornado events in the unincorporated area of West Baton Rouge Parish, the towns of Brusly and Addis, or the city of Port Allen since 2009.

Frequency / Probability

Tornadoes are a sporadic occurrence within West Baton Rouge Parish, with an annual chance of occurrence calculated at 16% based on the records for the past 25 years (1989-2014). *Figure 2-25* displays the density of tornado touch downs in West Baton Rouge Parish and neighboring parishes.

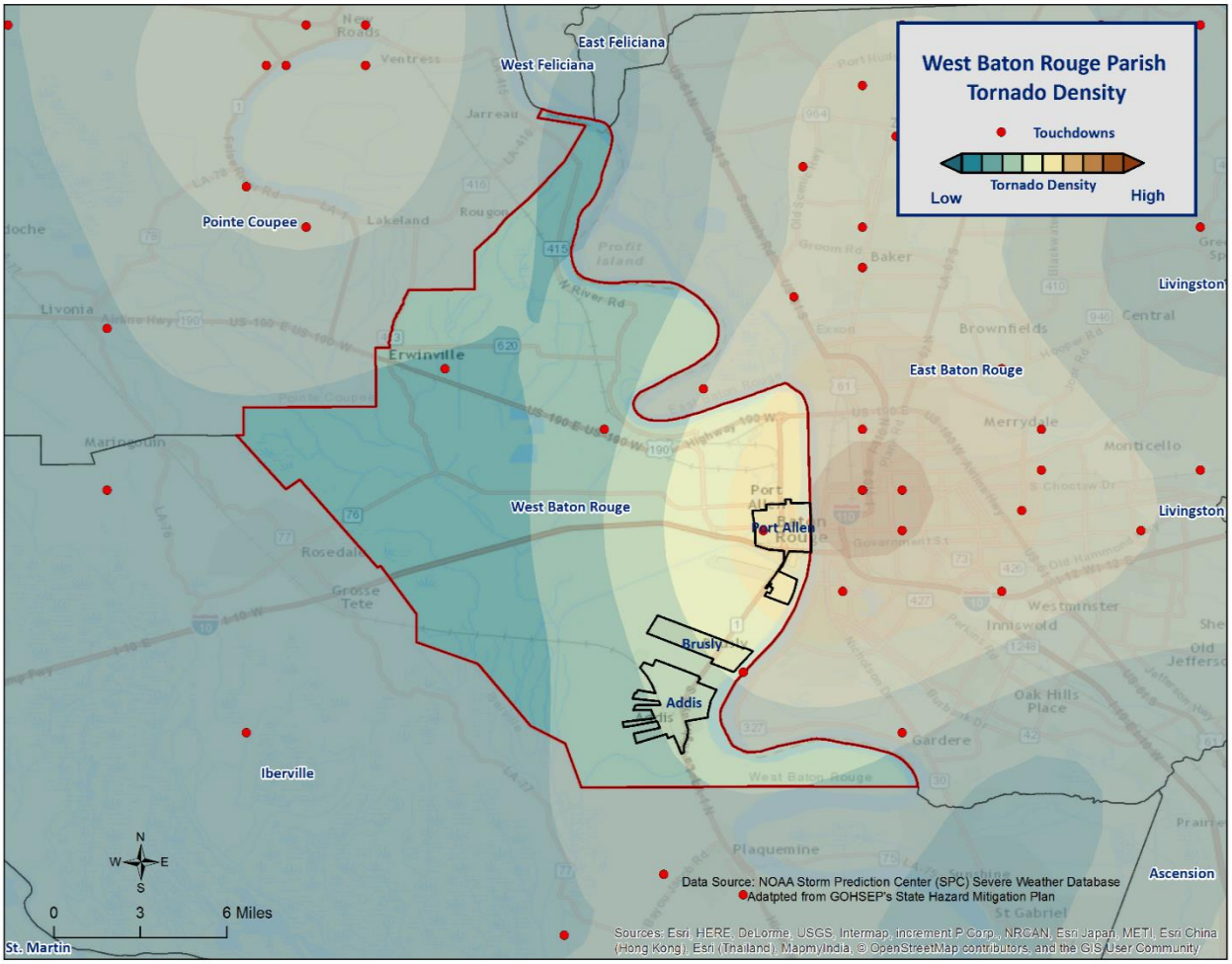


Figure 2-25: Location and Density of Tornadoes to Touch Down in West Baton Rouge Parish (Source: NOAA/SPC Severe Weather Database)

Estimated Potential Loses

According to the SHELDUS database, there have been four tornadoes that have caused some level of property damage. The total damage from the actual claims for property is $1,134,962, with an average cost of $283,740 per tornado strike. When annualizing the total cost over the 25 year record, total annual loses based on tornadoes are estimated to be $45,398. 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, *Table 2-44* provides an annual estimate of potential losses for West Baton Rouge Parish.

Table 2-44: Estimated Annual Losses for Tornadoes in West Baton Rouge Parish

Estimated Annual Potential Losses from Tornadoes for West Baton Rouge Parish			
Unincorporated West Baton Rouge Parish (52.2% of Population)	**Addis (15.1% of Population)**	**Brusly (10.9% of Population)**	**Port Allen (21.8% of Population)**
$23,715	$6,857	$4,941	$9,886

Table 2-45 presents an analysis of building exposures that are susceptible to tornadoes by general occupancy type for West Baton Rouge Parish, along with the percentage of building stock that are mobile homes.

Table 2-45: Building Exposure by General Occupancy Type for Tornadoes in West Baton Rouge 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 (%)
1,701,161	266,726	119,831	10,920	41,779	15,888	17,670	24.3%

The parish has suffered through a total of three days in which tornadoes or waterspouts have accounted for four injuries and no fatalities during this 25 year period (*Table 2-46*). The average number of injuries per event for West Baton Rouge Parish is one per tornado, with an average of 0.16 per year for the 25 year period.

Table 2-46: Tornadoes in West Baton Rouge Parish by Magnitude that Caused Injuries or Deaths

Date	Magnitude	Deaths	Injuries
June 8, 1989	F2	0	2
March 1, 1991	F1	0	1
January 18, 1995	F1	0	1

In assessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufactured housing. Approximately 24.3% of all housing in West Baton Rouge Parish is comprised of manufactured housing. Based on location data collected in a previous hazard mitigation project, there are 21 known locations where manufactured housing is concentrated. Those 21 locations have an overall number of manufactured houses ranging from four to 79. The location and density of manufactured houses can be seen in *Figure 2-26*.

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 West Baton Rouge Parish (*Table 2-47*). 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 2-47: Manufactured Home Distribution throughout West Baton Rouge Parish

Location	Number of Manufactured Home Parks	% of Manufactured Home Parks
Unincorporated Area	11	52.4%
Addis	8	38.1%
Brusly	0	0%
Port Allen	2	9.5%

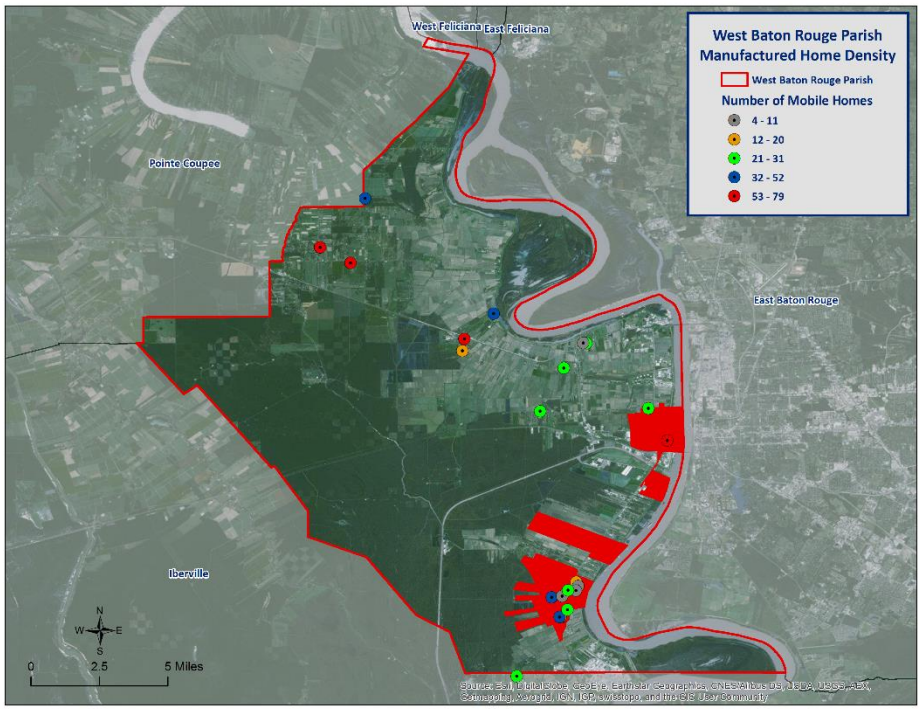


Figure 2-26: Location and Approximate Number of Units in Manufactured Housing Locations throughout West Baton Rouge Parish

Vulnerability

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

Tropical Cyclones

Tropical cyclones are among the worst hazards that 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, and move 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 storm (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). *Table 2-48* presents the Saffir-Simpson Hurricane Wind Scale, which categorizes tropical cyclones based on sustained winds.

Table 2-48: 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 Storm	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 likely will 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 will 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. For example, a fast-moving storm (20 mph) might be expected to produce five inches of rain while a slow-moving (5 mph) storm could produce totals of around twenty inches of rain. 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 damage amounts from storm surge so much that it 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 storm. 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. 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 pressures 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 home and buildings in need of maintenance are most subject to wind damage. High winds contribute to the formation of larger sized waves. Extended pounding by waves can demolish any poorly or improperly designed structure. Large waves also erode sand beaches, roads, and foundations, which can lead to building 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 possible 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 may cause animals, such as snakes, to move into areas occupied by humans.

Location

Hurricanes are the single biggest threat to all of south 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 West Baton Rouge Parish. As such, all jurisdictions are equally at risk for tropical cyclones.

Previous Occurrences / Extent

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 six tropical cyclone events occurring within the boundaries of West Baton Rouge Parish between the years 2002-2014 (*Table 2-49*). The tropical cyclone events experienced in West Baton Rouge Parish include depressions, storms, and hurricanes. As a worst case scenario, West Baton Rouge Parish can expect to experience hurricanes at the Category 3 level in the future.

Table 2-49: Historical Tropical Cyclone Events in West Baton Rouge Parish from 2002- 2014 (Source: SHELDUS)

Date	Name	Storm Type While Impacting West Baton Rouge Parish
October 2, 2002	Lili	Tropical Storm
August 28, 2005	Katrina	Hurricane – Category 3
September 23, 2005	Rita	Hurricane – Category 1
September 1, 2008	Gustav	Hurricane – Category 2
September 11,2008	Ike	Hurricane – Category 2
August 28, 2012	Isaac	Tropical Storm

Hurricane Betsy (1965)

Hurricane Betsy made landfall at Grand Isle, Louisiana in August of 1965, bringing 160 mph gusts and a 15.7 foot storm surge that flooded the entire island. Wind gusts of approximately 125 mph were experienced in New Orleans, and a storm surge with a height of 9.8 feet caused major flooding. Most of southeastern Louisiana experienced wind speeds reaching upwards of 100 mph, and areas inland as far north as Monroe experienced winds exceeding 60 mph. Offshore oil rigs, public utilities, and commercial boats all suffered severe damage, resulting in over $1 billion in disaster costs. Fifty-eight people in Louisiana lost their lives.

Hurricane Lili (2002)

Hurricane Lili made landfall on the Louisiana coast on October 3, 2002, with an estimated intensity of 92 mph. Although Lili weakened considerably before making landfall on the central Louisiana coast, it caused significant wind and flood damage in the area. Strong winds toppled trees onto houses and into roadways, stripped shingles from roofs, and blew out windows. The wind and driving rain flattened sugar cane fields throughout southern Louisiana. A combination of storm surge and rain caused levees to fail in Montegut and Franklin, Louisiana. Lili also temporarily curtailed oil production in the Gulf of Mexico.

West Baton Rouge Parish was mostly spared of devastation as a fast-moving trough provided critical wind shear that weakened Lili before landfall. Local flooding occurred in the city of Port Allen, and the towns of Addis and Brusly. Wind speeds peaked at approximately 50 mph in the parish.

Hurricane Katrina (2005)

Hurricane Katrina was one of the strongest and most destructive hurricanes on record to impact the coast of the United States. The National Hurricane Center ranked Katrina as the costliest storm (both before and after adjusting for inflation) and the third deadliest in the U.S. since 1851. The hurricane initially made landfall in Plaquemines Parish on August 29, 2005, as a Category 3 storm and continued on a north northeast track with a second landfall occurring near the Louisiana-Mississippi border. Hurricane Katrina caused widespread devastation along the central Gulf Coast states. Following the passage of Katrina, the flooding of New Orleans was catastrophic, resulting in the displacement of more than 250,000 people.

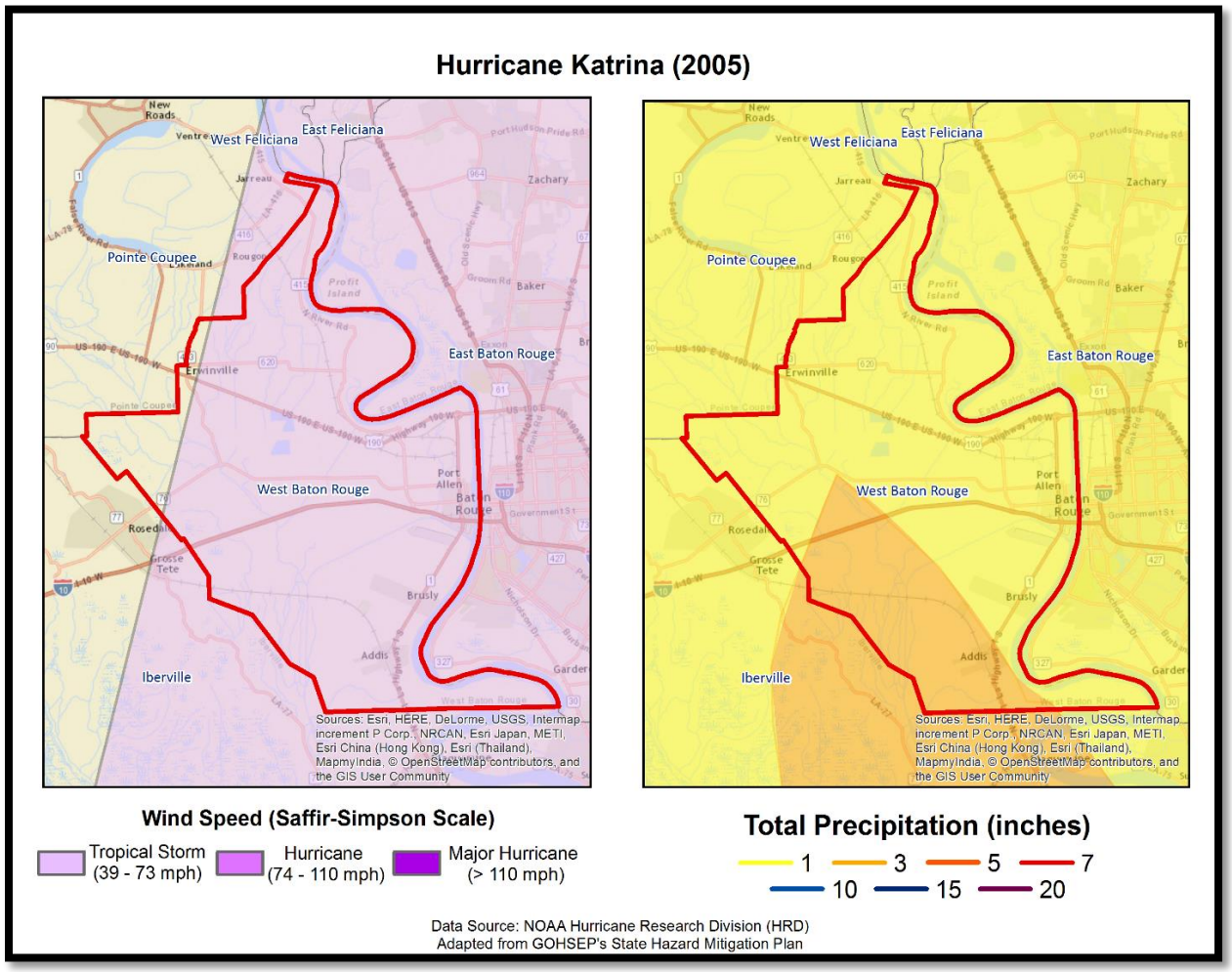


Figure 2-27: Wind Speed and Precipitation Totals in West Baton Rouge Parish for Hurricane Katrina

The most significant impact of Hurricane Katrina on West Baton Rouge Parish was the displacement of residents from southeast Louisiana. Katrina prompted one of the largest tropical cyclone evacuations in history, and many residents traveled west to inland areas for shelter and aid.

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 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.

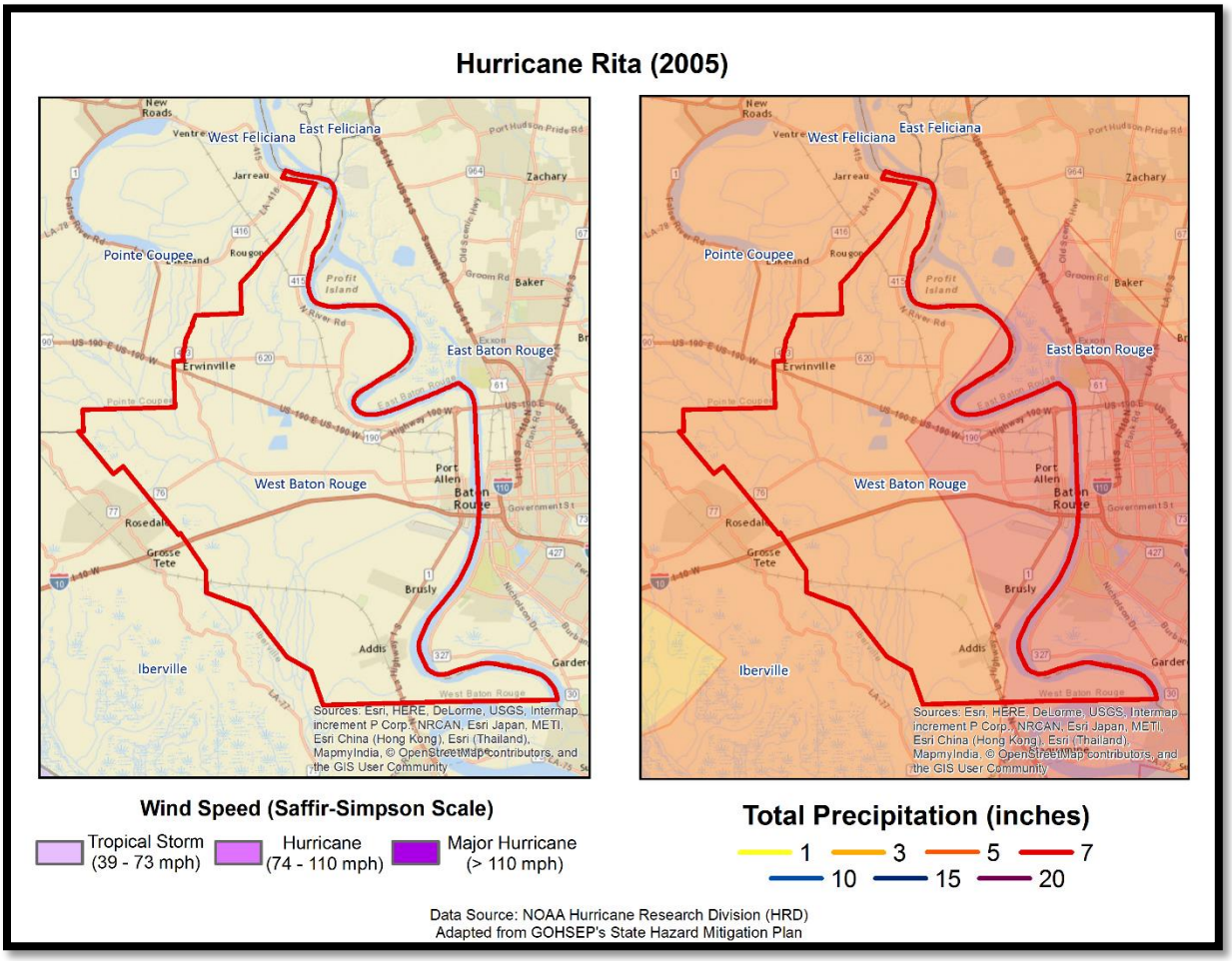


Figure 2-28: Wind Speed and Precipitation Totals in West Baton Rouge Parish for Hurricane Rita

As with Hurricane Katrina, West Baton Rouge Parish avoided most of the physical damage caused by Hurricane Rita. However, the strain placed on the infrastructure cannot be ignored. With two tropical events occurring within one month of each other, the parish had to accommodate thousands of displaced coastal residents. Localized flooding was experienced in the towns of Brusly and Addis, and in the city of Port Allen. Low-lying areas throughout the parish were also inundated with flood waters.

Hurricane Gustav (2008)

Hurricane Gustav emerged into 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 1. 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 2.

The highest wind gust recorded was 117 mph (102 knots) 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 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 eleven 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 across the inland areas, through 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 southwest Mississippi and central Louisiana. 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. 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.

West Baton Rouge Parish experienced excessive amounts of rainfall due to Hurricane Gustav, including over eleven inches in Brusly in the period from Sunday, August 31 to Wednesday, September 3. West Baton Rouge also suffered from accumulation of debris, power losses, and the shutdown of government and businesses. Several single family homes, mobile homes, government buildings, and businesses were destroyed by the winds and floods in the City of Port Allen and the Towns of Addis and Brusly.

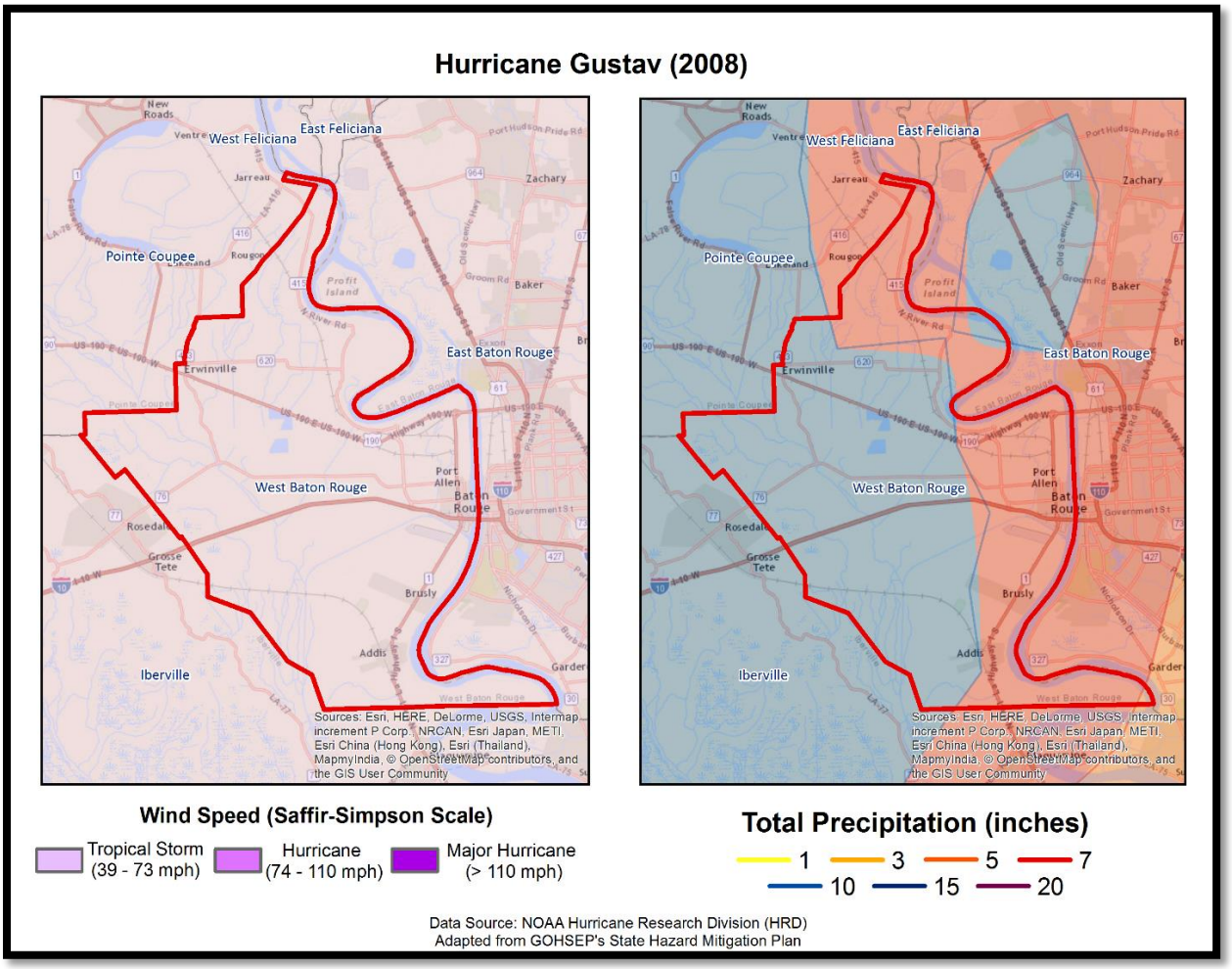


Figure 2-29: Wind Speed and Precipitation Totals in West Baton Rouge Parish for Hurricane Gustav

Hurricane Isaac (2012)

Isaac entered the Gulf of Mexico as a tropical storm on August 26, 2012, moving northwest after crossing Haiti, Cuba, and the Florida Straits. Isaac strengthened into a hurricane on the morning of the 28th when it was 75 miles south-southeast of the mouth of the Mississippi River. Isaac made landfall in Plaquemines Parish as a Category 1 Hurricane near Southwest Pass of the Mississippi River on the evening of the 28th. A second landfall occurred near Port Fourchon the following morning. The storm weakened to a tropical storm on the afternoon of the 29th about 50 miles west southwest of New Orleans, and weakened further to a tropical depression on the afternoon of the 30th near Monroe, Louisiana.

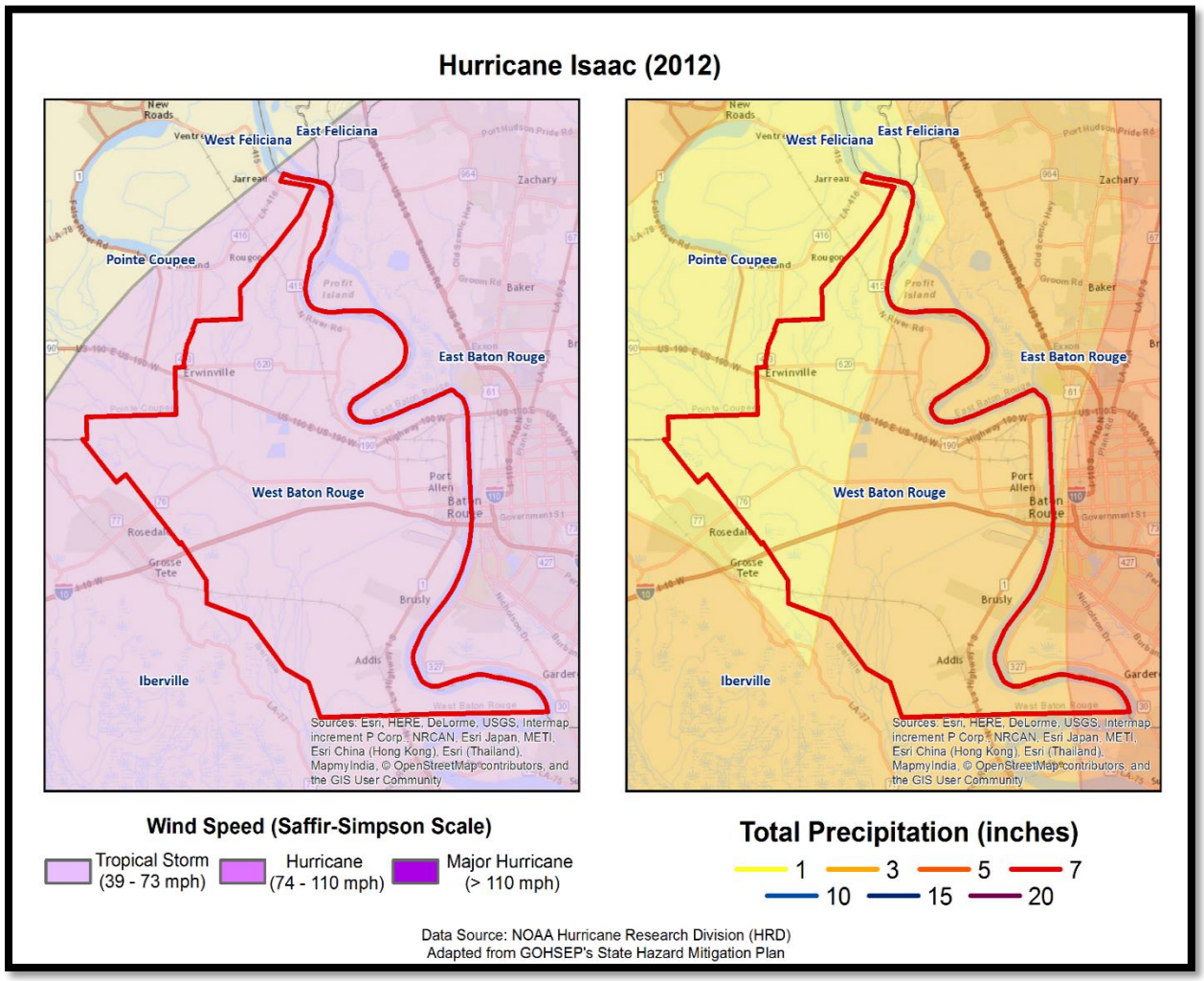


Figure 2-30: Wind Speed and Precipitation Totals in West Baton Rouge Parish for Hurricane Isaac

The highest wind gust recorded on land in Louisiana was 86 mph (75 knots), measured on the evening of August 28 by a Texas Tech University portable weather station located near Buras. The maximum sustained winds in Louisiana were 75 mph (65 knots), recorded at the same portable weather station near Buras on the evening of August 28. There were several marine observations near the coast that had slightly higher wind readings, but their observation heights were generally 80 feet or higher.

Due to Isaac's very large size and slow forward speed, tropical storm force winds lasted in excess of 48 hours in many areas of coastal southeast Louisiana. Occasional hurricane gusts of 70 to 85 mph were recorded across southeast Louisiana, especially south of Lake Pontchartrain, during the night of the Aug 28th and early on the 29th. Interior areas of southeast Louisiana such as around Baton Rouge and northward experienced tropical storm force winds. Widespread power outages occurred across the area. Local utility companies reported over 700,000 customers were without power at the peak of the storm in southeast Louisiana. Generally, most of the wind damage was limited to downed trees and power lines, and roof damage caused by wind and falling trees and tree limbs.

Significant impact also occurred around Lakes Pontchartrain and Maurepas, with a storm tide of 5 to 9 feet. Five to ten thousand homes were flooded in low lying areas of that border these lakes of the

following parishes: St. Tammany, Tangipahoa, Livingston, Ascension, St James and St John the Baptist. Laplace in St. John the Baptist was especially hard hit with over 5,000 homes flooded by storm surge. An additional storm surge fatality occurred in St. Tammany Parish on the morning of the 30th when a 75 year old man drove his car into a storm surge filled ditch. Storm surge flooding also affected areas south and southwest of New Orleans with a storm tide of four to seven feet. Roadways and low lying property were flooded. Local levees around Lafitte and Myrtle Grove were overtopped and/or breached, resulting in the flooding of numerous houses and property in this area.

Many areas of southeast Louisiana received eight to twelve inches of rain, with a few locations having fifteen inches of rain or more. Maximum storm total rainfall was 20.66 inches at the New Orleans Carrollton gauge on the Mississippi River. Rainfall run-off produced moderate to major flooding on the Tangipahoa, Tchefuncte, Tickfaw, Amite, Pearl, Bogue Chitto and Bogue Falaya Rivers. Storm surge and high tides restricted outflow of the rivers near the coast and lakes exacerbating flooding in those areas.

Overall impacts of Hurricane Isaac resulted in at least $600 million in damages in southeast Louisiana, three direct fatalities, and two indirect fatalities. Storm surge flooding accounted for the bulk of damage, estimated around $500 million, and the three direct storm surge fatalities in Louisiana. Winds accounted for a much lesser amount of slightly more than a $100 million.

In West Baton Rouge Parish, Hurricane Isaac had a minor impact on the parish, which was mainly due to strong winds. A few roads were blocked by downed trees and power lines. The city of Port Allen received 4.57 inches of rain during Hurricane Isaac, while the towns of Brusly and Addis received approximately four inches of rain.

Figure 2-31 displays the wind zones that affect West Baton Rouge Parish in relation to critical facilities throughout the parish.

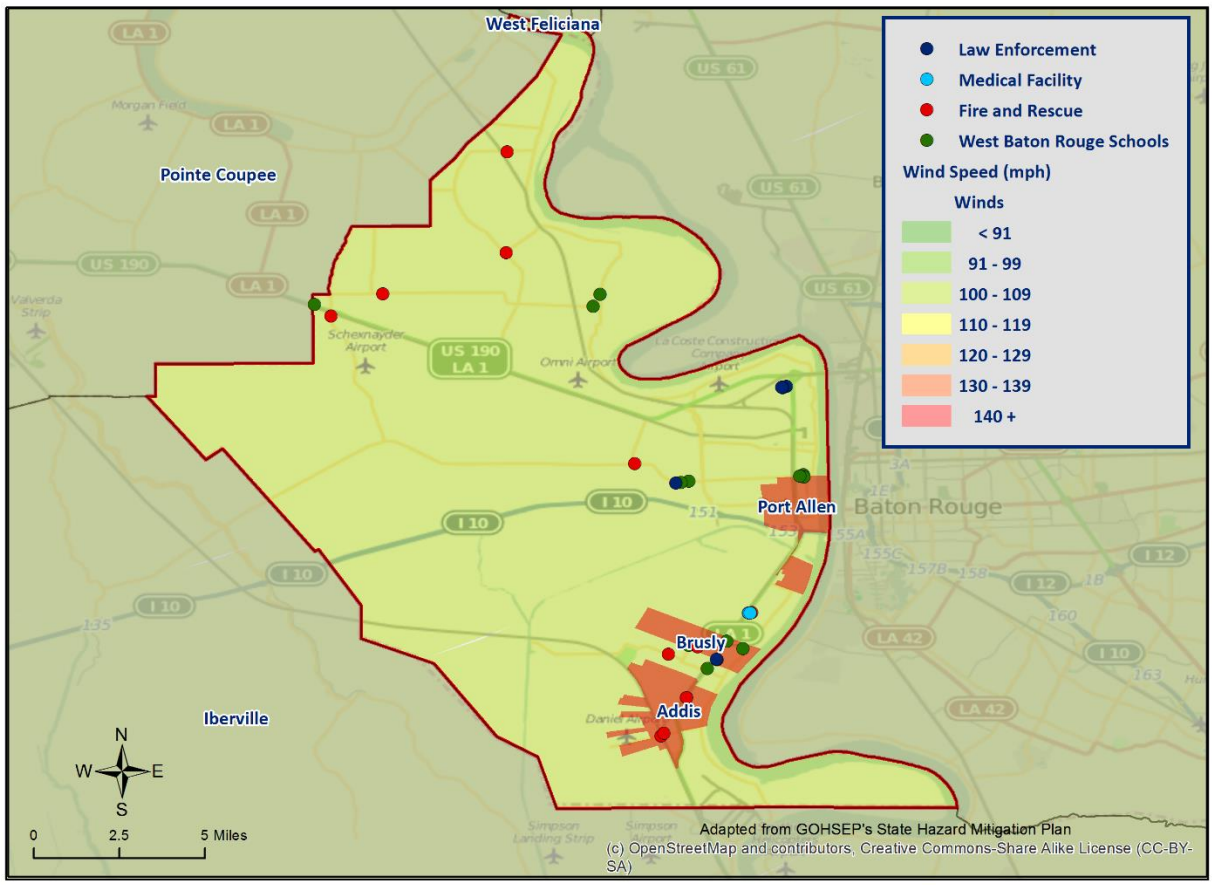


Figure 2-31: Winds Zones for West Baton Rouge Parish in Relation to Critical Facilities

Frequency / Probability

Tropical cyclones are large natural hazard events that regularly impact West Baton Rouge Parish. The annual chance of occurrence for a tropical cyclone occurrence is estimated at 28% for West Baton Rouge Parish and its municipalities, with seven 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. Based on geographical location alone, West Baton Rouge Parish is highly vulnerable to tropical cyclones. This area has experienced several tropical cyclone events in the past and can expect more in the future.

Estimated Potential Losses

Using the Hazus 2.2 Hurricane Model, the 100-year hurricane scenario was analyzed to determine losses from this worst-case scenario. *Table 2-50* shows the total economic losses that would result from this occurrence.

Table 2-50: Total Estimated Losses for a 100-Year Hurricane Event (Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
West Baton Rouge Parish (Unincorporated)	$16,710,283
Addis	$4,831,808
Brusly	$3,481,645
Port Allen	$6,965,980
Total	$31,989,717

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

Table 2-51: Ratio of Total Losses to Total Estimated Value of Assets for each Jurisdiction in West Baton Rouge Parish

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
Unincorporated	$16,710,283	$1,097,609,000	1.5%
Addis	$4,831,808	$311,998,000	1.5%
Brusly	$3,481,645	$262,860,000	1.3%
Port Allen	$6,965,980	$502,508,000	1.4%

Based on the Hazus 2.2 Hurricane Model, estimated total losses are approximately 1.5% of the total estimated value of all assets for the entirety of West Baton Rouge Parish.

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 following tables.

Table 2-52: Estimated Losses in West Baton Rouge Parish for a 100-Year Hurricane Event (Source: Hazus 2.2)

West Baton Rouge Parish (Unincorporated)	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$118,777
Commercial	$1,143,157
Government	$134,972
Industrial	$390,968
Religious / Non-Profit	$114,071
Residential	$14,753,473
Schools	$54,863
Total	$16,710,283

Table 2-53: Estimated Losses in Addis for a 100-Year Hurricane Event (Source: Hazus 2.2)

Addis	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$34,345
Commercial	$330,546
Government	$39,028
Industrial	$113,049
Religious / Non-Profit	$32,984
Residential	$4,265,993
Schools	$15,864
Total	$4,831,808

Table 2-54: Estimated Losses in Brusly for a 100-Year Hurricane Event (Source: Hazus 2.2)

Brusly	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$24,748
Commercial	$238,181
Government	$28,122
Industrial	$81,460
Religious / Non-Profit	$23,767
Residential	$3,073,937
Schools	$11,431
Total	$3,481,645

Table 2-55: Estimated Losses in Port Allen for a 100-Year Hurricane Event (Source: Hazus 2.2)

Port Allen	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	$49,514
Commercial	$476,546
Government	$56,266
Industrial	$162,982
Religious / Non-Profit	$47,553
Residential	$6,150,249
Schools	$22,871
Total	$6,965,980

Threat to People

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

Table 2-56: Number of People Susceptible to a 100-Year Hurricane Event in West Baton Rouge Parish (Source: Hazus 2.2)

Number of People Exposed to Hurricane Hazards			
Location	**# in Community**	**# in Hazard Area**	**% in Hazard Area**
Parish (Unincorporated)	**12,426**	**12,426**	**100.0%**
Addis	**3,593**	**3,593**	**100.0%**
Brusly	**2,589**	**2,589**	**100.0%**
Port Allen	**5,180**	**5,180**	**100.0%**
Total	**23,788**	**23,788**	**100.0%**

The HAZUS-MH hurricane model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions in the following tables:

Table 2-57: Vulnerable Populations in Unincorporated West Baton Rouge Parish for a 100-Year Hurricane (Source: Hazus 2.2)

West Baton Rouge Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	12,426	100.0%
Persons Under 5 Years	833	6.7%
Persons Under 18 Years	2,995	24.1%
Persons 65 Years and Over	1,466	11.8%
White	7,468	60.1%
Minority	4,958	39.9%

Table 2-58: Vulnerable Populations in Addis for a 100-Year Hurricane (Source: Hazus 2.2)

Addis		
Category	**Total Numbers**	**Percentage of People in Hazard Area**
Number in Hazard Area	3,593	100.0%
Persons Under 5 Years	293	8.2%
Persons Under 18 Years	706	19.7%
Persons 65 Years and Over	299	8.3%
White	2,483	69.1%
Minority	1,110	30.9%

Table 2-59: Vulnerable Populations in Brusly for a 100-Year Hurricane (Source: Hazus 2.2)

Brusly		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,589	100.0%
Persons Under 5 Years	175	6.8%
Persons Under 18 Years	495	19.1%
Persons 65 Years and Over	320	12.4%
White	1,923	74.3%
Minority	666	25.7%

Table 2-60: Vulnerable Populations in Port Allen for a 100-Year Hurricane (Source: Hazus 2.2)

Port Allen		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	5,180	100.0%
Persons Under 5 Years	387	7.5%
Persons Under 18 Years	793	15.3%
Persons 65 Years and Over	737	14.2%
White	2,069	39.9%
Minority	3,111	60.1%

Vulnerability

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

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 zero (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 2-32* displays the areas of wildland-urban interaction in West Baton Rouge 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 2-61: 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. Because every jurisdictional area in West Baton Rouge Parish has some form of wildland-urban interface or wildland-urban intermix, the entire planning area is equally at risk for wildfires. The following figures display the areas of wildland-urban interface and intermix in West Baton Rouge Parish and its jurisdictions.

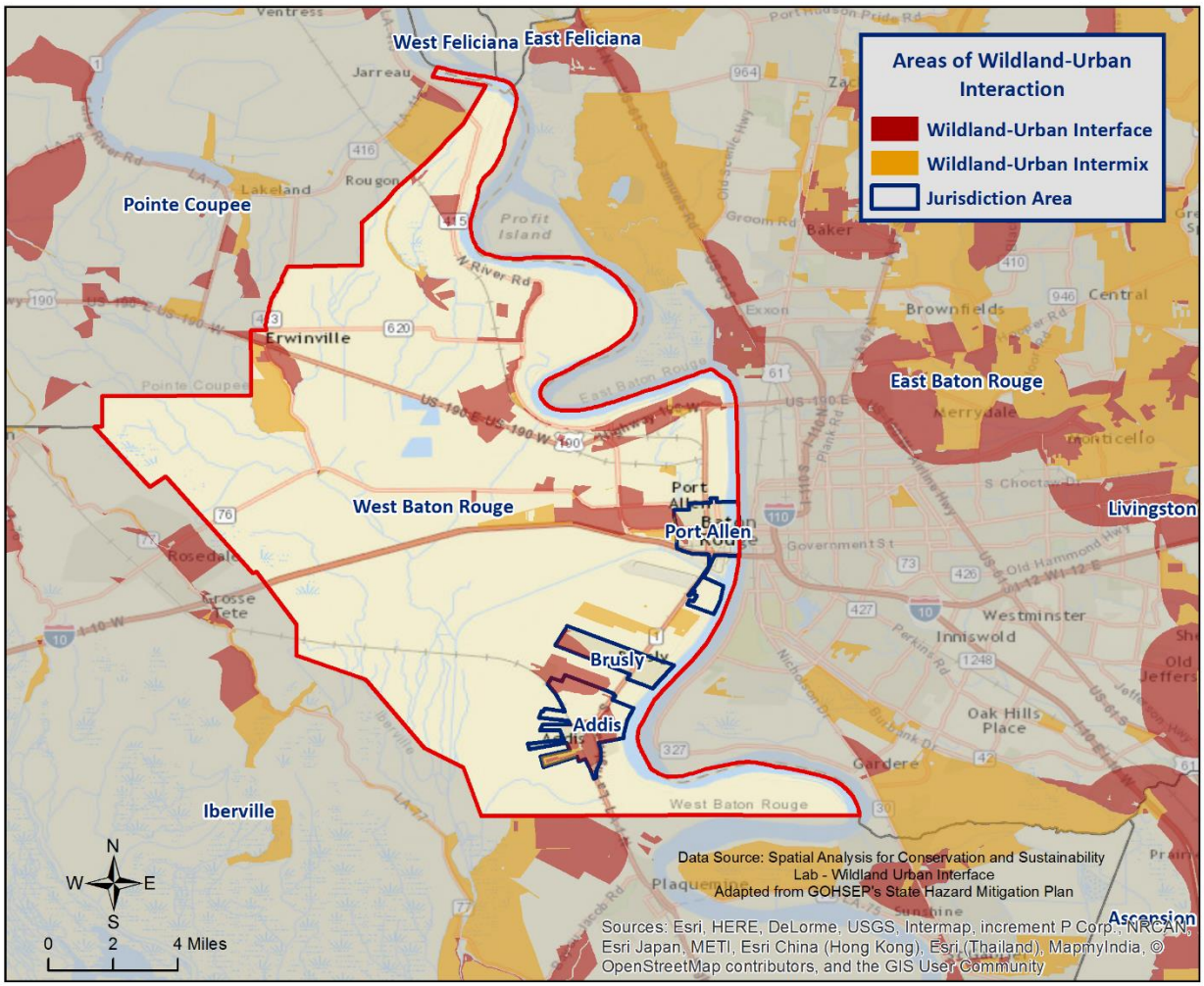


Figure 2-32: Wildland-Urban Interaction in West Baton Rouge Parish

Previous Occurrences / Extents

According to SHELDUS, there have been no reported wildfire events that have occurred within the boundaries of West Baton Rouge Parish between the years of 1989-2014.

Based on the Southern Group of State Foresters Risk Assessment Portal, *Table 2-62* outlines the intensity each jurisdictional area within West Baton Rouge Parish could potential experience due to a wildfire event.

Table 2-62: Potential Wildfire Intensity Levels for West Baton Rouge Parish (Source: Southern Wildfire Assessment Portal)

Potential Wildfire Intensity	
West Baton Rouge Parish (Unincorporated)	Moderate Fire Intensity Level 3
Addis	Moderate Fire Intensity Level 3
Brusly	Low to Moderate Fire Intensity Level 2.5
Port Allen	Low to Moderate Fire Intensity Level 2.5

Frequency / Probability

With no recorded events in 25 years, wildfire events within the boundaries of West Baton Rouge Parish have an annual chance of occurrence calculated at less than 1% based on the SHELDUS dataset.

Estimated Potential Losses

According to the SHELDUS database, there have been no wildfire events that have caused property damage, crop damage, injuries, or fatalities in West Baton Rouge 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 2-32* displays the areas of wildland-urban interaction in West Baton Rouge Parish.

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

Table 2-63: Total Building Exposure by Wildland-Urban Interaction Areas (Source: Hazus 2.2)

Jurisdiction	Estimated Total Building Exposure
West Baton Rouge Parish (Unincorporated)	$406,507,000
Addis	$189,037,000
Brusly	$35,542,000
Port Allen	$3,154,000
Total	$634,240,000

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 are listed in the tables on the following page.

Table 2-64: Estimated Exposure for Unincorporated West Baton Rouge Parish by Sector (Source: Hazus 2.2)

West Baton Rouge Parish (Unincorporated)	Estimated Total Building Exposure by Sector
Agricultural	$251,000
Commercial	$41,003,000
Government	$3,910,000
Industrial	$11,548,000
Religious / Non-Profit	$8,739,000
Residential	$334,920,000
Schools	$6,136,000
Total	$406,507,000

Table 2-65: Estimated Exposure for Addis by Sector
(Source: Hazus 2.2)

Addis	Estimated Total Building Exposure by Sector
Agricultural	$448,000
Commercial	$10,530,000
Government	$355,000
Industrial	$3,331,000
Religious / Non-Profit	$1,047,000
Residential	$173,326,000
Schools	$0
Total	$189,037,000

Table 2-66: Estimated Exposure for Brusly by Sector
(Source: Hazus 2.2)

Brusly	Estimated Total Building Exposure by Sector
Agricultural	$31,000
Commercial	$762,000
Government	$0
Industrial	$179,000
Religious / Non-Profit	$0
Residential	$34,570,000
Schools	$0
Total	$35,542,000

Table 2-67: Estimated Exposure for Port Allen by Sector
(Source: Hazus 2.2)

Port Allen	Estimated Total Building Exposure by Sector
Agricultural	$0
Commercial	$164,000
Government	$23,000
Industrial	$13,000
Religious / Non-Profit	$37,000
Residential	$2,917,000
Schools	$0
Total	$3,154,000

Threat to People

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

Table 2-68: Populations Located within a Wildland-Urban Interaction Area
(Source: 2010 U.S. Census Data)

Number of People Located in Wildland-Urban Interaction Areas.			
Location	**# in Community**	**# in Area**	**% in Area**
West Baton Rouge Parish (Unincorporated)	**12,426**	**5,250**	**42.3%**
Addis	**3,593**	**2,623**	**73.0%**
Brusly	**2,589**	**373**	**14.4%**
Port Allen	**5,180**	**75**	**1.4%**
Total	**23,788**	**8,321**	**35%**

The 2010 U.S. Census data was also extrapolated to provide an overview of populations located within a wildland-urban interaction area throughout the jurisdictions in the following tables:

Table 2-69: Population in Unincorporated West Baton Rouge Parish Located within a Wildland-Urban Interaction Area
(Source: 2010 U.S. Census Data)

West Baton Rouge Parish (Unincorporated)		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	5,250	42.3%
Persons Under 5 Years	352	6.7%
Persons Under 18 Years	1,265	24.1%
Persons 65 Years and Over	620	11.8%
White	3,155	60.1%
Minority	2,095	39.9%

Table 2-70: Population in Addis Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Addis		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	2,623	73.0%
Persons Under 5 Years	214	8.2%
Persons Under 18 Years	515	19.7%
Persons 65 Years and Over	218	8.3%
White	1,813	69.1%
Minority	810	30.9%

Table 2-71: Population in Brusly Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Brusly		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	373	14.4%
Persons Under 5 Years	25	6.8%
Persons Under 18 Years	71	19.1%
Persons 65 Years and Over	46	12.4%
White	277	74.3%
Minority	96	25.7%

Table 2-72: Population in Port Allen Located within a Wildland-Urban Interaction Area (Source: 2010 U.S. Census Data)

Port Allen		
Category	**Total Numbers**	**Percentage of People in Wildland-Urban Interaction Area**
Number in Hazard Area	75	1.4%
Persons Under 5 Years	6	7.5%
Persons Under 18 Years	11	15.3%
Persons 65 Years and Over	11	14.2%
White	30	39.9%
Minority	45	60.1%

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 falls, 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 in the state, this type of damage can occur in Louisiana, particularly in north Louisiana. Effects of winter weather more likely to occur in Louisiana, especially south Louisiana, include extreme temperatures which can cause waterlines to freeze and sewer lines to rupture. This is especially true with 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 within 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 West Baton Rouge Parish, experience the fewest severe winter events.

Location

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

Previous Occurrences / Extents

According to SHELDUS, there have been four reported winter storm events that have occurred within the boundaries of West Baton Rouge Parish between the years of 1989-2014. *Table 2-73* provides a brief synopsis of each event.

Table 2-73: Previous Occurrences for Winter Storm Events

Date	Synopsis	Property Damage	Crop Damage
December 23, 1989	The most significant cold spell of the century for the Deep South. Snow and sleet paralyzed transportation systems, and as much as two to four inches of snow accumulated in Lafourche and Terrebonne Parishes. The greatest impact was on breakage of water pipes in homes and businesses. Ice formed over shallow lakes and waterways where commercial fishing took heavy losses.	$14,677	$0
March 12, 1993	The "Storm of the Century" made landfall along the Gulf coast. Snow accumulations were recorded throughout much of the southern portion of the state, and records indicate snowfall spanning from Lafayette to Slidell.	$0	$224,191
February 2, 1996	An arctic air mass spread over much of SE Louisiana, bringing the longest extended period of cold weather since 1989. Many schools were closed and considerable property damage resulted from broken pipes due to the extended period of subfreezing temperatures. Several house fires were started by malfunctioning heaters.	$0	$1,349,771
March 7, 1996	A late spring freeze caused extensive damage to the sugarcane crop in three parishes. Temperatures remained below freezing for 6 to 8 hours each night. Several daily records were set and came within a few degrees of establishing minimum record temperatures for the month.	$3,563,396	$0

Frequency / Probability

With four recorded events in 25 years, winter storm events within the boundaries of West Baton Rouge Parish have an annual chance of occurrence calculated at 16% based on the SHELDUS dataset.

Estimated Potential Losses

Since 1989, there have been four 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 $3,578,073. 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 (1989 – 2014). This provides an annual estimated potential loss of $143,123. To assess potential losses to the participating jurisdictions, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. Based on the

2010 Census data, the following table provides an estimate of potential property losses for West Baton Rouge Parish.

Table 2-74: Estimated Annual Losses for Winter Weather Events in West Baton Rouge Parish

Estimated Annual Potential Losses from Winter Weather for West Baton Rouge Parish			
Unincorporated West Baton Rouge Parish (52.2% of Population)	**Addis (15.1% of Population)**	**Brusly (10.9% of Population)**	**Port Allen (21.8% of Population)**
$74,762	$21,618	$15,577	$31,166

There have been no injuries or fatalities as a result of winter weather in West Baton Rouge Parish from the years 1989 – 2014.

Vulnerability

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

3. Capability Assessment

This section summarizes the results of the West Baton Rouge 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, West Baton Rouge Parish and the participating jurisdictions are able to identify strengths that could be used to reduce risk and losses 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

West Baton Rouge 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, and take an integrated and strategic look, holistically, at hazard mitigation in West Baton Rouge 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 West Baton Rouge Parish and its jurisdictions include the following:

Table 3-1: Planning and Regulatory Capabilities

Planning and Regulatory					
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.					
	WBR Parish	Port Allen	Addis	Brusly	Comments
Plans	Yes / No				
Comprehensive / Master Plan	Yes	Yes	Yes	Yes	n/a
Capital Improvements Plan	Yes	Yes	Yes	Yes	WBR - 5 year drainage and roads plans
Economic Development Plan	Yes	Yes	Yes	Yes	WBR - Regional (local element is part of Master Plan)
Local Emergency Operations Plan	Yes	Yes	Yes	Yes	n/a
Continuity of Operations Plan	Yes	Yes	Yes	Yes	n/a
Transportation Plan	Yes	Yes	Yes	No	Regional/State
Stormwater Management Plan	Yes	Yes	Yes	Yes	WBR - Adopted in 2014, effective date of 2019
Community Wildfire Protection Plan	No	No	Yes	No	n/a
Other plans (redevelopment, recovery, coastal zone management)	Alternative Transportation Plan	N/A	Yes	Yes	n /a
Building Code, Permitting and Inspections	Yes / No				
Building Code	2012 IRC, 2012 IBC, 2012 IMC, La. State Plumbing Code, 2011 NEC	Yes	Yes	Yes	Brusly - Adopted by Brusly Ordinance
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	No	No	No	n /a
Fire Department ISO/PIAL rating	Yes	Yes	Yes	Yes	n /a
Site plan review requirements	Yes, per WBR Codes	Yes	Yes	Yes	n /a
Land Use Planning and Ordinances	Yes / No				
Zoning Ordinance	Yes	Yes	Yes	Yes	n /a
Subdivision Ordinance	Yes	No	Yes	Yes	n /a
Floodplain Ordinance	Yes	Yes	Yes	Yes	n /a
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	No	Yes	No	n /a
Flood Insurance Rate Maps	Yes	Yes	Yes	Yes	n /a
Acquisition of land for open space and public recreation uses	No	Yes	No	No	n /a
Other	No	No	No	No	n /a

Building Codes, Permitting, Land Use Planning and Ordinances

The West Baton Rouge Office of Community Planning and Development is responsible for building permits, reviewing plans, flood zone requirements, zoning requirements, contractor registrations, subdivisions of property, planning projects, premise complaints, and conducting building inspections in the unincorporated sections as well as the municipalities. Actual building permits for the municipalities are pulled within the municipalities.

As of the 2016 update, West Baton Rouge 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. West Baton Rouge Parish follows the Uniform Construction Codes as adopted under ACT 12 of the state law. The building code requires a building permit for any new construction in the parish.

The purpose of the West Baton Rouge Parish Zoning Ordinance is to promote the health, safety, morals, and general welfare to lessen congestion in the street; to prevent the overcrowding of land; to avoid undue concentration of land; to facilitate the adequate provision of transportation, water, sewer, schools, parks, and other public requirements to minimize flood losses by the establishment of zoning districts and corresponding regulations.

The Planning and Zoning Commission meets on the first and third Tuesday of each month to consider any proposed ordinance changes, as well as additional planning and zoning topics.

While local capabilities for mitigation can vary from community to community, West Baton Rouge Parish as a whole has a system in place to coordinate and share these capabilities through West Baton Rouge 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, West Baton Rouge 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. On the following page are examples of resources in place in West Baton Rouge Parish and its jurisdictions.

Table 3-2: Administration 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.					
	WBR Parish	Port Allen	Addis	Brusly	Comments
Administration	Yes / No				
Planning Commission	Yes	Yes	Yes	Yes	n /a
Mitigation Planning Committee	Yes	Yes	Yes	Yes	n /a
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Yes	Yes	Yes	n /a
Mutual Aid Agreements	Yes	Yes	Yes	Yes	n /a
Staff	Yes / No; FT/PT; % Hazard Mitigation				
Chief Building Official	Yes	Yes	Yes	Yes	n /a
Floodplain Administrator	Yes	Yes	Yes	Yes	n /a
Emergency Manager	Yes	Yes	Yes	Yes	n /a
Community Planner	Yes	No	Yes	No	n /a
Civil Engineer	Yes	Yes	Yes	Yes	Brusly- Owen & White
GIS Coordinator	Yes	Yes	Yes	Yes	n /a
Grant Writer	No	N/A	Yes	Yes	n /a
Other	No	No	No	No	n /a
Technical	Yes / No				
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Yes	Yes	Yes	n /a
Hazard Data & Information	No	Yes	Yes	No	n /a
Grant Writing	No	No	Yes	No	n /a
Hazus Analysis	No	Yes	No	No	n /a
Other	No	No	No	No	n /a

Financial capabilities are the resources that West Baton Rouge 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 West Baton Rouge Parish and its jurisdictions:

Table 3-3: Financial Capabilities

Financial					
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.					
	WBR Parish	Port Allen	Addis	Brusly	Comments
Funding Resource	Yes / No				
Capital Improvements project funding	Yes	Yes	Yes	Yes	Brusly/State
Authority to levy taxes for specific purposes	Yes	Yes	Yes	No	n /a
Fees for water, sewer, gas, or electric services	Yes	Yes	Yes	Yes	Brusly - Sewer Fees
Impact fees for new development	Yes	Yes	Yes	No	n /a
Stormwater Utility Fee	No	No	No	Yes	n /a
Community Development Block Grant (CDBG)	Yes	Yes	Yes	No	n /a
Other Funding Programs	No	Yes	Yes	Yes	Brusly - Sewer (USDA)

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.

West Baton Rouge 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. Specifically focusing on advising repetitive loss property owners of ways they can reduce their exposure to damage by repetitive flooding remains a priority for the entire parish. The existing programs are as follows:

Table 3-4: 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.					
	WBR Parish	Port Allen	Addis	Brusly	Comments
Program / Organization	Yes / No				
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	No	No	Yes	Brusly - LEPC, Rotary
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Yes	Yes	Yes	Brusly - Fire Safety
Natural Disaster or safety related school program	Yes	Yes	Yes	Yes	n /a
Storm Ready certification	Yes	Yes	Yes	Yes	n /a
Firewise Communities certification	No	No	No	No	n /a
Public/Private partnership initiatives addressing disaster-related issues	No	No	No	No	n /a
Other	No	No	No	No	n /a

In some cases, the jurisdictions rely on West Baton Rouge Parish OHSEP and/or West Baton Rouge 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, West Baton Rouge Parish and each 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 West Baton Rouge 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:

- West Baton Rouge Parish
- City of Port Allen

- Town of Addis
- Town of Brusly

Flood Insurance and Community Rating System

West Baton Rouge Parish is a participant in the Community Rating System (CRS). Maintaining and improving the CRS rating for the parish and participating jurisdictions is recognized as a high priority by the Hazard Mitigation Steering Committee, with the addition of a new goal directly relating to CRS. Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed National Flood Insurance Program (NFIP) minimum requirements.

Under the Federal Emergency Management Agency (FEMA), the 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 the unincorporated areas of West Baton Rouge 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. In West Baton Rouge Parish, only the unincorporated areas participate. The incorporated jurisdictions of Port Allen, Brusly, and Addis do not participate in the CRS.

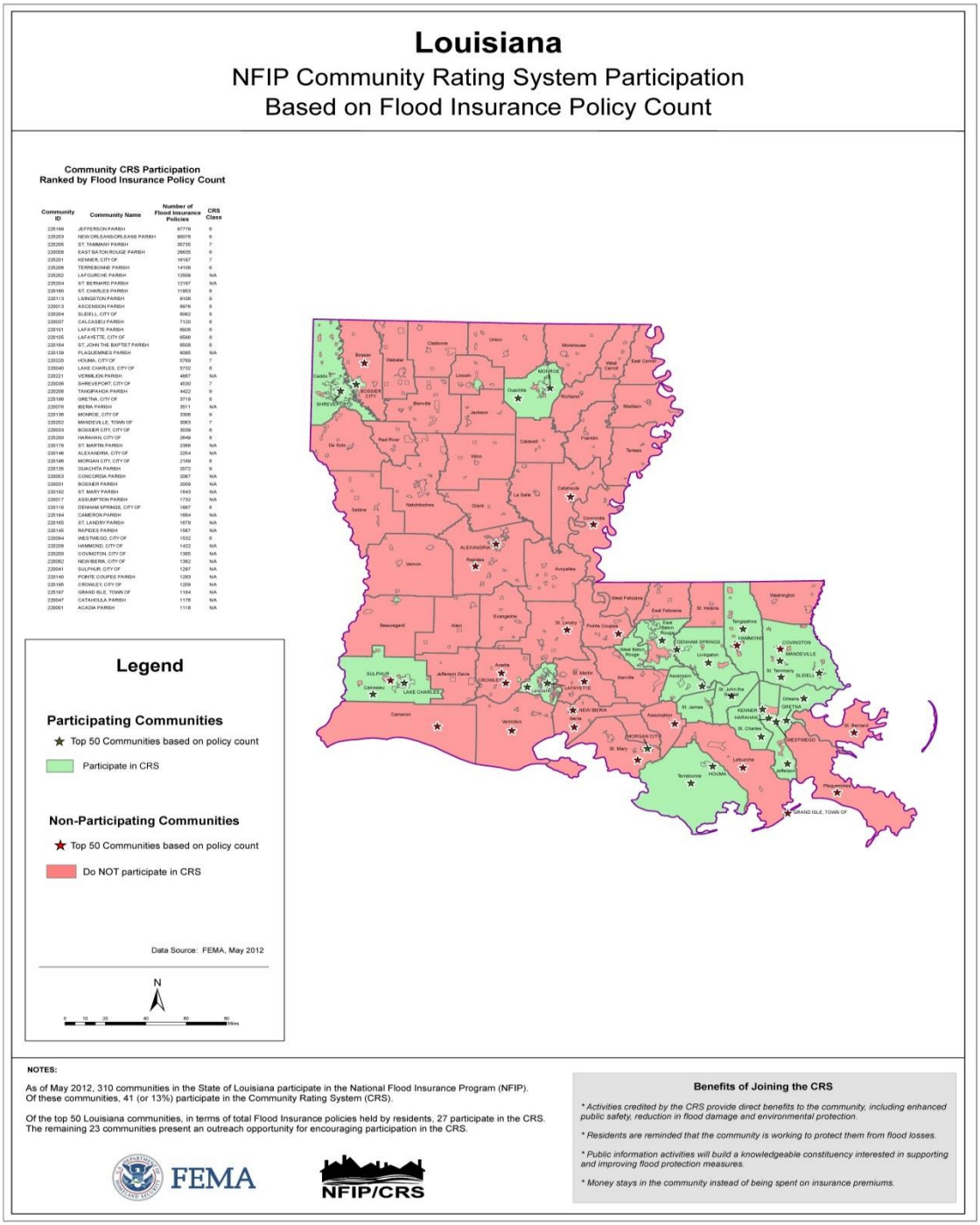
The CRS provides an incentive not just to start new mitigation programs, but to keep them going. There are two requirements that "encourage" a community to implement flood mitigation activities. First, the Parish will receive CRS credit for this plan when it is adopted. To retain that credit, though, the parish

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 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



Community ID	Community Name	Number of Flood Insurance Policies	CRS Class
225199	JEFFERSON PARISH	87779	6
225203	NEW ORLEANS/ORLEANS PARISH	86076	6
225205	ST. TAMMANY PARISH	35735	7
220058	EAST BATON ROUGE PARISH	26835	6
225201	KENNER, CITY OF	16197	7
225206	TERREBONNE PARISH	14108	6
225202	LAFOURCHE PARISH	12569	NA
225204	ST. BERNARD PARISH	12187	NA
225180	ST. CHARLES PARISH	11963	8
220113	LIVINGSTON PARISH	9108	9
220013	ASCENSION PARISH	8978	8
220204	SLIDELL, CITY OF	8062	8
220097	CALCASIEU PARISH	7120	8
220101	LAFAYETTE PARISH	6826	8
220105	LAFAYETTE, CITY OF	6566	8
220164	ST. JOHN THE BAPTIST PARISH	6508	8
220139	PLAQUEMINES PARISH	6265	NA
220220	HOUMA, CITY OF	5769	7
220040	LAKE CHARLES, CITY OF	5732	8
220221	VERMILION PARISH	4867	NA
220036	SHREVEPORT, CITY OF	4530	7
220206	TANGIPAHOA PARISH	4422	9
225198	GRETNA, CITY OF	3719	8
220079	IBERIA PARISH	3511	NA
220136	MONROE, CITY OF	3306	9
220202	MANDEVILLE, TOWN OF	3063	7
220033	BOSSIER CITY, CITY OF	3039	8
225200	HARAHAN, CITY OF	2649	8
220178	ST. MARTIN PARISH	2388	NA
220148	ALEXANDRIA, CITY OF	2264	NA
220196	MORGAN CITY, CITY OF	2189	8
220135	OUACHITA PARISH	2072	9
220053	CONCORDIA PARISH	2067	NA
220031	BOSSIER PARISH	2009	NA
220192	ST. MARY PARISH	1843	NA
220017	ASSUMPTION PARISH	1732	NA
220116	DENHAM SPRINGS, CITY OF	1687	8
225184	CAMERON PARISH	1684	NA
220165	ST. LANDRY PARISH	1679	NA
220145	RAPIDES PARISH	1567	NA
220064	WESTWEGO, CITY OF	1532	8
220208	HAMMOND, CITY OF	1422	NA
220200	COVINGTON, CITY OF	1365	NA
220062	NEW IBERIA, CITY OF	1362	NA
220041	SULPHUR, CITY OF	1297	NA
220140	POINTE COUPEE PARISH	1283	NA
220195	CROWLEY, CITY OF	1269	NA
225197	GRAND ISLE, TOWN OF	1184	NA
220047	CATAHOULA PARISH	1176	NA
220001	ACADIA PARISH	1118	NA

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

West Baton Rouge 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.

An online public opinion survey was conducted of West Baton Rouge Parish residents between July 2014 and October 2015. The 25 question survey was completed by parish residents over the age of 18.

The survey was designed to capture public perceptions and opinions regarding natural hazards in West Baton Rouge Parish. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

When asked to gauge from a list which categories were more susceptible to impacts caused by natural hazards, the top three categories selected were:

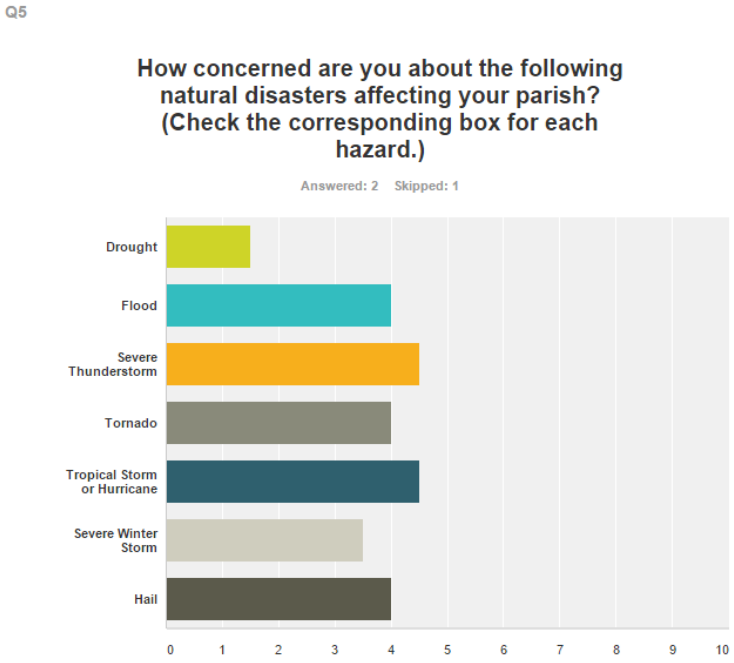
1. Human (Loss of life and/or injuries)
2. Infrastructure (Damage or loss of bridges, utilities, schools, etc.)
3. Economic (Business closures and/or job losses)

	1	2	3	4	5	6	Total	Score
Human (Loss of life and/or injuries)	50.00% 1	50.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	2	5.50
Economic (Business closures and/or job losses)	0.00% 0	50.00% 1	50.00% 1	0.00% 0	0.00% 0	0.00% 0	2	4.50
Infrastructure (Damage or loss of bridges, utilities, schools, etc.)	50.00% 1	0.00% 0	50.00% 1	0.00% 0	0.00% 0	0.00% 0	2	5.00
Cultural/Historic (Damage or loss of libraries, museums, historic sites)	0.00% 0	0.00% 0	0.00% 0	50.00% 1	50.00% 1	0.00% 0	2	2.50
Environmental (Damage or loss of forests, pastureland, waterways, etc.)	0.00% 0	0.00% 0	0.00% 0	0.00% 0	50.00% 1	50.00% 1	2	1.50
Governance (Ability to maintain order and/or provide public amenities and services)	0.00% 0	0.00% 0	0.00% 0	50.00% 1	0.00% 0	50.00% 1	2	2.00

Figure 4-1: Most Susceptible Community Assets

The survey results also indicated which natural disasters citizens were *most concerned* with being affected by in West Baton Rouge Parish. The natural disasters selected were:

1. Severe Thunderstorms and Tropical Storms (or Hurricanes)
2. Flooding and Hail



The online survey also showed a level of trust in the news media as well as the parish government for disaster related issues, further highlighting the collaborative relationship between citizen and government agencies. This indicated that the strategies and actions being implemented within the communities is trusted and important to citizens. Full survey results can be found here:

https://www.surveymonkey.com/results/SM-72JNTW62/

West Baton Rouge Parish reviewed and 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 Hazard Mitigation Plan Update are a product of analysis and review of the West Baton Rouge Parish Hazard Mitigation Plan Steering Committee, under the coordination of the West Baton Rouge Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, both new and from the 2011 plan, for review from June 2015 to September 2015.

During the public meeting in September, the committee and participating jurisdictions provided a status of the projects from 2011 plan and the proposed actions for the 2016 update. Breakout forums were provided for citizens to discuss each project with subject matter experts from the parish.

Committee members then submitted jurisdiction-specific projects based on feasibility for funding, ease of completion, and other community-specific factors. The actions were later prioritized. This

activity confirms that the goals and action items developed by the West Baton Rouge Parish Hazard Mitigation Plan Steering Committee are representative of the outlook of the community at large.

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 focused on identifying and quantifying the risks faced by the residents and property owners in West Baton Rouge Parish from natural and manmade hazards. By articulating goals and objectives based on the previous plans, the risk assessment results, and the intent 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, West Baton Rouge 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.

Goals

The current goals of the West Baton Rouge 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 six goals remain valid.

The goals are as follows:

1. Minimize human, economic, and environmental disruption from natural hazards
2. Protect life and property from the impacts of natural disasters
3. Enhance preparedness and emergency response to natural disasters
4. Enhance public awareness regarding understanding of risks associated with hazards and the need for hazard mitigation
5. Improve the disaster resistance of vulnerable structures and critical facilities through the development and implementation of cost-effective, technically feasible, and environmentally sound location mitigation actions
6. Promote the preservation or restoration of natural areas or natural functions of floodplain and watershed areas

The Mitigation Action Plan focuses on actions to be taken by West Baton Rouge 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 West Baton Rouge Parish Hazard Mitigation Plan Steering Committee and participating jurisdictions each identified actions that would reduce and/or prevent future damage within West Baton Rouge 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.

In addition to the established and agreed upon parish and jurisdiction actions relative to the parish-wide goals, the action updates from the previous plan updates can be found in the table on the following page.

West Baton Rouge 2010 Hazard Mitigation Actions Update

West Baton Rouge Parish - Update			
Jurisdiction-Specific Action	**Description**	**Responsible Party, Agency, or Department**	**Status**
Lyndale Drainage Project	48" Steel Casing under La Hwy 1 and 72" Steel Casing under the Union Pacific Railroad	WBR Parish	Completed
Emily Drive Drainage Project	1). Replace 110 feet of 36" Storm Drains with 48" Storm Drains and 2.) Excavate a new drainage ditch on the north side of the subdivision	WBR Parish	Completed
Parish Canal-South End-Drainage Project	Channelization and culverts. Clear, de-sag and improve the south end of the major drainage Parish Canal south of 1-10 and generally parallel to LA Hwy 1	WBR Parish	In Progress
Diversion Canal Drainage Project	Project involves connecting a Parish canal south of the Interstate 10 frontage road and parallel to the Intracoastal Waterway to the Intracoastal Waterway	WBR Parish	In Progress
Ton Canal Drainage Project	Widen an existing Parish drainage canal in the vicinity of Brusly High School which runs perpendicular to the La Hwy 1 and the Railroad. The State DOTD is improving the drainage under La Hwy 1 in this area.	WBR Parish	In Progress
Repetitive Loss Protection	Perform drainage improvements to alleviate flooding of these properties. Berms will be installed at the 5277 Choctaw Street Apartments. 1035 North 121h Street will have enlarged storm drains, 3100 Phillips Way will have enlarged storm drains and 4344 Dunleith will benefit from a current project to enlarge drainage under Hwy 1 and the railroad.	WBR Parish	In Progress
Port Allen 6th street Water Well	Install backup power generator for water well. The City of Port Allen currently has two water wells. One is located on 12th street and has generator. The proposed project is to install a new generator on the 6th street water well.	City of Port Allen	Removed generator from 12th St. well that was closed & installed at 6th St.
Brusly Lift Station	Install backup power generator	Town of Brusly	Completed
Addis Place Drainage Project	Local canal to be widened, cleared and de-snagged.	Town of Addis	Completed

Unincorporated West Baton Rouge - New Mitigation Actions

West Baton Rouge Parish - Unincorporated							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
WBR1: Drainage Improvement Projects	Various drainage projects to reduce flood damage and costs of damage, overtopping of roads with drain water, as well as provide relief for flooding problems. Projects may include Lake Clause Drainage Project; Big Stumpy Drainage Project; Grand Bayou Canal (Section Road to Rosehill Road); local drainage South of Byrd Heights; Riverview Canal (Hwy 190 South); South Line Canal (LA Hwy 1 to Parish Canal); additional drainage improvement projects	FEMA; local	2-4 years	WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 5, 6	New
WBR2: Retrofitting Projects	Retrofit essential facilities and governmental 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. Projects may include Erwinville Community Center, EOC/9-1-1 Center, Addis VFW and additional retrofitting projects	FEMA; local	1-5 years	WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2, 5	New
WBR3: Early Warning System	Currently, the parish has a chemical warning system which consists of 2 sirens. Both sirens are located at Addis. The proposed warning system will cover the entire Parish and its municipalities hence ensuring that residents can be quickly alerted of hazards and will be able to seek shelter	TBD	1-2 years	WBR Parish OHSEP	Flooding, Sinkhole, Thunderstorm - High Wind, Hail, and Lightning, Tropical Cyclone, Tornado	1, 2, 3, 4	New
WBR4: Generator Installation Projects	Installation of backup generator power for governmental buildings, critical facilities, and school campuses.	TBD	1-5 years	WBR Parish OHSEP	Flooding, Thunderstorm - High Wind and Lightning, Tornado, Tropical Cyclone, Wildfire, Winter Storm	1, 3, 5	New
WBR5: Construction of Safe Rooms	Construction of safe rooms for essential facilities, governmental buildings	TBD	1-5 years	WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical	1, 2	New

West Baton Rouge Parish - Unincorporated							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
					Cyclone, Tornado		
WBR6: Flood Mitigation of Severe Repetitive Loss and Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss and severe repetitive loss or other hazard prone properties.	FEMA; local	1-5 years	WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 6	New
WBR7: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Tropical Cyclone, tornadoes, wildfire, sinkholes, thunderstorm (lightning, high wind, hail), 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. Also promoting the use of NOAA "All Hazards" radios for early warning and post event information.	FEMA; local	1-5 years	WBR Parish OHSEP	Drought, Flooding, Sinkhole, Thunderstorm - Hail, High Wind and Lightning, Tornado, Tropical Cyclone, Wildfire, Winter Weather	1, 2, 3, 4	New
WBR8: Lightning Protection Projects	Installation of lightning rods and surge protectors to facilities. Upgrade critical facilities database and communications systems including data back-up and surge protection to mitigate losses due to lightning strikes and electrical blackouts.	FEMA; local	1-2 years	WBR Parish OHSEP	Thunderstorm - Lightning	1, 2, 5	New
WBR9: Wildfire Mitigation Plan	Develop and implement a regional interagency wildfire mitigation plan	FEMA, Local	1-5 years	WBR Parish OHSEP	Wildfire	1, 2, 3, 4	New
WBR10: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought.	FEMA, Local	1-5 years	WBR Parish OHSEP	Drought	1	New

City of Port Allen - New Mitigation Actions

City of Port Allen							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
PA1: Drainage Improvement Projects	Various drainage projects to reduce flood damage and costs of damage, overtopping of roads with drain water, as well as provide relief for flooding problems. Projects may include Lake Riverside Canal - Port Allen; Oaks Avenue; Avenue G; Florida Street; additional drainage improvement projects	FEMA; local	2-4 years	City of Port Allen, WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 5, 6	New
PA2: Retrofitting Projects	Retrofit essential facilities and governmental 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. Projects may include Port Allen Community Center, Port Allen Fire Station #1, and additional retrofitting projects	FEMA; local	1-5 years	City of Port Allen; WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2, 5	New
PA3: Generator Installation Projects	Installation of backup generator power for governmental buildings, critical facilities, school campuses. Projects may include Port Allen High School, Port Allen Fire Department, Port Allen Lift Stations, and Port Allen Wastewater Treatment Plant	TBD	1-2 years	City of Port Allen; WBR Parish OHSEP	Flooding, Thunderstorm - High Wind and Lightning, Tropical Cyclone, Wildfire, Winter Storm	1, 3, 5	New
PA4: Early Warning System	Currently, the parish has a chemical warning system which consists of 2 sirens. Both sirens are located at Addis. The proposed warning system will cover the entire Parish and its municipalities hence ensuring that residents can be quickly alerted of hazards and will be able to seek shelter	TBD	1-5 years	City of Port Allen; WBR Parish OHSEP	Flooding, Thunderstorm - High Wind, Hail, and Lightning, Tropical Cyclone, Tornado	1, 2, 3, 4	New
PA5: Construction of Safe Rooms	Construction of safe rooms for essential facilities, governmental buildings	TBD	1-5 years	WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2	New

City of Port Allen							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
PA6: Flood Mitigation of Severe Repetitive Loss and Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss and severe repetitive loss or other hazard prone properties.	FEMA; local	1-5 years	WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 6	New
PA7: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Tropical Cyclone, tornadoes, wildfire, sinkholes, thunderstorm (lightning, high wind, hail), 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. Also promoting the use of NOAA "All Hazards" radios for early warning and post event information.	FEMA; local	1-5 years	WBR Parish OHSEP	Drought, Flooding, Thunderstorm - Hail, High Wind and Lightning, Tornado, Tropical Cyclone, Wildfire, Winter Weather	1, 2, 3, 4	New
PA8: Lightning Protection Projects	Installation of lightning rods and surge protectors to facilities. Upgrade critical facilities database and communications systems including data back-up and surge protection to mitigate losses due to lightning strikes and electrical blackouts.	FEMA; local	1-2 years	WBR Parish OHSEP	Thunderstorm - Lightning	1, 2, 5	New
PA9: Wildfire Mitigation Plan	Develop and implement a regional interagency wildfire mitigation plan	FEMA, Local	1-5 years	WBR Parish OHSEP	Wildfire	1, 2, 3, 4	New
PA10: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought.	FEMA, Local	1-5 years	WBR Parish OHSEP	Drought	1	New

Town of Brusly - New Mitigation Actions

Town of Brusly							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
B1: Drainage Improvement Projects	Various drainage projects to reduce flood damage and costs of damage, overtopping of roads with drain water, as well as provide relief for flooding problems.	FEMA; local	2-4 years	Town of Brusly, WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 5, 6	New
B2: Retrofitting Projects	Retrofit essential facilities and governmental 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; local	1-5 years	Town of Brusly, WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2, 5	New
B3: Generator Installation Projects	Installation of backup generator power for governmental buildings, critical facilities, school campuses.	TBD	1-2 years	Town of Brusly, WBR Parish OHSEP	Flooding, Thunderstorm - High Wind and Lightning, Tropical Cyclone, Wildfire, Winter Storm	1, 3, 5	New
B4: Early Warning System	Currently, the parish has a chemical warning system which consists of 2 sirens. Both sirens are located at Addis. The proposed warning system will cover the entire Parish and its municipalities hence ensuring that residents can be quickly alerted of hazards and will be able to seek shelter	TBD	1-5 years	Town of Brusly, WBR Parish OHSEP	Flooding, Thunderstorm - High Wind, Hail, and Lightning, Tropical Cyclone, Tornado	1, 2, 3, 4	New
B5: Construction of Safe Rooms	Construction of safe rooms for essential facilities, governmental buildings	TBD	1-5 years	Town of Brusly, WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2	New
B6: Flood Mitigation of Severe Repetitive Loss and Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss and severe repetitive loss or other hazard prone properties.	FEMA; local	1-5 years	Town of Brusly, WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 6	New

Town of Brusly							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
B7: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Tropical Cyclone, tornadoes, wildfire, sinkholes, thunderstorm (lightning, high wind, hail), 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. Also promoting the use of NOAA "All Hazards" radios for early warning and post event information.	FEMA; local	1-5 years	Town of Brusly, WBR Parish OHSEP	Drought, Flooding, Thunderstorm - Hail, High Wind and Lightning, Tornado, Tropical Cyclone, Wildfire, Winter Weather	1, 2, 3, 4	New
B8: Lightning Protection Projects	Installation of lightning rods and surge protectors to facilities. Upgrade critical facilities database and communications systems including data back-up and surge protection to mitigate losses due to lightning strikes and electrical blackouts.	FEMA; local	1-2 years	Town of Brusly, WBR Parish OHSEP	Thunderstorm - Lightning	1, 2, 5	New
B9: Wildfire Mitigation Plan	Develop and implement a regional interagency wildfire mitigation plan	FEMA, Local	1-5 years	Town of Brusly, WBR Parish OHSEP	Wildfire	1, 2, 3, 4	New
B10: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought.	FEMA, Local	1-5 years	WBR Parish OHSEP	Drought	1	New

Town of Addis - New Mitigation Actions

Town of Addis							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
A1: Drainage Improvement Projects	Various drainage projects to reduce flood damage and costs of damage, overtopping of roads with drain water, as well as provide relief for flooding problems.	FEMA; local	2-4 years	Town of Addis, WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 5, 6	New
A2: Retrofitting Projects	Retrofit essential facilities and governmental 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; local	1-5 years	Town of Addis, WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2, 5	New
A3: Generator Installation Projects	Installation of backup generator power for governmental buildings, critical facilities, school campuses.	TBD	1-2 years	Town of Addis, WBR Parish OHSEP	Flooding, Thunderstorm - High Wind and Lightning, Tropical Cyclone, Wildfire, Winter Storm	1, 3, 5	New
A4: Early Warning System	Currently, the parish has a chemical warning system which consists of 2 sirens. Both sirens are located at Addis. The proposed warning system will cover the entire Parish and its municipalities hence ensuring that residents can be quickly alerted of hazards and will be able to seek shelter	TBD	1-5 years	Town of Addis, WBR Parish OHSEP	Flooding, Thunderstorm - High Wind, Hail, and Lightning, Tropical Cyclone, Tornado	1, 2, 3, 4	New
A5: Construction of Safe Rooms	Construction of safe rooms for essential facilities, governmental buildings	TBD	1-5 years	Town of Addis, WBR Parish OHSEP	Thunderstorm - High Wind and Hail, Tropical Cyclone, Tornado	1, 2	New
A6: Flood Mitigation of Severe Repetitive Loss and Repetitive Loss Properties and Other Hazard Prone Structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss and severe repetitive loss or other hazard prone properties.	FEMA; local	1-5 years	Town of Addis, WBR Parish OHSEP	Flooding, Tropical Cyclone	1, 2, 6	New

Town of Addis							
Jurisdiction-Specific Action	**Description**	**Funding Source**	**Target Completion Date**	**Responsible Party, Agency, or Department**	**Hazard**	**Goal**	**Status**
A7: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Tropical Cyclone, tornadoes, wildfire, sinkholes, thunderstorm (lightning, high wind, hail), 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. Also promoting the use of NOAA "All Hazards" radios for early warning and post event information.	FEMA; local	1-5 years	Town of Addis, WBR Parish OHSEP	Drought, Flooding, Thunderstorm - Hail, High Wind and Lightning, Tornado, Tropical Cyclone, Wildfire, Winter Weather	1, 2, 3, 4	New
A8: Lightning Protection Projects	Installation of lightning rods and surge protectors to facilities. Upgrade critical facilities database and communications systems including data back-up and surge protection to mitigate losses due to lightning strikes and electrical blackouts.	FEMA; local	1-2 years	Town of Addis, WBR Parish OHSEP	Thunderstorm - Lightning	1, 2, 5	New
A9: Wildfire Mitigation Plan	Develop and implement a regional interagency wildfire mitigation plan	FEMA, Local	1-5 years	Town of Addis, WBR Parish OHSEP	Wildfire	1, 2, 3, 4	New
A10: Drought Ordinances	Adopt ordinance requiring water-saving measures in time of drought.	FEMA, Local	1-5 years	WBR Parish OHSEP	Drought	1	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.

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. The jurisdictions prioritized the possible activities that could be pursued. Jurisdictions and the Steering Committee members consulted appropriate agencies in order to assist with the prioritizations. The result were items that address the major hazards, are appropriate for those hazards, are cost-effective, and are affordable. The Steering Committee met at the Mitigation Action meeting to review and approve each jurisdictions' and unincorporated West Baton Rouge Parish mitigation actions.

West Baton Rouge Parish and the jurisdictions will implement and administer the identified actions based off of the proposed timeframes and priorities for each action.

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 West Baton Rouge Parish Hazard Mitigation Plan Update

The West Baton Rouge Parish Hazard Mitigation Plan Update process began in February 2015 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.

West Baton Rouge Parish includes three incorporated municipalities: the City of Port Allen as well as the Towns of Brusly and Addis. All three municipalities participated in the plan update process. West Baton Rouge 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
5/19/2015	Initial Coordination	Telephone/ Email	No	Discuss with Parish HM coordinator and any Steering Committee members expectations and requirements of the project.
6/4/2015	Kick-Off Meeting	WBR OHSEP, Port Allen, LA	No	Discuss with the plan Steering Committee expectations and requirements of the project. Assign plan worksheets to jurisdictions.
9/9/2015	Risk Assessment Overview	WBR OHSEP, Port Allen, LA	No	Discuss and review the risk assessment with the Steering Committee discuss and review expectations for public meeting.
9/9/2015	Public Meeting	WBR OHSEP, Port Allen, 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 West Baton Rouge 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 West Baton Rouge 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/results/SM-72JNTW62/
2 Week Period	Public Plan Review (Digital)		Yes	Parish Website and West Baton Rouge 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 West Baton Rouge Parish OHSEP oversaw the coordination of the 2016 Hazard Mitigation Plan Update Steering Committee during the update process. The West Baton Rouge 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 stakeholders through email to planned meetings and activities. 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 consists of representatives from the following parish, municipal, or community stakeholders:

- West Baton Rouge Parish Government
- West Baton Rouge Office of Homeland Security and Emergency Preparedness
- City of Port Allen
- Town of Brusly
- Town of Addis
- West Baton Rouge Parish School Board

The Parish of Iberville was invited by the West Baton Rouge Parish OHSEP to participate in all meetings and activities as well in an effort to collaborate with neighboring communities for plan development. With the addition of the sinkhole hazard, Iberville Parish and West Baton Rouge Parish may collaborate in the future on any mitigation measures necessary to mitigate the area in which the buffer zone of a sinkhole in West Baton Rouge Parish overlaps the parish line with Iberville Parish. The participation of the GOHSEP Region 2 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
Darren Guidry	Region 2 Coordinator	GOHSEP
David Toups	Mayor	Town of Addis
Deano Moran	Director	WBR OHSEP
Esdron Brown	Police Chief	City of Port Allen Police Department
Jason Manola	Executive Assistant	West Baton Rouge Parish
Joey Normand	Mayor	Town of Brusly
Jonathan Lefeaux	Police Chief	Town of Brusly Police Department
Mike Cazes	Sheriff	WBR Sheriff's Office
Richard Lee	Mayor	City of Port Allen
Ricky Anderson	Police Chief	Town of Addis Police Department
Riley Berthelot	Parish President	West Baton Rouge Parish
Wes Watts	Superintendent	WBR School Board

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 West Baton Rouge 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 West Baton Rouge 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:

- Floodplain Ordinances (Parish and Jurisdictions)
- All Hazards Emergency Operations Plan (Parish and Jurisdictions)
- West Baton Rouge Comprehensive Master Plan
- Debris Removal Plan
- Economic Plan (Parish and Jurisdictions)
- Stormwater Management Plan
- Flood Insurance Rate Maps (FIRMs)
- Flood Insurance Studies
- Drainage Studies
- Zoning Ordinances
- Flood Plain Ordinances

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 West Baton Rouge Parish.

Meeting #1: Initial Coordination

Date: May 19, 2015
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: SDMI Staff, West Baton Rouge Parish OHSEP Staff

Meeting #2: Hazard Mitigation Plan Update Kick-Off

Date: June 4, 2015
Location: Port Allen, Louisiana
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
Deano Moran	Director	WBR OHSEP
Riley Berthelot	Parish President	West Baton Rouge Parish
Richard Lee	Mayor	City of Port Allen
Joey Normand	Mayor	Town of Brusly
David Toups	Mayor	Town of Addis
Mike Cazes	Sheriff	WBR Sheriff's Office
Esdron Brown	Police Chief	City of Port Allen Police Department
Jonathan Lefeaux	Police Chief	Town of Brusly Police Department
Ricky Anderson	Police Chief	Town of Addis Police Department
Jason Manola	Executive Assistant	West Baton Rouge Parish
Wes Watts	Superintendent	WBR School Board
Darren Guidry	Region 2 Coordinator	GOHSEP
Ken Kahoa	Law Enforcement	WBR Sheriff's Office
Lisa Ardeneaux	EOC Coordinator	WBR OHSEP
Anthony Summers	Assistant Director	WBR OHSEP
Warren LeJeune	School Board	WBR School Board
Tom Southon	Law Enforcement	Town of Brusly Police Department
David Jones	Law Enforcement	Town of Addis Police Department
Laurie Doiron	Director	Iberville Parish OHSEP

Meeting #3: Risk Assessment Overview

Date: September 9, 2015

Location: Port Allen, 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
Deano Moran	Director	WBR OHSEP
Riley Berthelot	Parish President	West Baton Rouge Parish
Richard Lee	Mayor	City of Port Allen
Joey Normand	Mayor	Town of Brusly
David Toups	Mayor	Town of Addis
Mike Cazes	Sheriff	WBR Sheriff's Office
Esdron Brown	Police Chief	City of Port Allen Police Department
Jonathan Lefeaux	Police Chief	Town of Brusly Police Department
Ricky Anderson	Police Chief	Town of Addis Police Department
Jason Manola	Executive Assistant	West Baton Rouge Parish
Wes Watts	Superintendent	WBR School Board
Darren Guidry	Region 2 Coordinator	GOHSEP
Ken Kahoa	Law Enforcement	WBR Sheriff's Office
Lisa Ardeneaux	EOC Coordinator	WBR OHSEP
Anthony Summers	Assistant Director	WBR OHSEP
Warren LeJeune	School Board	WBR School Board
Tom Southon	Law Enforcement	Town of Brusly Police Department
David Jones	Law Enforcement	Town of Addis Police Department
Laurie Doiron	Director	Iberville Parish OHSEP

Meeting #4: Public Meeting

Date: September 9, 2015

Location: Port Allen, 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 West Baton Rouge Parish communities were provided for the meeting attendees to identify specific areas where localized hazards occur.

Public Initiation: Yes

Invitees Included:

Name	Title	Agency
Deano Moran	Director	WBR OHSEP
Riley Berthelot	Parish President	West Baton Rouge Parish
Richard Lee	Mayor	City of Port Allen
Joey Normand	Mayor	Town of Brusly
David Toups	Mayor	Town of Addis
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Darren Guidry	Region 2 Coordinator	GOHSEP
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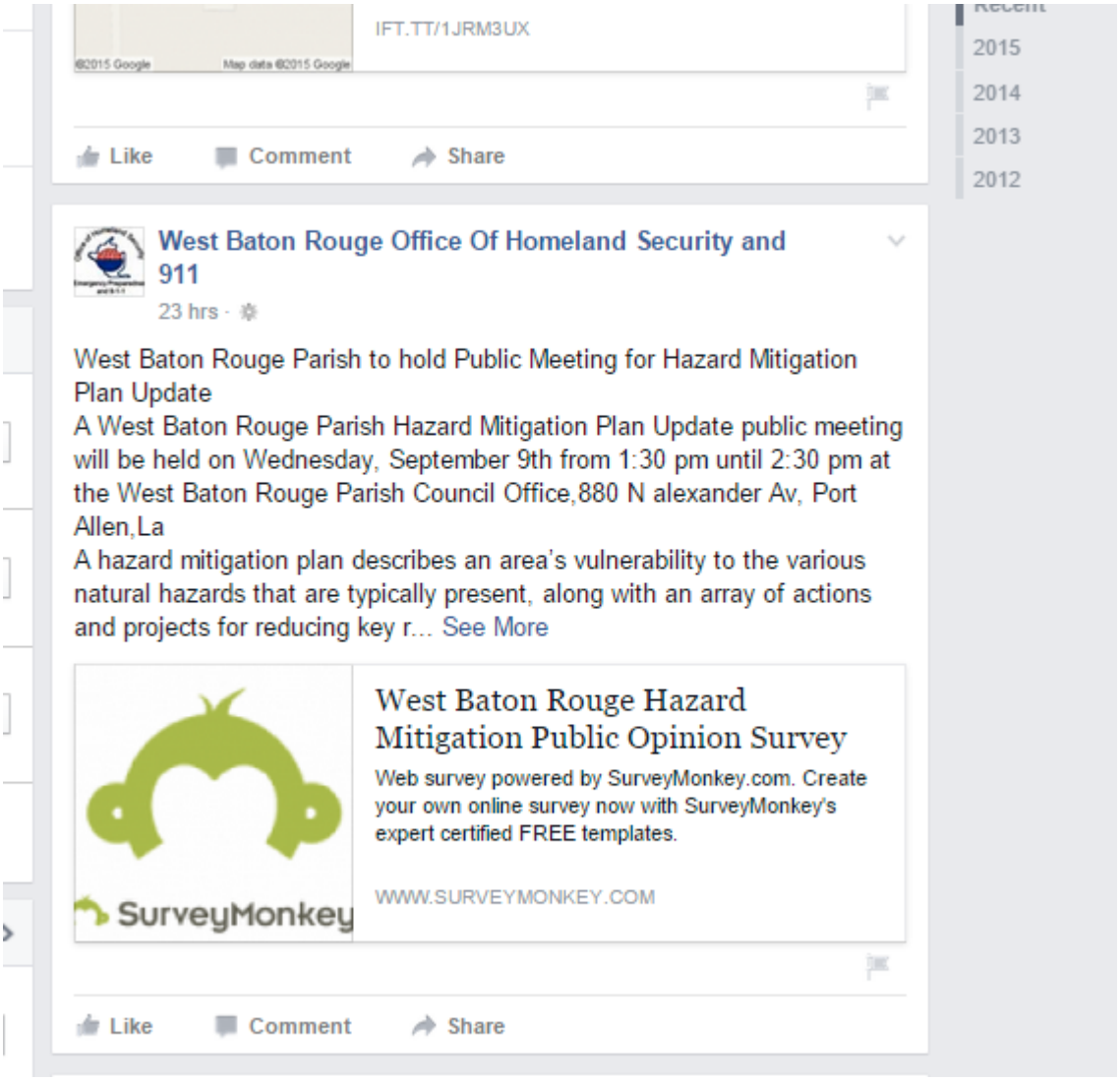
Lisa Ardeneaux	EOC Coordinator	WBR OHSEP
Anthony Summers	Assistant Director	WBR OHSEP
Warren LeJeune	School Board	WBR School Board
Tom Southon	Law Enforcement	Town of Brusly Police Department
David Jones	Law Enforcement	Town of Addis Police Department
Laurie Doiron	Director	Iberville Parish OHSEP

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

Meeting Public Notices:



WEST BATON ROUGE PARISH
OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

FOR IMMEDIATE RELEASE
September 9, 2015

West Baton Rouge Parish to hold Public Meetings for Hazard Mitigation Plan Update

Port Allen, LA – West Baton Rouge Parish Office of Homeland Security & Emergency Preparedness is in the process of updating the West Baton Rouge Parish Hazard Mitigation Plan and are required to hold public meetings on the plan update. The Public meeting will be held on September 9, 2015 in the West Baton Rouge Parish Council Office located at 880 N. Alexander Ave., Port Allen, LA from 1:30PM to 2:30PM.

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.

West Baton Rouge Parish is in the beginning stages of updating its hazard mitigation plan. Public meeting will be held on September 9, 2015 for all citizens interested in learning about and participating in discussions concerning the West Baton Rouge Parish Hazard Mitigation Plan.

Residents of West Baton Rouge 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/WestBatonRouge .

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

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

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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 West Baton Rouge 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 buildings 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

West Baton Rouge 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

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

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances (Parish and Jurisdictions)
- Emergency Operations Plan (Parish and Jurisdictions)
- Comprehensive Master Plan (Entire Parish)
- Economic Development Plan (Parish and Jurisdictions)
- Stormwater Management Plan

- Continuity of Operations Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the West Baton Rouge 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 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 West Baton Rouge 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 City of Port Allen, Town of Brusly, and the Town of Addis, West Baton Rouge 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:

West Baton Rouge Unincorporated
Comprehensive Master Plan/Updated Annually/WBR Government
Capital Improvements Plan/Updated every 5 years/WBR Government
Regional Economic Development Plan/Updated as needed/WBR Government
Regional/State Transportation Plan/Updated as needed/WBR Government
Stormwater Management Plan/Updated as needed/WBR Government
Alternative Transportation Plan/Updated as needed/WBR Government

City of Port Allen
Comprehensive Master Plan/Updated as needed/WBR Government, City of Port Allen
Capital Improvement Plan/Updated as needed/WBR Government, City of Port Allen
Economic Development Plan/Updated as needed/WBR Government, City of Port Allen
Local Emergency Operations Plan/Updated annually/WBR OHSEP

Continuity of Operations Plan/Updated as needed/WBR OHSEP
Stormwater Management Plan/Updated As needed/WBR Government, City of Port Allen

Town of Brusly
Comprehensive Master Plan/Updated as needed/WBR Government, Town of Brusly
Capital Improvement Plan/Updated as needed/WBR Government, Town of Brusly
Economic Development Plan/Updated as needed/WBR Government, Town of Brusly
Local Emergency Operations Plan/Updated annually/WBR OHSEP
Continuity of Operations Plan/Updated as needed/WBR OHSEP
Stormwater Management Plan/Updated As needed/WBR Government, Town of Brusly

Town of Addis
Comprehensive Master Plan/Updated as needed/WBR Government, Town of Addis
Capital Improvement Plan/Updated as needed/WBR Government, Town of Addis
Economic Development Plan/Updated as needed/WBR Government, Town of Addis
Local Emergency Operations Plan/Updated annually/WBR OHSEP
Continuity of Operations Plan/Updated as needed/WBR OHSEP
Stormwater Management Plan/Updated As needed/WBR Government, Town of Addis

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 may include:

- 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

Appendix C: Essential Facilities

West Baton Rouge Parish Essential Facilities – All Jurisdictions

West Baton Rouge Unincorporated Essential Facilities											
Type	Name	Drought*	Flood	Sinkhole*	Hail*	Lightning*	Wind	Tornado	Tropical Cyclones	Wildfires	Winter Storm*
Fire and Rescue	Brusly Fire Department Station 3						X	X	X		
	Erwinville Fire Department Station 1						X	X	X	X	
	Erwinville Fire Department Station 2		X				X	X	X	X	
	Port Allen Fire Department Station 2						X	X	X	X	
	Port Allen Fire Department Station 3						X	X	X		
	Lobdell Volunteer Fire Department						X	X	X		
	Rosehill Fire Department Station 1						X	X	X	X	
	Rosehill Fire Department Station 2						X	X	X	X	
	Brusly Fire Department Station 2						X	X	X	X	
Public Health	Louisiana Urgent Care and Walk in Clinic						X	X	X	X	
Government	WBR Cooperative Extension						X	X	X		
	WBR Council on Aging						X	X	X	X	
	WBR Natural Gas Maintenance Barn						X	X	X		
	Animal Control						X	X	X		
	WBR Maintenance Barn						X	X	X	X	
	WBR Tourist Information and Convention Center						X	X	X	X	
	Detention Center						X	X	X		
	Work Release						X	X	X	X	
Schools	Chamberlin Elementary School						X	X	X		

West Baton Rouge Unincorporated Essential Facilities											
Type	Name	Drought*	Flood	Sinkhole*	Hail*	Lightning*	Wind	Tornado	Tropical Cyclones	Wildfires	Winter Storm*
	Devall Middle School						X	X	X		
	Faith Academy						X	X	X		
	WBR Parish of School Board						X	X	X	X	
	Port Allen High School						X	X	X	X	
	Jumonville Memorial Campus						X	X	X	X	
	Lukeville Upper Elementary						X	X	X		

Addis Essential Facilities											
Type	Name	Drought*	Flood	Sinkhole*	Hail*	Lightning*	Wind	Tornado	Tropical Cyclones	Wildfires	Winter Storm*
Fire and Rescue	Addis Fire Department Station 1						X	X	X	X	
	Addis Fire Department Station 2									X	
	Addis Fire Department Station 3						X	X	X	X	
Government	Addis Town Hall						X	X	X	X	
Law Enforcement	Addis Police Department						X	X	X	X	

Brusly Essential Facilities											
Type	Name	Drought*	Flood	Sinkhole*	Hail*	Lightning*	Wind	Tornado	Tropical Cyclones	Wildfires	Winter Storm*
Fire and Rescue	Brusly Fire Department Station Training Facility						X	X	X		
	Brusly Fire Department Station 1						X	X	X		
Government	Brusly Town Hall						X	X	X		
Law Enforcement	Brusly Police Department						X	X	X		
Schools	Brusly Middle School						X	X	X		
	Brusly High School						X	X	X		
	Brusly Elementary School						X	X	X		

Port Allen Essential Facilities											
Type	Name	Drought*	Flood	Sinkhole*	Hail*	Lightning*	Wind	Tornado	Tropical Cyclones	Wildfires	Winter Storm*
Fire and Rescue	Port Allen Fire Department Station 1						X	X	X		
Government	Port Allen City Hall						X	X	X		
	Port Allen Department of Public Works						X	X	X		
	WBR Parish Courthouse						X	X	X		
	WBR OHSEP and 911						X	X	X		
	WBR Governmental Building						X	X	X		
	WBR Parish Library						X	X	X		
Law Enforcement	Port Allen City Police						X	X	X		
Schools	Cohn Elementary School						X	X	X		

Port Allen Essential Facilities											
Type	Name	Drought*	Flood	Sinkhole*	Hail*	Lightning*	Wind	Tornado	Tropical Cyclones	Wildfires	Winter Storm*
	Holy Family Catholic School						X	X	X		
	Port Allen Middle						X	X	X		
	Port Allen Elementary						X	X	X		
	Holy Family Pre Kindergarten School						X	X	X		

* There are no critical facilities vulnerable to the hazard.

Appendix D: Plan Adoption

APA Letter from FEMA

Placeholder for Jurisdiction and Parish Adoptions

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
Darren Guidry	Region 2 Coordinator	GOHSEP
David Toups	Mayor	Town of Addis
Deano Moran	Director	WBR OHSEP
Esdron Brown	Police Chief	City of Port Allen Police Department
Jason Manola	Executive Assistant	West Baton Rouge Parish
Joey Normand	Mayor	Town of Brusly
Jonathan Lefeaux	Police Chief	Town of Brusly Police Department
Mike Cazes	Sheriff	WBR Sheriff's Office
Richard Lee	Mayor	City of Port Allen
Ricky Anderson	Police Chief	Town of Addis Police Department
Riley Berthelot	Parish President	West Baton Rouge Parish
Wes Watts	Superintendent	WBR School Board

Capability Assessment

West Baton Rouge Unincorporated

Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
West Baton Rouge Parish (Unincorporated Area)		
Plans	Yes/No	Comments
Comprehensive / Master Plan	Yes	n/a
Capital Improvements Plan	Yes	5-year drainage and roads plans
Economic Development Plan	Yes	Regional (Local element is part of Master Plan)
Local Emergency Operations Plan	Yes	n/a
Continuity of Operations Plan	Yes	n/a
Transportation Plan	Yes	Regional / state
Stormwater Management Plan	Yes	Adopted in 2014 with an effective date of 2019
Community Wildfire Protection Plan	No	n/a
Other plans (redevelopment, recovery, coastal zone management)	Alternative Transportation Plan	n/a
Building Code, Permitting and Inspections		
Building Code	2012 IRC, 2012 IBC, 2012 IMC, La. State Plumbing Code, 2011 NEC	n/a
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	n/a
Fire Department ISO/PIAL rating	Yes	n/a
Site plan review requirements	Yes, per WBR Codes	n/a
Land Use Planning and Ordinances		
Zoning Ordinance	Yes	n/a
Subdivision Ordinance	Yes	n/a
Floodplain Ordinance	Yes	n/a
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	n/a
Flood Insurance Rate Maps	Yes	n/a
Acquisition of land for open space and public recreation uses	No	n/a
Other	No	n/a

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	n/a
Mitigation Planning Committee	Yes	n/a
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	n/a
Mutual Aid Agreements	Yes	n/a
Staff		
Chief Building Official	Yes	n/a
Floodplain Administrator	Yes	n/a
Emergency Manager	No	n/a
Community Planner	Yes	n/a
Civil Engineer	Yes	n/a
GIS Coordinator	Yes	n/a
Grant Writer	No	n/a
Other	No	n/a
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	n/a
Hazard Data & Information	No	n/a
Grant Writing	No	n/a
Hazus Analysis	No	n/a
Other	No	n/a

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	n/a
Authority to levy taxes for specific purposes	Yes	n/a
Fees for water, sewer, gas, or electric services	Yes	n/a
Impact fees for new development	Yes	n/a
Stormwater Utility Fee	No	n/a
Community Development Block Grant (CDBG)	Yes	n/a
Other Funding Programs	N/A	n/a

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	n/a
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	n/a
Natural Disaster or safety related school program	Yes	n/a
Storm Ready certification	Yes	n/a
Firewise Communities certification	No	n/a
Public/Private partnership initiatives addressing disaster-related issues	No	n/a
Other	No	n/a

City of Port Allen

Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Port Allen		
Plans	Yes/No	Comments
Comprehensive / Master Plan	Yes	City / Parish
Capital Improvements Plan	Yes	City
Economic Development Plan	Yes	City
Local Emergency Operations Plan	Yes	Parish
Continuity of Operations Plan	Yes	Parish
Transportation Plan	Yes	Parish
Stormwater Management Plan	Yes	City
Community Wildfire Protection Plan	No	N/A
Other plans (redevelopment, recovery, coastal zone management)	N/A	N/A
Building Code, Permitting and Inspections		
Building Code	Yes	City
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	N/A
Fire Department ISO/PIAL rating	Yes	Parish
Site plan review requirements	Yes	Parish
Land Use Planning and Ordinances		
Zoning Ordinance	Yes	City
Subdivision Ordinance	N/A	N/A
Floodplain Ordinance	Yes	City
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	N/A	N/A
Flood Insurance Rate Maps	Yes	City
Acquisition of land for open space and public recreation uses	Yes	Parish
Other	N/A	N/A

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	City
Mitigation Planning Committee	Yes	City
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	City
Mutual Aid Agreements	Yes	n/a
Staff		
Chief Building Official	Yes	City
Floodplain Administrator	Yes	City
Emergency Manager	Yes	Parish
Community Planner	No	N/A
Civil Engineer	Yes	City Contract
GIS Coordinator	Yes	City
Grant Writer	N/A	N/A
Other	N/A	N/A
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Parish
Hazard Data & Information	Yes	Parish
Grant Writing	N/A	N/A
Hazus Analysis	Yes	Parish
Other	N/A	N/A

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	City
Authority to levy taxes for specific purposes	Yes	City
Fees for water, sewer, gas, or electric services	Yes	City
Impact fees for new development	Yes	Commercial Only
Stormwater Utility Fee	No	N/A
Community Development Block Grant (CDBG)	Yes	City
Other Funding Programs	Yes	City

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	N/A
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	N/A
Natural Disaster or safety related school program	Yes	Parish
Storm Ready certification	Yes	N/A
Firewise Communities certification	No	N/A
Public/Private partnership initiatives addressing disaster-related issues	No	N/A
Other	N/A	N/A

Town of Brusly

Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Brusly		
Plans	Yes/No	Comments
Comprehensive / Master Plan	yes	Parish
Capital Improvements Plan	yes	Parish
Economic Development Plan	yes	Parish
Local Emergency Operations Plan	yes	Parish
Continuity of Operations Plan	yes	Parish
Transportation Plan	yes	n/a
Stormwater Management Plan	yes	Parish
Community Wildfire Protection Plan	no	n/a
Other plans (redevelopment, recovery, coastal zone management)	yes	Parish
Building Code, Permitting and Inspections		
Building Code	yes	Adopted by Brusly Ordinance
Building Code Effectiveness Grading Schedule (BCEGS) Score	no	n/a
Fire Department ISO/PIAL rating	yes	Parish
Site plan review requirements	yes	by Parish for Brusly
Land Use Planning and Ordinances		
Zoning Ordinance	yes	Brusly
Subdivision Ordinance	yes	Brusly
Floodplain Ordinance	yes	Brusly
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	no	n/a
Flood Insurance Rate Maps	yes	Brusly
Acquisition of land for open space and public recreation uses	no	n/a
Other	no	n/a

Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions withou		
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	Brusly
Mitigation Planning Committee	yes	Parish
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	yes	Brusly
Mutual Aid Agreements	yes	n/a
Staff		
Chief Building Official	yes	Brusly
Floodplain Administrator	yes	Brusly
Emergency Manager	yes	Brusly
Community Planner	no	Parish
Civil Engineer	yes	Brusly- Owen & White
GIS Coordinator	yes	Parish
Grant Writer	yes	Brusly/Parish
Other	no	n/a
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	yes	Parish
Hazard Data & Information	no	n/a
Grant Writing	no	n/a
Hazus Analysis	no	n/a
Other	no	n/a

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	Brusly/State
Authority to levy taxes for specific purposes	no	n/a
Fees for water, sewer, gas, or electric services	yes	Sewer Fees
Impact fees for new development	no	n/a
Stormwater Utility Fee	yes	Parish
Community Development Block Grant (CDBG)	no	n/a
Other Funding Programs	yes	Sewer (USDA)

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	LEPC, Rotary
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	yes	Fire Safety
Natural Disaster or safety related school program	yes	n/a
Storm Ready certification	yes	Parish
Firewise Communities certification	no	n/a
Public/Private partnership initiatives addressing disaster-related issues	no	n/a
Other	no	n/a

Town of Addis

Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Addis		
Plans	Yes/No	Comments
Comprehensive / Master Plan	yes	Parish
Capital Improvements Plan	yes	n/a
Economic Development Plan	yes	Parish
Local Emergency Operations Plan	yes	Parish
Continuity of Operations Plan	yes	n/a
Transportation Plan	yes	Parish
Stormwater Management Plan	yes	Parish
Community Wildfire Protection Plan	yes	Parish
Other plans (redevelopment, recovery, coastal zone management)	yes	Parish
Building Code, Permitting and Inspections		
Building Code	yes	Parish
Building Code Effectiveness Grading Schedule (BCEGS) Score	no	n/a
Fire Department ISO/PIAL rating	yes	Parish
Site plan review requirements	yes	Parish
Land Use Planning and Ordinances		
Zoning Ordinance	yes	n/a
Subdivision Ordinance	yes	n/a
Floodplain Ordinance	yes	n/a
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	yes	n/a
Flood Insurance Rate Maps	yes	n/a
Acquisition of land for open space and public recreation uses	no	n/a
Other	no	n/a

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	n/a
Mitigation Planning Committee	yes	Parish
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	yes	n/a
Mutual Aid Agreements	Yes	n/a
Staff		
Chief Building Official	yes	n/a
Floodplain Administrator	yes	n/a
Emergency Manager	yes	Parish
Community Planner	yes	Parish
Civil Engineer	yes	n/a
GIS Coordinator	yes	Parish
Grant Writer	yes	n/a
Other	no	n/a
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	yes	Parish
Hazard Data & Information	yes	Parish
Grant Writing	yes	n/a
Hazus Analysis	n/a	n/a
Other	n/a	n/a

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	n/a
Authority to levy taxes for specific purposes	yes	n/a
Fees for water, sewer, gas, or electric services	yes	sewer-rest for parish
Impact fees for new development	yes	n/a
Stormwater Utility Fee	no	n/a
Community Development Block Grant (CDBG)	yes	n/a
Other Funding Programs	yes	n/a
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	n/a
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	yes	parish
Natural Disaster or safety related school program	yes	parish
Storm Ready certification	yes	parish
Firewise Communities certification	n/a	n/a
Public/Private partnership initiatives addressing disaster-related issues	no	
Other	n/a	n/a

Building Inventory

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Lat	Long	Assessed Value	Date Built	Construction Type
Port Allen									
x	City Hall	Administrative Operations for City employees & Police	375 Court St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	City Maintenance Barn	Dept. of Public Works Operations & Equipment	N. 14th St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	Waste Water Treatment Plant	Sewer Treatment Plant Operations	S. 14th St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	West Baton Rouge Community Center	All Purpose Recreation Facility & 6th Street water well	749 N. Jefferson Ave	Port Allen, La	n/a	n/a	n/a	n/a	n/a
	City Court	Judicial Proceedings	330 S. Alexander Ave	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	DOTD Maintenance	DOTD Operations & Equipment	Oaks Ave	Port Allen, La	n/a	n/a	n/a	n/a	n/a
	DOTD Engineering	Engineering Office	S. River Rd.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	WBR Courthouse	Judicial Proceedings	850 8th St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Lat	Long	Assessed Value	Date Built	Construction Type
Port Allen									
x	WBR Parish Office	WBR Administrative Operations	880 8th St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	Entergy	Substation for Port Allen	Rosedale Rd	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	WBR Fire Station #1	Fire Equipment	700 N. Alexander	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	WBR Fire Station #2	Fire Equipment	Court St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
	Louis Mouch Jr. Multi-purpose Arena	All Purpose Recreation Facility	152 Turner Rd.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
	Port Allen Elementary School	School	609 Rosedale Rd	Port Allen, La	n/a	n/a	n/a	n/a	n/a
	Port Allen Middle School	School	610 Rosedale Rd	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	Cohn Elementary School	School	805 N. 14th St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
	Holy Family Catholic School	School	335 Jefferson Ave	Port Allen, La	n/a	n/a	n/a	n/a	n/a

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Lat	Long	Assessed Value	Date Built	Construction Type
Port Allen									
x	Knights of Columbus Hall	Fraternal Organization	679 N. Jefferson	Port Allen, La	n/a	n/a	n/a	n/a	n/a
x	American Legion Hall	Fraternal Organization	850 8th St.	Port Allen, La	n/a	n/a	n/a	n/a	n/a
Addis									
yes	Addis Town Hall	Municipal and Police	7818 Highway 1 South	Addis	n/a	n/a	n/a	n/a	n/a
yes	Addis Sewer Plant	Sewer Plant	8122 South River Road	Addis	n/a	n/a	n/a	n/a	n/a
yes	Addis Civic Center & Fire Station	Fire Station	4343 Harris Ave.	Addis	n/a	n/a	n/a	n/a	n/a
yes	Addis Maintenance Barn & Fire	Maintenance Equipment and Fire & First Aid Equipment	4372 Main St.	Addis	n/a	n/a	n/a	n/a	n/a
no	Addis Museum and Park	Museum and Park	7821 Ray Rivet	Addis	n/a	n/a	n/a	n/a	n/a
Brusly									
x	Town Hall	Communicate and assist the citizens of Brusly	601 S. Vaughan St.	Brusly	n/a	n/a	n/a	2000	Reinforced Masonry
x	Police Station	Law Enforcement	150-A East St. Francis St.	Brusly	n/a	n/a	n/a	2015	Metal
x	Maintenance Barn	Storing of maintenance equipment (lawn mower, tractors, saws, etc.)	180- A - East St. Francis St.	Brusly	n/a	n/a	n/a		Metal
x	Maintenance Barn	Storing of maintenance equipment (lawn mower, tractors, saws, etc.)	180- B- East St. Francis St.	Brusly	n/a	n/a	n/a	2015	Metal

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Lat	Long	Assessed Value	Date Built	Construction Type
Port Allen									
x	Storage/Record Room	Official documents and records that are maintained by Town and Police	150-B East St. Francis St.	Brusly	n/a	n/a	n/a	2015	Reinforced Masonry

National Flood Insurance Program (NFIP)

West Baton Rouge Parish

National Flood Insurance Program (NFIP)	ELEMENT F: STATE REQUIREMENT				
Jurisidction: West Baton Rouge Unincorporated					
	WBR Parish	**Port Allen**	**Addis**	**Brusly**	
Insurance Summary					**Comments**
How many NFIP polices are in the community? What is the total premium and coverage?	697; $199,182,800	107; $27,084,100	41; $10,051,900	123 Policies; 54,018 total premiums, 37,244,000 Insurance in Force	n/a
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?	97; $859,885. There have been 7 substantial damages since 1978.	25; $311,521	1; $42,034	16 Closed Paid Losses , Total Paid Claims $162,026, 0 Substantial Damage	n/a
How many structures are exposed to flood risk with in the community?	Estimates range from between 700 and 1200	8	n/a	n/a	n/a
Describe any areas of flood risk with limited NFIP policy coverage.	n/a	n/a	n/a	n/a	n/a
Staff Resources					
Is the Community FPA or NFIP Coordinator certified?	No	n/a	n/a	n/a	WBR - Working towards certification
Is flood plain management an auxiliary function?	Yes	n/a	n/a	n/a	Through the Planning, Zoning and Building Permit department
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	The Parish provides permit review (including elevation certificates), floodplain education and outreach, inspecctions and technical advice as well as a fully functional floodplain GIS system.	n/a	n/a	n/a	n/a
What are the barriers to running an effective NFIP program in the community, if any?	Our participation in both the NFIP and the Community Rating System (CRS) has been approved by FEMA on a regular basis. There are no current barriers.	n/a	n/a	n/a	n/a

Compliance History					
Is the community in good standing with the NFIP?	Yes	n/a	n/a	n/a	n/a
Are there any outstanding compliance issues(i.e., current violations)?	No	n/a	n/a	n/a	n/a
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	Fall of 2015	n/a	n/a	n/a	n/a
Is a CAV or CAC scheduled or needed? If so when?	None scheduled	n/a	n/a	n/a	n/a
Regulation					
When did the community enter the NFIP?	April 1978	n/a	n/a	8/15/1977	n/a
Are the FIRMs digital or paper?	Digital	n/a	n/a	Yes	Both
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Exceed	n/a	n/a	Yes	WBR - We require an additional one (1) foot of elevation in all areas of the Parish, including those in the Special Flood Hazard Area
Community Rating System (CRS)					
Does the community participate in CRS?	Yes	No	No	No	n/a
What is the community's CRS Class Ranking?	8	n/a	n/a	n/a	n/a
Does the plan include CRS planning requirements?	n/a	n/a	n/a	n/a	n/a