



# UNION

## PARISH HAZARD MITIGATION UPDATE – 2017



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# UNION PARISH

## HAZARD MITIGATION PLAN UPDATE

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**Union Parish**



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April 19, 2018

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## ACKNOWLEDGMENTS

This 2017 Union Parish Hazard Mitigation Plan Update was coordinated by the Union 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:

Union Parish  
Town of Bernice  
Village of Downsville  
Town of Farmerville  
Village of Junction City  
Village of Lillie  
Town of Marion  
Village of Spearsville

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

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

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

- Unincorporated Union Parish
- Town of Bernice
- Village of Downsville
- Town of Farmerville
- Village of Junction City
- Village of Lillie
- Town of Marion
- Village of Spearsville

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

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

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

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

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

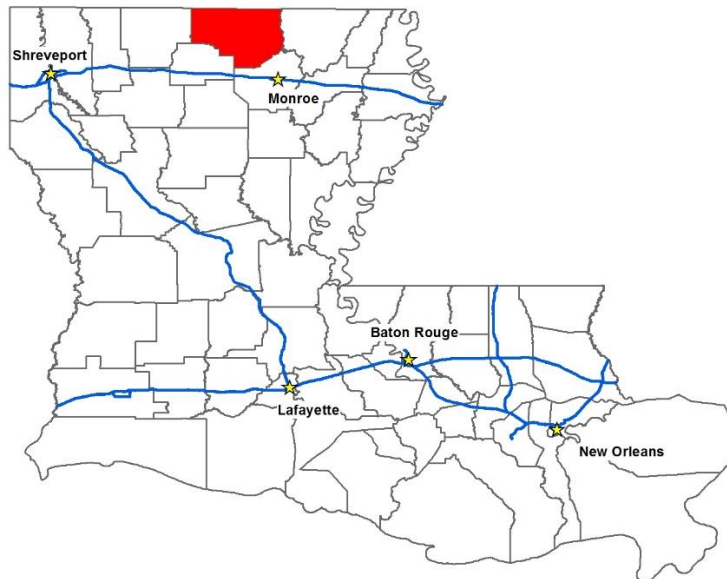
Mitigation activities need funding. Under the Disaster Mitigation Act of 2000 (42 USC 5165), a mitigation plan is a requirement for federal mitigation funds. Therefore, a mitigation plan will both guide the best use of mitigation funding and meet the prerequisite for obtaining such funds from FEMA. FEMA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

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

## Location, Demography, and Economy

### Location

Union Parish is located in north-central Louisiana, approximately 15 miles northwest of Monroe and approximately 90 miles northeast of Shreveport. Morehouse Parish lies to the east, separated by the Ouachita River, while Claiborne and Lincoln Parishes lie to the west, Ouachita Parish lies to the south, and Union County, Arkansas lies to the north. The total area of the parish is approximately 526,185 acres, of which 8,464 acres is water.



*Figure 1-1: Location of Union Parish within the State of Louisiana*

The topography of Union Parish varies, and includes high hills, fertile valleys, and boggy swamps. While the majority of Union Parish is composed of woodlands, several waterways are also located in the parish, including Bayou D'Arbonne, Lake D'Arbonne, Bayou DeLoutre, and Tenmile Creek. The Ouachita River also partially lies within Union Parish, forming the majority of the western border with Ouachita Parish. D'Arbonne National Wildlife Refuge, which is home to alligators, bald eagles, and numerous other species of animals, is located in the far southwestern portion of the parish. The elevation of the parish averages approximately 113 feet, but ranges from 300 feet in the hills to as low as 50 feet in the lowlands.

Union Parish is located in Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 8.

As noted above, Union Parish is located in the northern region of Louisiana.



Figure 1-2: Louisiana Homeland Security Regions

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

	2010 Census	2014 Census	Current Year (If Available)	Percent Change 2010 - 2014
Total Population	22,782	22,539	—	-1.10%
Population Density (Pop/Sq. Mi.)	25.9	—	—	—
Total Households	11,346	11,431	—	—

### Economy

A hard-working labor force, abundant raw materials, location near a corridor of significant industrial activity, and land for commercial and industrial development make Union Parish an ideal prospect for business investment. Agriculture is big business in Union Parish, contributing millions of dollars to the state's economy, employing thousands of people, and providing many products we use every day. From forestry to produce and fruits, to poultry and beef cattle, Union Parish agriculture provides families with food and fiber. Although agriculture dominates the local economic base, Union Parish has diversified its industries, adding agribusiness or poultry growing and processing, healthcare, retail businesses, petroleum pipeline construction, and timber processing and transport.

In recent years, tourism has become a growing part of the Union Parish economy. A hunting and fishing paradise, Union Parish offers a wide variety of ponds, lakes, and wildlife areas that are prime for weekend getaways. Most notably, Lake D'Arbonne is tremendously popular among locals and visitors, and record freshwater catches of bass, crappie, catfish, and bream make Lake D'Arbonne a fishing haven. Wide open areas of the lake, about seven miles from the park, appeal to water skiers and pleasure boaters.

Industry data for business patterns in Morehouse Parish can be found in the table below:

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

Business Description	Number of Employees	Number of Establishments	Annual Payroll (\$1,000)
Retail Trade	579	58	14,627
Manufacturing	1000-2499	11	—
Health Care and Social Assistance	751	30	19,712
Mining, Quarrying, Oil and Gas Extraction	0-19	5	429
Transportation and Warehousing	111	17	3,938
Construction	346	43	14,325
Administration and Support and Waste Management and Remediation Services	43	13	1,312
Real Estate and Rental and Leasing	0-19	8	—
Wholesale Trade	20-99	5	—
Other Services (except Public Administration)	212	45	4,057
Accommodation and Food Services	188	14	2,319
Financial and Insurance	123	20	4,432
Professional, Scientific, and Technical Services	61	16	1,961
Information	20-99	5	2,398
Educational Services	141	4	4,590
Arts, Entertainment, and Recreation	0-19	3	111
Management of Companies and Enterprises	0-19	1	—
Agriculture, Forestry, Fishing and Hunting	221	22	8,010
Utilities	20-99	6	—



While nature has presented the parish with a variety of hazards, the parish has the human resources that can face those hazards and manage the impact they have on people and property. This plan will discuss hazards affecting Union 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 Union Parish and throughout Louisiana, it is first crucial to understand how hazard mitigation relates to the broader concept of emergency management. In the early 1980s, the newly-created Federal Emergency Management Agency (FEMA) was charged with developing a structure for how the federal, state, and local governments would respond to disasters. FEMA developed the *four phases of emergency management*, an approach which can be applied to all disasters. The four phases are as follows:

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

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

As *Figure 1-3* demonstrates, mitigation relies on updating in the wake of disaster. This can give the appearance that mitigation is only reactive rather than proactive. In reality, however, post-disaster revision is a vital component of



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

improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.

Unfortunately, this cycle can be painful for a community. For instance, the risks of disasters that could create catastrophic incidents in Louisiana were thought to be relatively well-understood prior to 2005. However, the impact of the 2005 hurricane season on the Gulf Coast region of the United States prompted a new level of planning and engagement related to disaster response, recovery, and hazard mitigation. Hurricanes Katrina and Rita hit three weeks apart and together caused astonishing damage to human life and to property. The two storms highlighted a hurricane season that spawned 28 storms—unparalleled in American history. The 2005 hurricane season confirmed Louisiana’s extreme exposure to natural disasters and both the positive effects and the concerns resulting from engineered flood-protection solutions.

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

### General Strategy

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

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

The 2017 Union 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 Union Hazard Mitigation Plan were as follows:

- Section One      Table of Contents
- Section Two      Executive Summary
- Section Three     Context
- Section Four      Adoption and Approval
- Section Five      Planning Process
- Section Six       Hazard Identification, Profiling, and Ranking
- Section Seven     Risk Assessment
- Section Eight      Capability Assessment
- Section Nine      Mitigation Action Plan
- Section Ten       Plan Monitoring and Maintenance
- 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 Union 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.

### 2017 Plan Update

This 2017 plan update proceeds with the previous goals of the Union Parish Hazard Mitigation Plan. The current goals are as follows:

- Improve education and outreach efforts, specifically to the public, parish/municipal employees, and local business, regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact
- Improve data collection, use, and sharing, specifically with neighboring communities, among municipalities, and with the State, to reduce the impact of hazards
- Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation project, programs, and activities, especially through the use of GIS, coordination with universities, and public/private partnerships
- Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities, with a focus on existing structures, future structures, protection of existing infrastructure, and protection of future infrastructure

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 2017 plan update is organized generally as follows:

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

*Table 1-4: Plan Crosswalk*

2011 Plan	Revised Plan (2017)
Section 1: Table of Contents	Table of Contents
Section 2: Executive Summary	Section 1: Introduction
Section 3: Context	Section 1: Introduction
Section 4: Adoption and Approval	Appendix D: Plan Adoption
Section 5: Planning Process	Appendix A: Planning Process
Section 6: Hazard Identification, Profiling, and Ranking	Section 2: Hazard Identification and Parish-Wide Risk Assessment
Section 7: Risk Assessment	Section 2: Hazard Identification and Parish-Wide Risk Assessment
Section 8: Capability Assessment	Section 3: Capability Assessment
Section 9: Mitigation Action Plan	Section 4: Mitigation Strategy
Section 10: Plan Monitoring and Maintenance	Appendix B: Plan Maintenance
Appendices	Appendices

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 Union Parish and its municipalities. The extent of this risk is dictated primarily by its geographic location. Most significantly, Union 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 Union Parish faces in order to identify a strategy for mitigation. Having identified the categories of hazards, emergencies, disasters, and catastrophes, this section details the major climatological and natural/human-influenced hazards by (1) defining them, (2) explaining how they are measured, (3) describing their geographic extent, (4) surveying their previous occurrences, and (5) evaluating their future likelihood of occurrences.

The table below provides an overview of the hazards that had been previously profiled in the Union 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 2017 Update
<b>Subsidence/Coastal Land Loss</b>			
<b>Drought</b>	X		X
<b>Earthquakes</b>	X		*
<b>Expansive Soils</b>			
<b>Fog</b>			
<b>Flooding</b>	X	X	X
<b>Extreme Heat</b>	X		X
<b>Sinkholes</b>			
<b>Thunderstorms (Hail, Lightning, &amp; Wind)</b>	X	X	X
<b>Tornadoes</b>	X	X	X
<b>Tropical Cyclones</b>	X	X	X
<b>Tsunamis</b>			
<b>Wildfires</b>	X		X
<b>Winter Storms</b>	X		X
<b>Dam Failure</b>	X		+
<b>Levee Failure</b>	X		+

\* Hazard was profiled but discounted

+ Data deficiency declared

### 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. The earthquake hazard was discounted since they do not have an impact on the parish, and dam and levee failure hazards both declared a data deficiency.

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

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

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

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

The potential destructive power of tropical cyclones and flooding were determined to be the most prevalent hazards to the parish. Nine of the fourteen Presidential Declarations Union Parish has received resulted from either tropical cyclones (5 declarations) or flooding (4 declarations), which validates these as the most significant hazards. Therefore, the issues of hurricanes and floods will both serve as the main focus during the mitigation planning process. Hurricanes present risks from the potential for flooding, primarily resulting from storm surge, and high wind speeds. While storm surge is considered the hazard with the most destructive potential, the risk assessment will also assess non-storm surge flooding as well. Flooding can also occur from non-hurricane events, as flash floods are a common occurrence due to heavy rainfall.

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

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

### Previous Occurrences

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

*Table 2-2: Union Parish Major Disaster Declarations*

Disaster Declaration Number	Date	Type of Disaster
3031	2/22/1977	Drought and Freezing
675	1/11/1983	Severe Storms and Flooding
829	5/20/1989	Severe Storms and Flooding
904	5/3/1991	Severe Storms, Tornadoes, and Flooding
1012	2/28/1994	Severe Winter Ice Storm
1264	1/21/1999	Severe Ice Storm
1314	2/15/2000	Severe Winter Storm
1357	1/12/2001	Severe Winter Ice Storm
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Ivan
1786	9/2/2008	Tropical Cyclone – Hurricane Gustav
1792	9/13/2008	Tropical Cyclone – Hurricane Ike
1863	12/10/2009	Severe Storms, Tornadoes, and Flooding
4080	8/29/2012	Tropical Cyclone – Hurricane Isaac

### Probability of Future Hazard Events

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

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

*Table 2-3: Probability of Future Hazard Reoccurrence*

Hazard	Probability			
	Union Parish (Unincorporated)	Bernice	Downsville	Farmerville
Drought	4%	4%	4%	4%
Earthquake	<1%	<1%	<1%	<1%
Extreme Heat	12%	12%	12%	12%
Flooding	48%	16%	4%	36%
Thunderstorms (Hail)	100%	100%	100%	100%
Thunderstorms (Lightning)	12%	12%	12%	12%
Thunderstorms (Wind)	100%	100%	100%	100%
Tornadoes	88%	88%	88%	88%
Tropical Cyclones	8%	8%	8%	8%
Wildfires	<1%	<1%	<1%	<1%
Winter Storms	56%	56%	56%	56%
Dam Failure	<1%	<1%	<1%	<1%
Levee Failure	<1%	<1%	<1%	<1%

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

Hazard	Probability			
	Junction City	Lillie	Marion	Spearsville
Drought	4%	4%	4%	4%
Earthquake	<1%	<1%	<1%	<1%
Extreme Heat	12%	12%	12%	12%
Flooding	4%	16%	4%	12%
Thunderstorms (Hail)	100%	100%	100%	100%
Thunderstorms (Lightning)	12%	12%	12%	12%
Thunderstorms (Wind)	100%	100%	100%	100%
Tornadoes	88%	88%	88%	88%
Tropical Cyclones	8%	8%	8%	8%
Wildfires	<1%	<1%	<1%	<1%
Winter Storms	56%	56%	56%	56%
Dam Failure	<1%	<1%	<1%	<1%
Levee Failure	<1%	<1%	<1%	<1%



As shown in [Table 2-3](#), thunderstorm winds and hail for the entire planning area, have the highest annual chance of occurrence in the parish (100). Tornadoes have an 88% annual chance of reoccurrence, followed by winter storms (56%), and flooding for the unincorporated areas of the parish (48%). Flood events in the remaining incorporated areas have a slightly lower chance of occurring annually. Lightning and extreme heat have a 12% annual chance of occurrence, followed by tropical cyclones (8%), drought (4%), and wildfires (<1%). Earthquakes (<1%) were discounted due to having no impact on the parish. Dam and levee failure (<1%) both declared a data deficiency.

### Inventory of Assets for the Entire Parish

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

Within the entire planning area, there is an estimated value of \$3,253,840,000 in structures throughout the parish. The tables below provide the total estimated value for each type of structure by occupancy.

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

Occupancy	Union Parish	Unincorporated Union	Bernice	Downsville	Farmerville
Agricultural	\$20,130,000	\$16,916,000	\$268,000	\$422,000	\$2,390,000
Commercial	\$371,129,000	\$96,367,000	\$63,674,000	\$0	\$188,851,000
Government	\$28,307,000	\$9,341,000	\$1,686,000	\$766,000	\$14,844,000
Industrial	\$101,138,000	\$54,688,000	\$14,113,000	\$6,900,000	\$5,975,000
Religion	\$116,434,000	\$70,232,000	\$9,388,000	\$2,608,000	\$24,566,000
Residential	\$2,588,558,000	\$1,915,075,000	\$171,938,000	\$10,307,000	\$317,007,000
Education	\$28,144,000	\$10,626,000	\$3,820,000	\$0	\$13,698,000
<b>Total</b>	<b>\$3,253,840,000</b>	<b>\$2,173,245,000</b>	<b>\$264,887,000</b>	<b>\$21,003,000</b>	<b>\$567,331,000</b>

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

Occupancy	Junction City	Lillie	Marion	Spearsville
Agricultural	\$0	\$0	\$134,000	\$0
Commercial	\$0	\$592,000	\$21,645,000	\$0
Government	\$250,000	\$0	\$1,420,000	\$0
Industrial	\$0	\$15,525,000	\$3,937,000	\$0
Religion	\$0	\$1,304,000	\$1,666,000	\$6,670,000
Residential	\$50,906,000	\$12,300,000	\$96,239,000	\$14,786,000
Education	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$51,156,000</b>	<b>\$29,721,000</b>	<b>\$125,041,000</b>	<b>\$21,456,000</b>

### Essential Facilities of the Parish

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

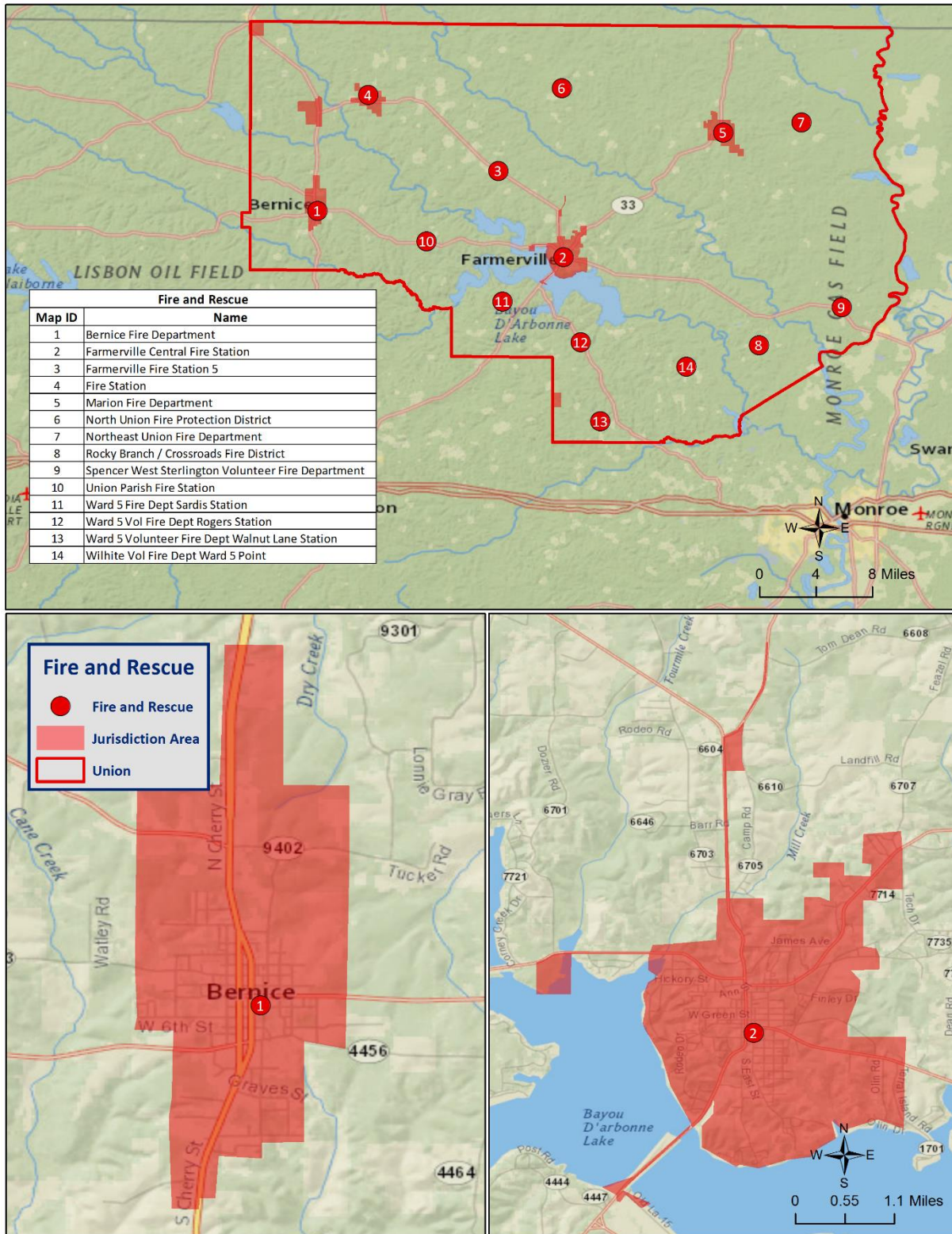
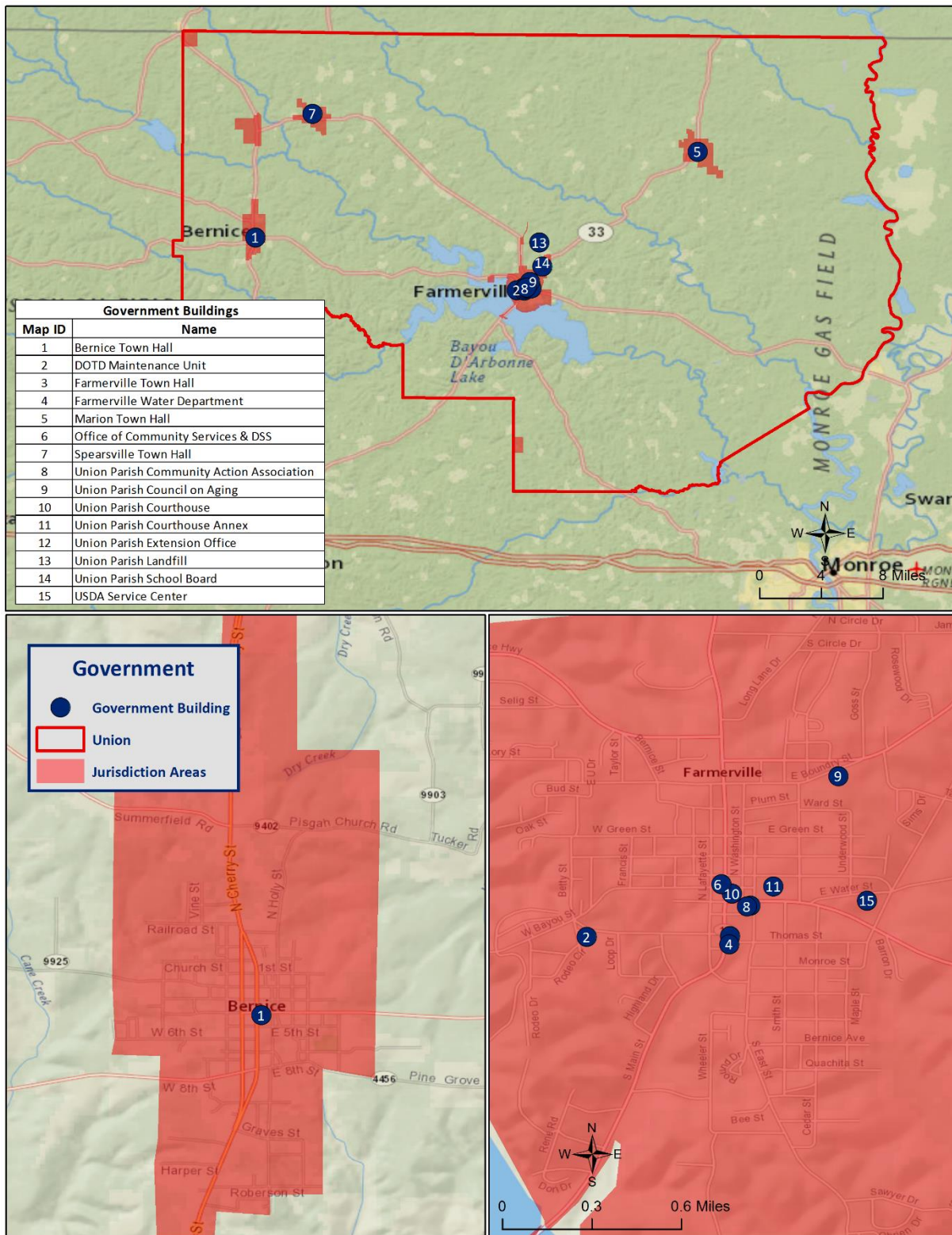


Figure 2-1: Fire and Rescue Facilities in Union Parish





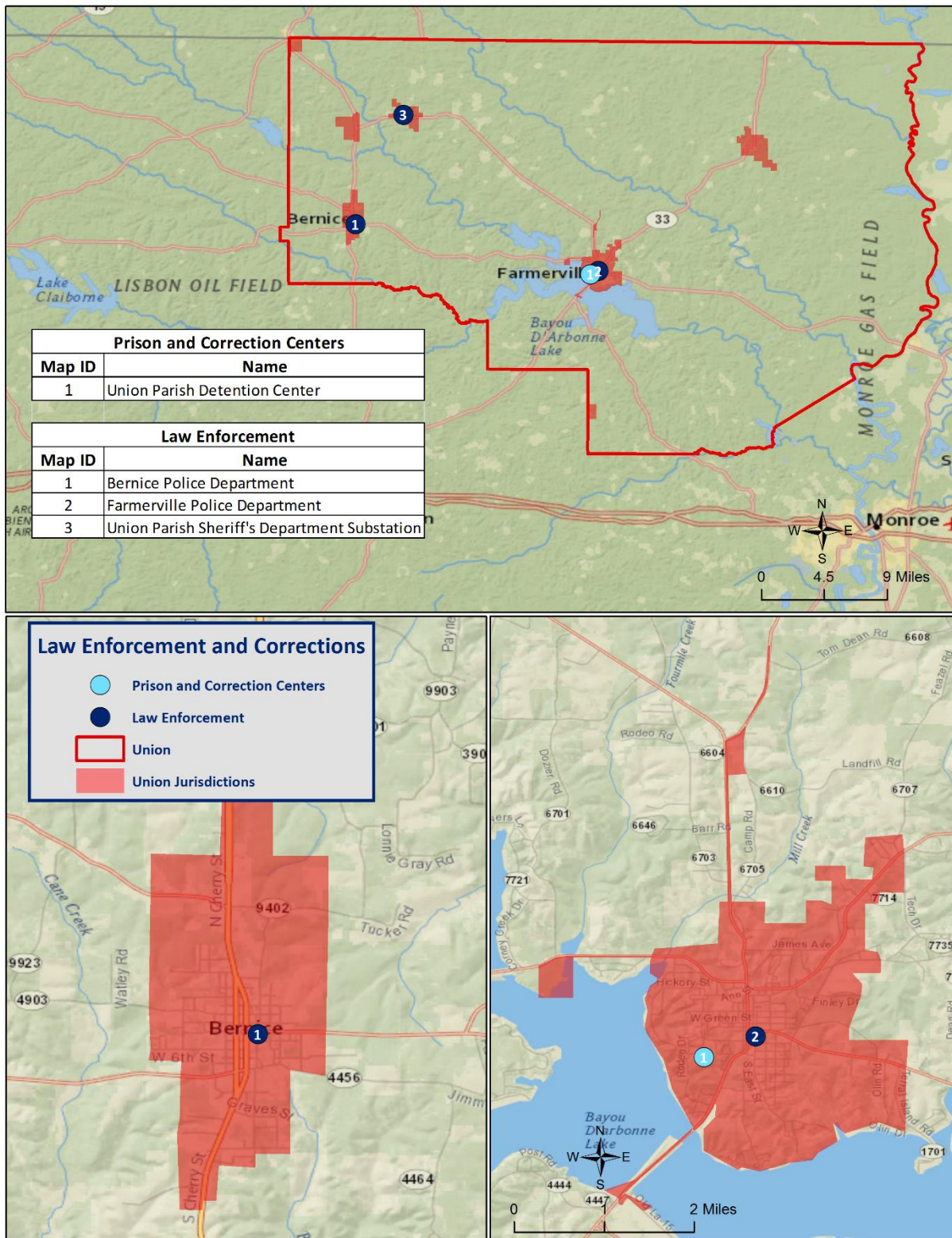
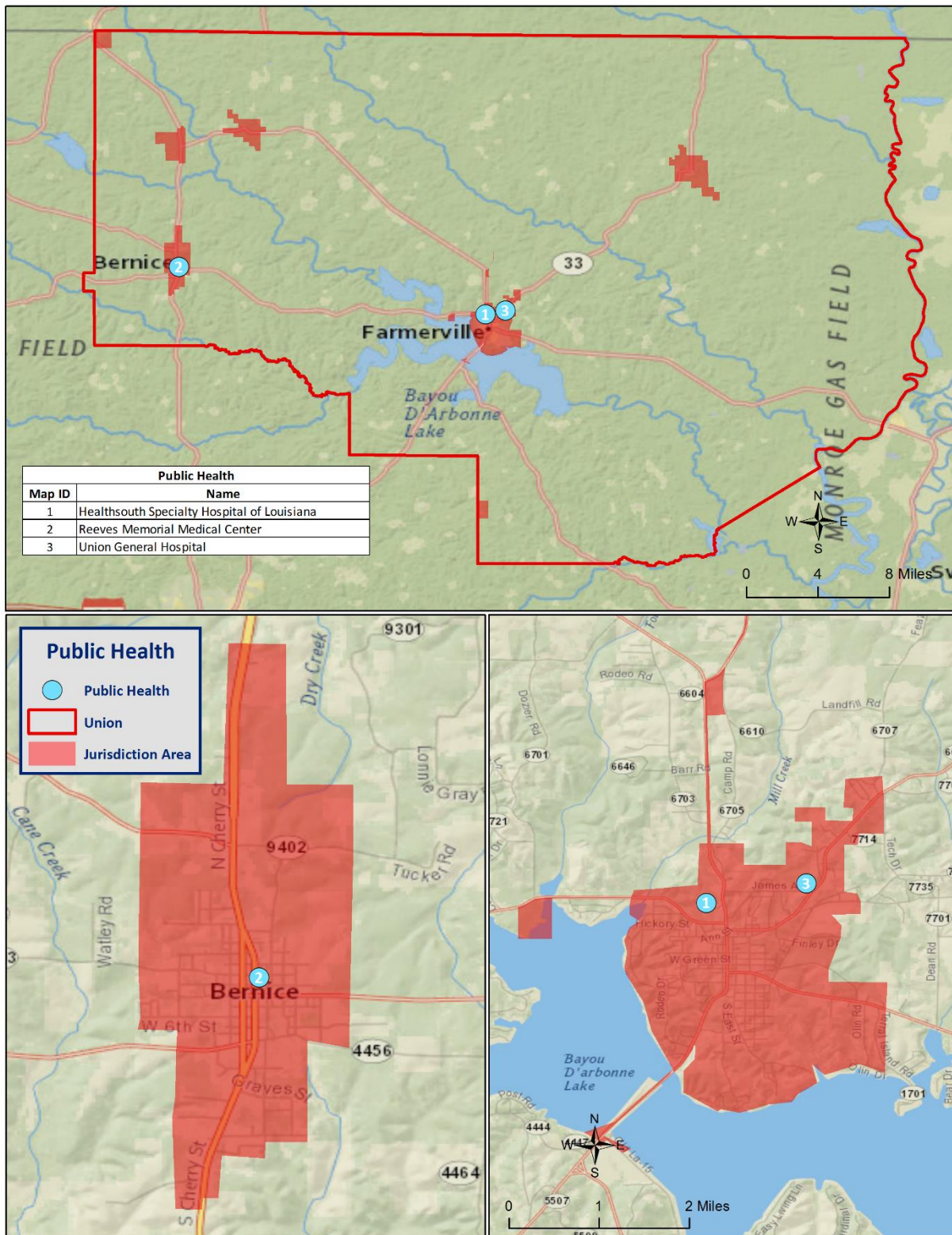
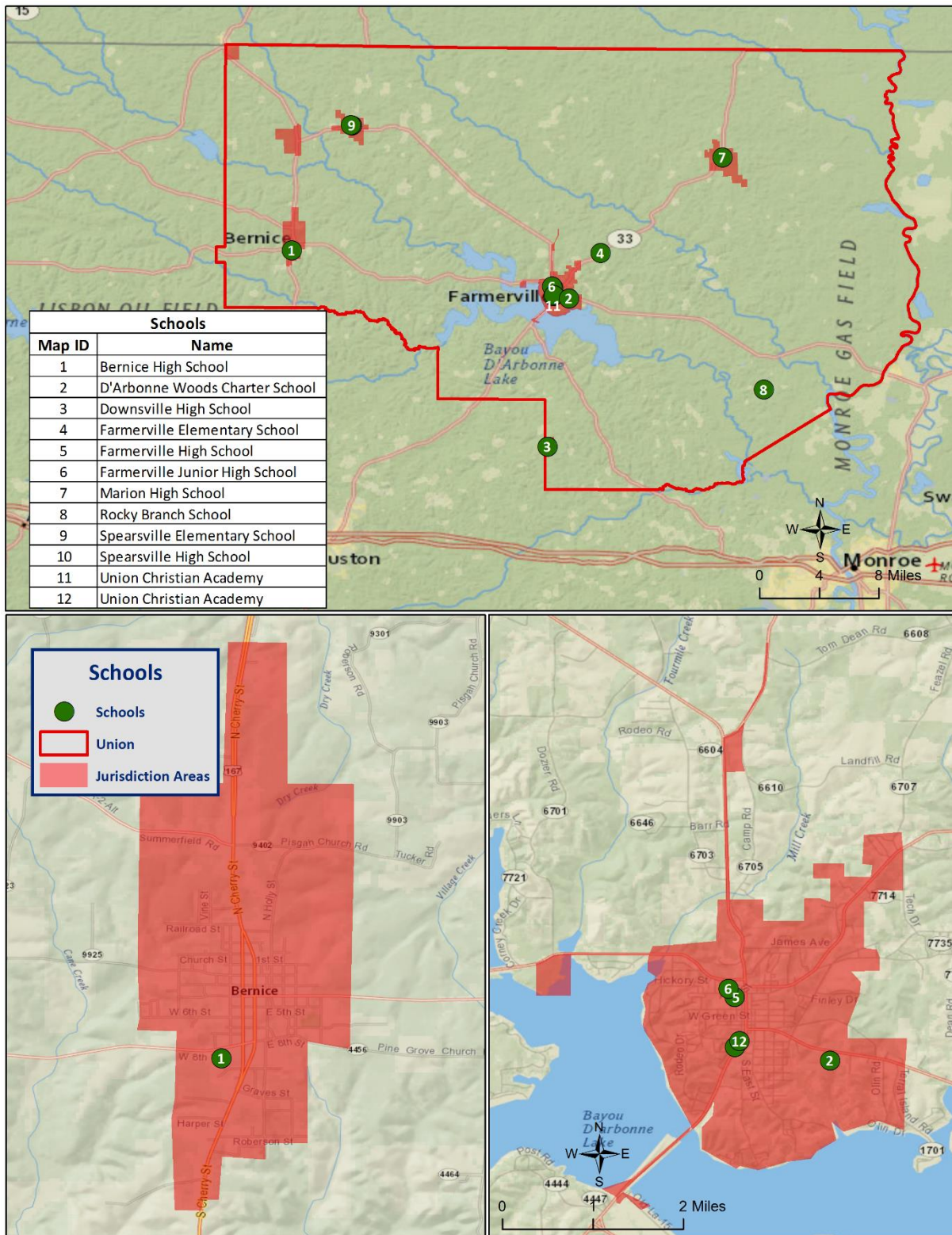


Figure 2-3: Law Enforcement and Correction Facilities in Union Parish









### Future Development Trends

Union Parish experienced a slight decline in population and a small growth in housing between the years of 2000 and 2014, falling from a population of 22,762 in 2000 to a population of 22,623 with 82,998 in 2014. This decline was largely in the incorporated areas of Junction City and Lillie from the years 2000 to 2010, and in the incorporated areas of Bernice and Marion from 2010 to 2014. The future population and number of buildings can be estimated using U.S. Census Bureau housing and population data. The following tables show population and housing unit estimates from 2000 to 2014:

*Table 2-5: Population Growth Rate for Union Parish*

Total Population	Union Parish	Union (Unincorporated)	Bernice	Downsville	Farmerville
1-Apr-00	22,762	15,356	1,822	94	3,858
1-Apr-10	22,754	15,598	1,692	115	3,865
1-Jul-14	22,623	15,695	1,373	210	3,892
Population Growth between 2000 – 2010	0.0%	1.6%	-7.1%	22.3%	0.2%
Average Annual Growth Rate between 2000 – 2010	0.0%	0.2%	-0.7%	2.2%	0.0%
Population Growth between 2010 – 2014	-0.6%	0.6%	-18.9%	82.6%	0.7%
Average Annual Growth Rate between 2010 – 2014	-0.14%	0.16%	-4.71%	20.65%	0.17%

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

Total Population	Junction City	Lillie	Marion	Spearsville
1-Apr-00	525	134	822	151
1-Apr-10	463	118	766	137
1-Jul-14	524	104	647	178
Population Growth between 2000 – 2010	-11.8%	-11.9%	-6.8%	-9.3%
Average Annual Growth Rate between 2000 – 2010	-1.2%	-1.2%	-0.7%	-0.9%
Population Growth between 2010 – 2014	13.2%	-11.9%	-15.5%	29.9%
Average Annual Growth Rate between 2010 – 2014	3.29%	-2.97%	-3.88%	7.48%



*Table 2-6: Housing Growth Rate for Union Parish*

Total Housing Units	Union Parish	Union (Unincorporated)	Bernice	Downsville	Farmerville
1-Apr-00	10,873	7,700	806	39	1,554
1-Apr-10	11,346	8,195	723	46	1,636
1-Jul-14	11,392	8,224	676	106	1,610
Housing Growth between 2000 – 2010	4.4%	6.4%	-10.3%	17.9%	5.3%
Average Annual Growth Rate between 2000 – 2010	0.4%	0.6%	-1.0%	1.8%	0.5%
Housing Growth between 2010 – 2014	0.4%	0.4%	-6.5%	130.4%	-1.6%
Average Annual Growth Rate between 2010 – 2014	0.1%	0.1%	-1.6%	32.6%	-0.4%

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

Total Housing Units	Junction City	Lillie	Marion	Spearsville
1-Apr-00	243	65	379	87
1-Apr-10	228	55	391	72
1-Jul-14	246	54	371	105
Housing Growth between 2000 – 2010	-6.2%	-15.4%	3.2%	-17.2%
Average Annual Growth Rate between 2000 – 2010	-0.6%	-1.5%	0.3%	-1.7%
Housing Growth between 2010 – 2014	7.9%	-1.8%	-5.1%	45.8%
Average Annual Growth Rate between 2010 – 2014	2.0%	-0.5%	-1.3%	11.5%

As shown in the previous tables, Union Parish has experienced a slight decline in population and small growth in housing units. Housing growth rates grew at 0.4% annually from 2000 to 2010, and at 0.1% annually from 2010 to 2014. Population fell at less than -0.1% annually from 2000 to 2010, and -0.14% annually from 2010 to 2014. From 2000 to 2010, the incorporated area of Lillie had the largest decline in population with an overall decline of -11.9%, followed by the unincorporated area of Junction City at -11.8%. From 2010 to 2014, Bernice experienced the largest decline in population at -18.9% followed by Marion at -15.5%.

The incorporated area of Downsville experienced the largest increase in housing units from 2000 to 2010 at 17.9% overall, followed by the incorporated area of Farmerville at 5.3% from 2000 to 2010. From 2010 to 2013, the incorporated area of Spearsville had the largest increase in housing units at 45.8%, followed by Downsville at 21.7%.

### 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 remain almost stagnant within Union 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)
<b>Flood Damage</b>				
Structures	11,404	400	402	403
Value of Structures	\$3,290,360,812	\$115,273,413	\$121,889,362	\$127,454,485
# of People	22,646	793	797	801
<b>Tropical Cyclones</b>				
Structures	11,404	11,404	11,461	11,508
Value of Structures	\$3,290,360,812	\$3,290,360,812	\$3,479,206,262	\$3,638,056,991
# of People	22,646	22,646	22,759	22,850

### Land Use

The Union Parish Land Use table is provided on the below. Residential, commercial, and industrial areas account for only 6% of the parish's land use. Forest land is the largest category at 312,544 acres, accounting for 54% of parish land. At 119,199 acres, wetlands account for 21% of parish lands, while 92,177 acres of agricultural lands account for 16% of parish lands. The parish also consists of 21,566 acres of water areas, accounting for 4% of all parish lands.

*Table 2-8: Union Parish Land Use*

*(Source: USGS Land Use Map)*

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	92,177	16%
Wetlands	119,199	21%
Forest Land (not including forested wetlands)	312,544	54%
Urban/Development	33,444	6%
Water	21,566	4%

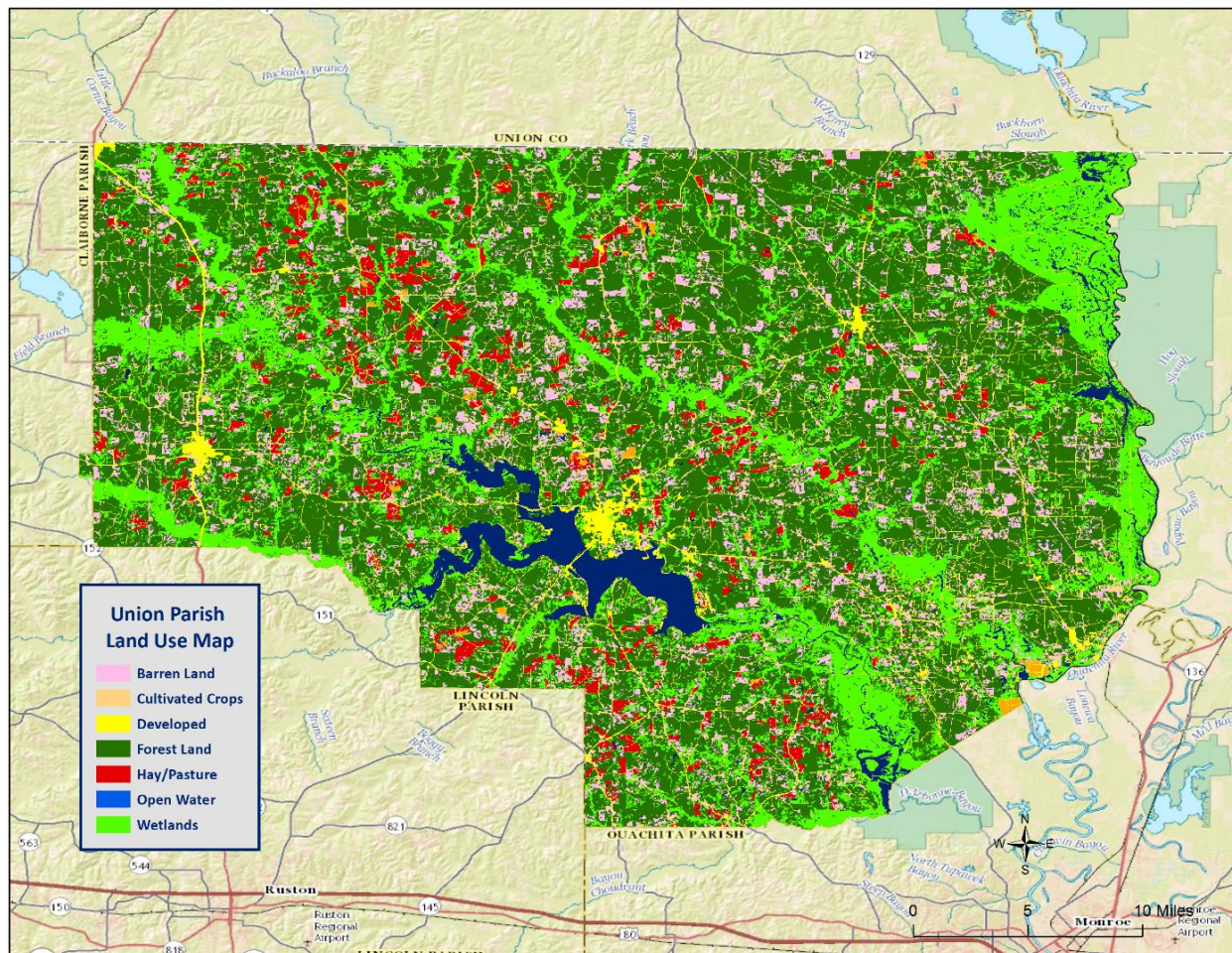


Figure 2-6: Union Parish Land Use Map  
(Source: USGS Land Use Map)

## Hazard Identification

### Drought

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

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

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



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

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

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

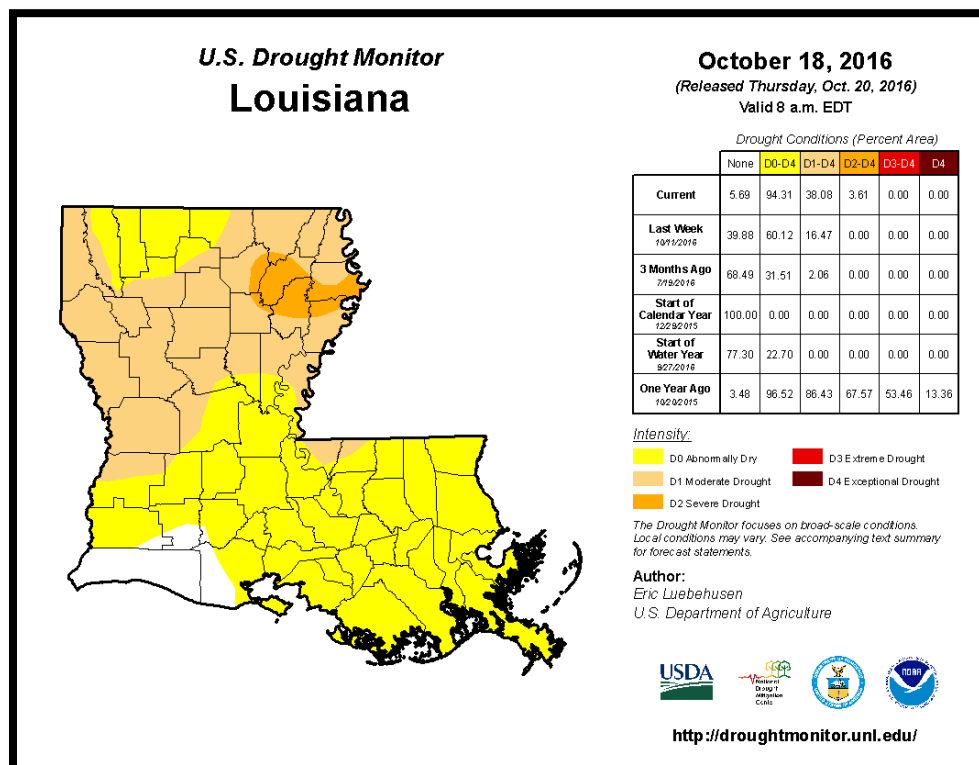


Figure 2-7: United States Drought Monitor for the State of Louisiana and its Parishes  
(Source: The National Drought Mitigation Center)

### 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 Union Parish is on the agricultural community.

### Previous Occurrences / Extents

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

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

Date	Crop Damage	Palmer Classification
June 1998	\$1,281,497	Severe Drought

### Frequency / Probability

Based on previous occurrences of one drought event in 25 years, the probability of drought occurrence in the planning area in any given year is 4%.

### Estimated Potential Losses

According to the SHELDUS database, there has been one drought event that has caused some level of crop damage. The total agricultural damage from these events is \$1,281,497, with an average cost of \$1,281,497 per drought event. When annualizing the total cost over the 25-year record, total annual losses based on drought is estimated to be \$51,260. *Table 2-11* presents an analysis of agricultural exposure that is susceptible to drought by major crop type for Union Parish.

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

Agricultural Exposure by Type for Drought						
Hay	Southern Peas	Watermelon	Peppers	Collards	Cantaloupe	Total
\$7,319,520	\$1,092,000	\$2,720,000	\$47,625	\$65,875	\$46,800	\$11,291,820

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

## Earthquakes

An earthquake is a sudden motion or trembling of the Earth caused by an abrupt release of stored energy in the rocks beneath the Earth's surface. The energy released results in vibrations which are known as seismic waves. Ground motion from seismic waves is expressed as peak ground acceleration (PGA), the fastest measured change in speed for a particle at ground level that is moving because of an earthquake. PGA is commonly measured as a percentage of acceleration due to Earth's gravity (%g). This measurement is relied upon to determine seismic load engineering design and construction requirements. Earthquakes are typically described in terms of magnitude and intensity. Magnitude is the measure of the amplitude of the seismic wave and is often expressed by the Richter scale, and intensity is a measure of how strong the shock was felt at a particular location, indexed by the Modified Mercalli Intensity (MMI) scale. The Richter scale is a logarithmic measurement whereby an increase in the scale by one whole number represents a tenfold increase in measured ground motion of the earthquake (and an increase in energy released of more than 30 times). An increase by two whole numbers represents a 102 (or 100-fold) increase in ground motion, and thus more than 302 (or 900) times the energy released. [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	<b>VIII.</b> 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. <b>IX.</b> 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	<b>VIII</b> or higher	<b>X.</b> Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. <b>XI.</b> Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. <b>XII.</b> Damage total. Lines of sight and level are distorted. Objects thrown into the air.

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

#### Location

An earthquake event is a geological hazard that occurs along fault lines. Union Parish has two fault lines that run through portions of the parish (*Figure 2-8*). The first runs directly between Lillie and Bernice near the western border and continues just south of Farmerville. The second runs through a portion of the southern border southwest of Bernice.

#### Previous Occurrences / Extents

There have been no reports of an earthquake event occurring within the boundaries of Union Parish between the years of 1990 to 2015. The National Oceanic and Atmospheric Administration's National Geophysical Data Center reports no earthquake events occurring within the boundaries of Union Parish between the years 1811 – 2014. *Figure 2-8* displays the location of each fault line in Union Parish and surrounding parishes. Based on previous earthquake events in the region, an earthquake with an intensity level of MMI 1 could occur within the planning area. This intensity of an earthquake would only be felt by a very few people.

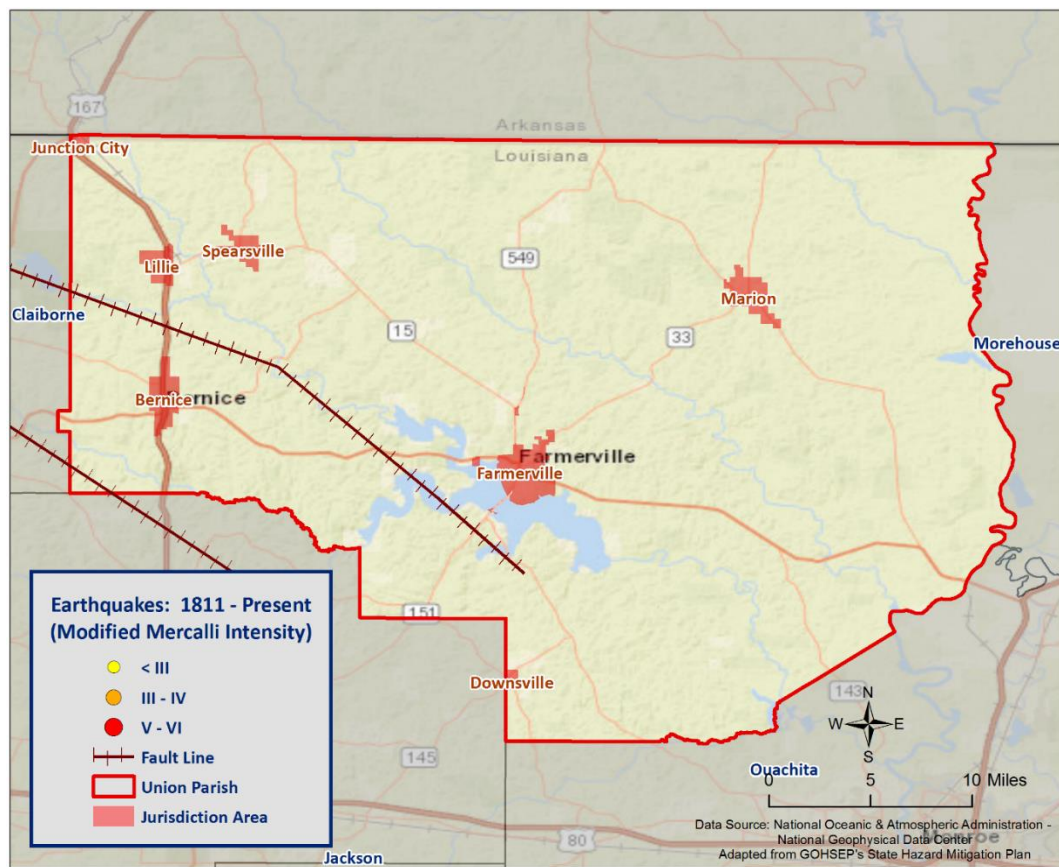


Figure 2-8: Location and Intensity (MMI) of Earthquakes in Union Parish

#### Frequency / Probability

Earthquakes are an extremely rare occurrence in the State of Louisiana and Union Parish, with no occurrences of an earthquake event within the boundaries of the parish from the years 1811 – 2014. Based on the available data it is determined that an earthquake event has less than a 1% annual chance of occurrence in Union Parish or any of its jurisdictions, and is therefore discounted. As a result, earthquakes are not carried forward into risk assessment.

### Extreme Heat

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

However, temperature alone is insufficient to describe the stress placed on humans (as well as flora and fauna) in hot weather. It is crucial to consider the effect of relative humidity since it is essential to the body's ability to perspire and cool. Once air temperature reaches 95 °F, perspiration becomes a very significant biophysical mechanism to ensure heat loss. Perspiration is ineffective as a cooling mechanism if the water cannot evaporate (i.e., sweating in high relative humidity is reduced as compared to during dry conditions). To communicate this relationship between temperature and humidity, the National Weather Service (NWS) developed the Heat Index (HI), which provides a warning system based on a combination of air temperature and relative humidity. The HI is presented in [Table 2-13](#), and [Table 2-14](#) summarizes the HI risk levels and protective measures. The NWS devised the index for shady, light wind conditions, and thus advises that the HI value can be increased by as much as 15 °F if a person is in direct sunlight with strong, hot winds present.

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

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

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

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

Table 2-13: Heat Index Advisor based on Air Temperature (°F) and Relative Humidity  
(Source: National Weather Service)

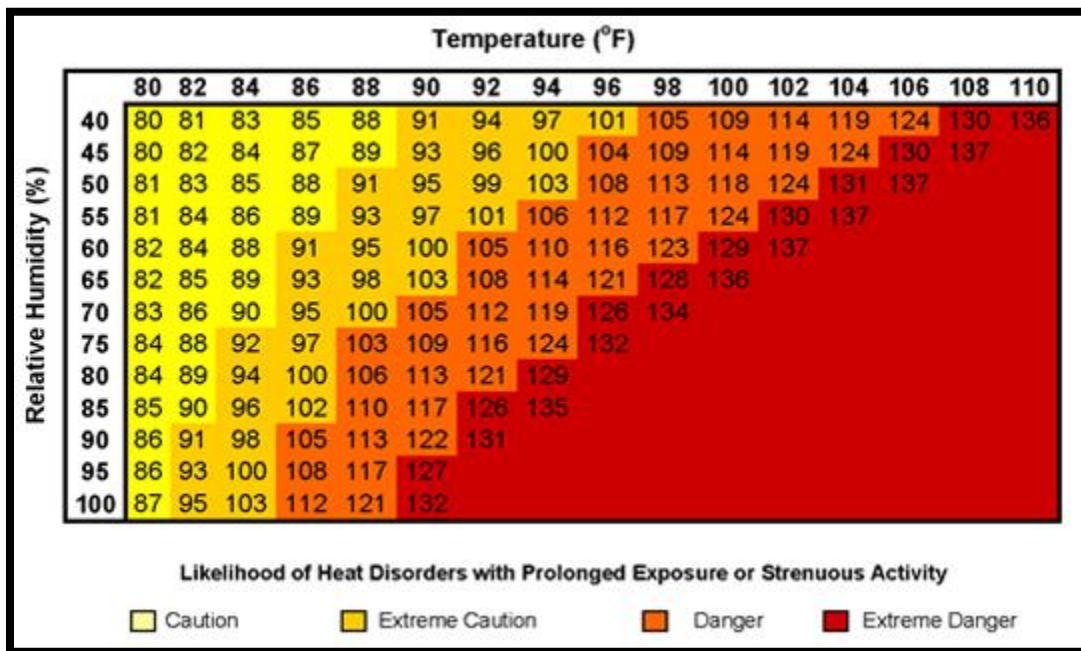


Table 2-14: Summary of Heat Index Risk Levels with Protective Measures  
(Source: National Weather Service)

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

#### Previous Occurrences / Extents

The SHELDS database reports a total of three significant extreme heat events occurring within the boundaries of Union Parish between the years of 1990 to 2015. [Table 2-15](#) provides an overview of extreme heat events that have impacted the Union Parish planning area since 2010. Based on historical data, the worst case scenario for Union Parish involving extreme heat would be a high risk level event on the HI scale with temperatures ranging from 103 °F to 115 °F.

*Table 2-15: Previous Occurrences of Extreme Heat in Union Parish  
(Source: NOAA)*

Date	Temperature (°F)
August 14, 2012	103
August 1, 2014	103

#### *Frequency / Probability*

Based on the geographical location of the State of Louisiana, and Union Parish in particular, extreme heat events occur frequently. The probability of occurrence is estimated at approximately 12%.

#### *Estimated Potential Losses*

According to the SHELDUS database, crop damage due to extreme heat in Union Parish has totaled approximately \$17,441 since 1990. To estimate the potential losses of an extreme heat event on an annual basis, the total damages recorded for an extreme event is divided by the total number of years of available extreme heat data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of \$698. The following table, based on the 2010 Census data, provides an estimate of potential crop losses for Union Parish:

*Table 2-16: Estimated Annual Crop Losses in Union Parish for Extreme Heat*

Estimated Annual Potential Losses from Extreme Heat for Union Parish			
Unincorporated Union Parish (67.9% of Population)	Bernice (7.4% of Population)	Downsville (0.6% of Population)	Farmerville (17% of Population)
\$474	\$52	\$4	\$119

*Table 2-16: Estimated Annual Crop Losses in Union Parish for Extreme Heat (Continued)*

Estimated Annual Potential Losses from Extreme Heat for Union Parish			
Junction City (2.6% of Population)	Lillie (0.5% of Population)	Marion (3.4% of Population)	Spearsville (0.6% of Population)
\$18	\$4	\$23	\$4

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

#### *Vulnerability*

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

## Flooding

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

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

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

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

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

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

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



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

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

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

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

- **Flood Categories**
  - Minor Flooding: Minimal or no property damage, but possibly some public threat.
  - Moderate Flooding: Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
  - Major Flooding: Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
  - Record Flooding: Flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.
- **Flood Warning**
  - Issued along larger streams when there is a serious threat to life or property.
- **Flood Watch**
  - Issued when current and developing hydrometeorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.

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



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

The 100-year flood event is of particular significance 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 FEMA suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in *Figure 2-9*.

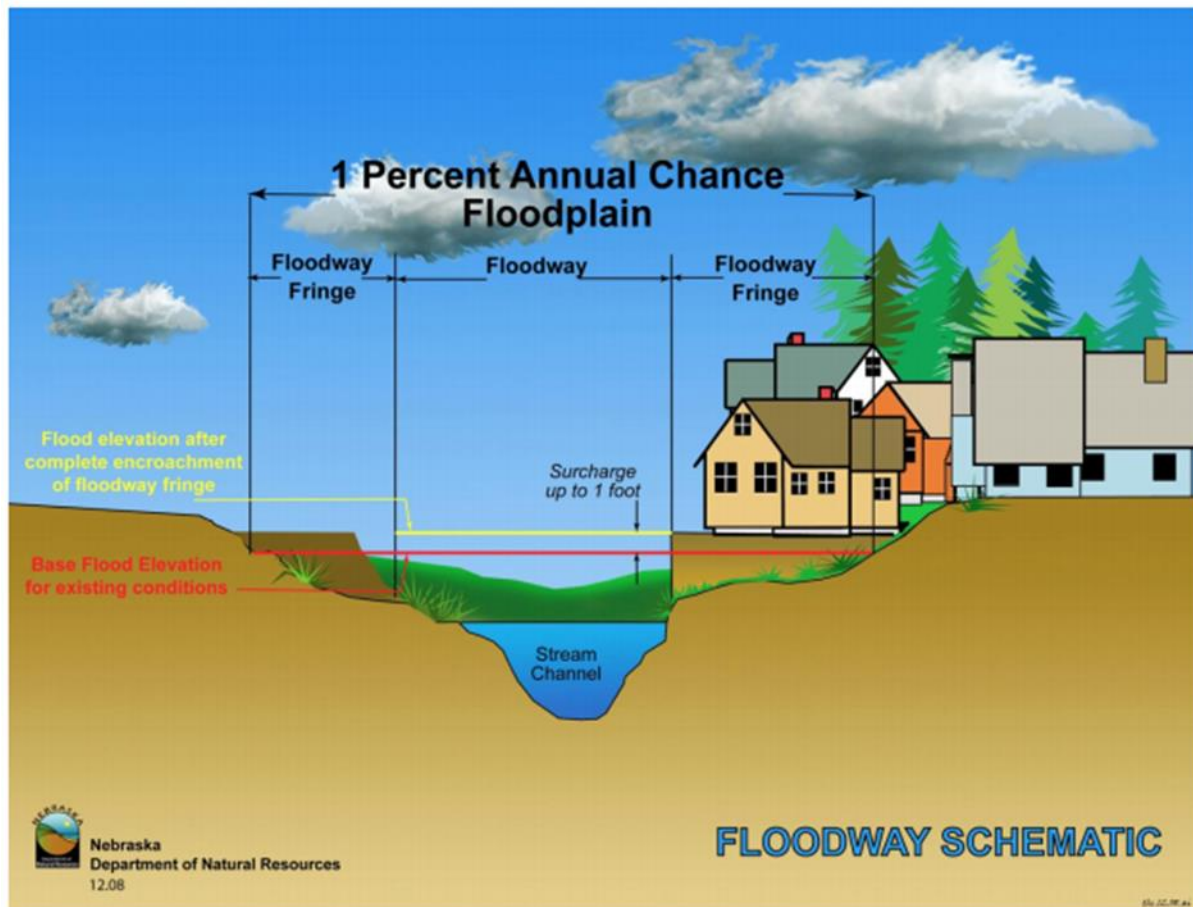


Figure 2-9: Schematic of 100-Year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.

(Source: Nebraska Department of Natural Resources)

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

#### *Property Damage*

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

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

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

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

#### *Repetitive Loss Properties*

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

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

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

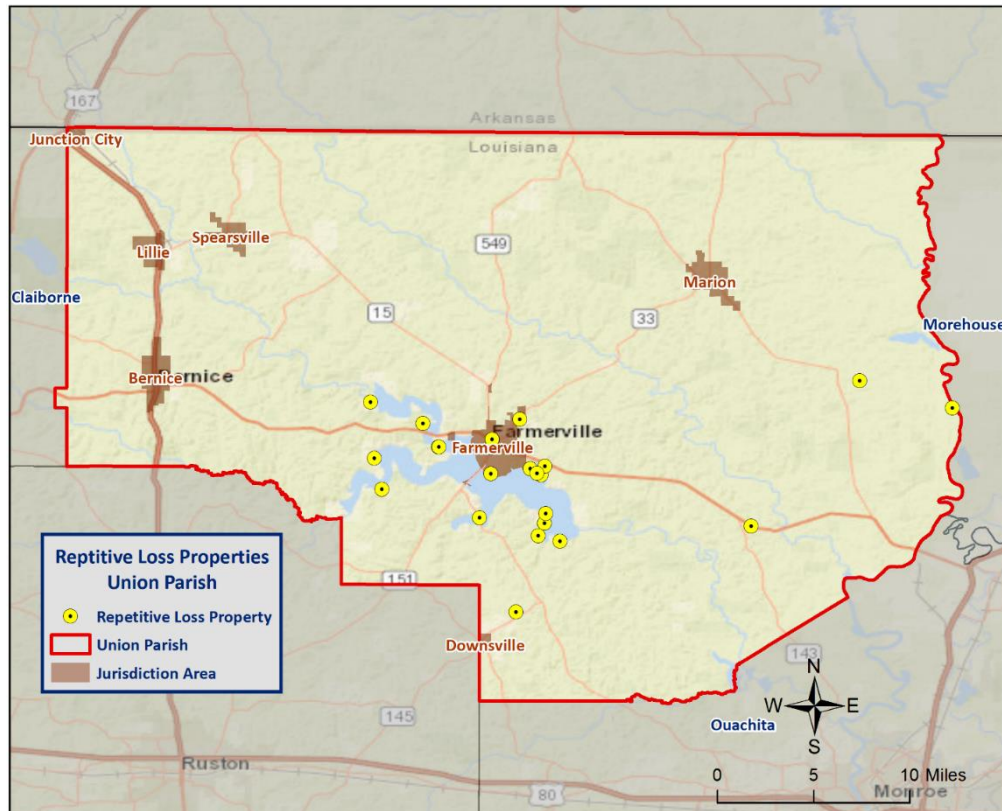
- a. It is covered under a contract for flood insurance made available under the NFIP; and
- b. It has incurred flood related damage –
  - 1) For which four or more separate claims payments have been made under flood insurance coverage with the amount of each claim exceeding \$5,000 and with the cumulative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

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

*Table 2-17: Repetitive Loss Structures for Union Parish*

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
Union Parish (Unincorporated)	26	26	0	0	84	\$1,058,807	\$12,605
Bernice	0	0	0	0	0	\$0	\$0
Downsville	0	0	0	0	0	\$0	\$0
Farmerville	2	2	0	0	4	\$50,229	\$12,557
Junction City	0	0	0	0	0	\$0	\$0
Lillie	0	0	0	0	0	\$0	\$0
Marion	0	0	0	0	0	\$0	\$0
Spearsville	0	0	0	0	0	\$0	\$0
<b>Total</b>	<b>28</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>88</b>	<b>\$1,109,036</b>	<b>\$12,603</b>

All 28 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 28 structures, while *Figure 2-11* shows where the highest concentration of repetitive loss structures are located. Through the repetitive loss map, it is clear that the primary concentrated area of repetitive loss structures is focused in and around the incorporated area of Farmerville.



*Figure 2-10: Repetitive Loss Properties in Union Parish*

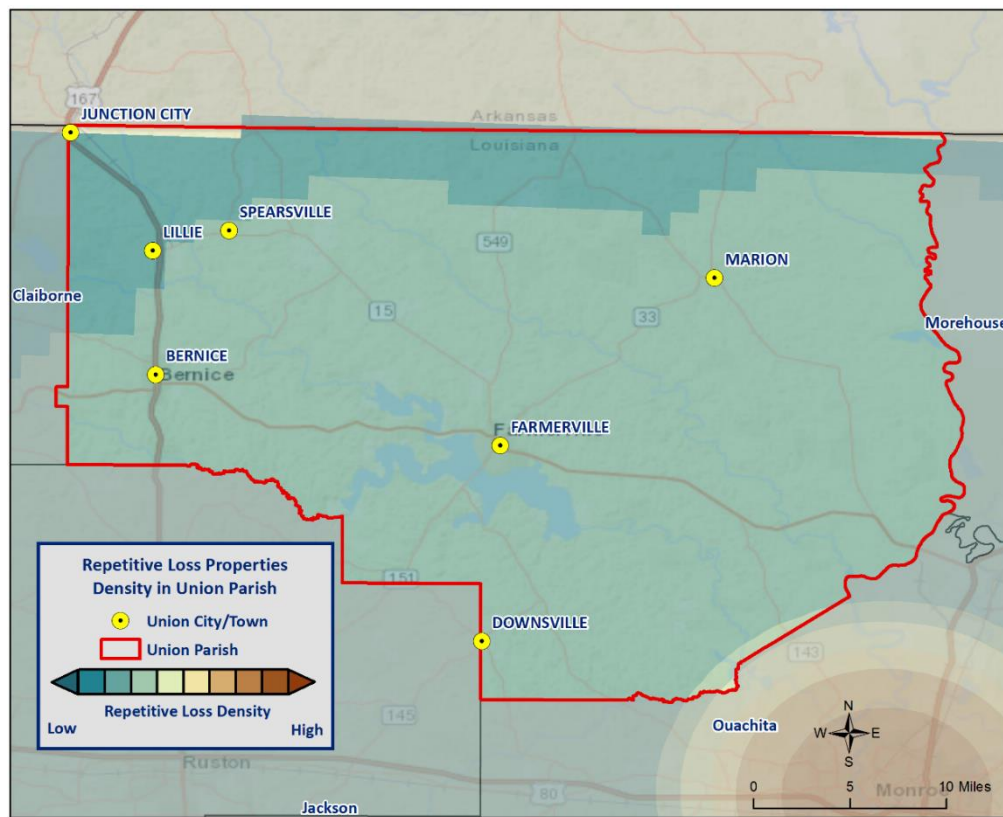


Figure 2-11: Repetitive Loss Property Densities in Union Parish

#### National Flood Insurance Program

Flood insurance statistics indicate that Union Parish has 298 flood insurance policies with the NFIP, with total annual premiums of \$221,903. Union Parish and the incorporated area of Farmerville are all participants in the NFIP. The incorporated areas of Bernice, Downsview, Junction City, Lillie, Marion, and Spearsville do not participate in the NFIP. Union Parish and each of the incorporated jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction Special Flood Hazard Areas, and will continue to monitor activities including local requests for new map updates. Flood insurance statistics and additional NFIP participation details for Union Parish are provided in the tables to follow.

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

Table 2-18: Summary of NFIP Policies for Union Parish

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
Union Parish (Unincorporated)	286	\$45,049,600	\$213,601	349	\$8,232,503
Bernice	0	\$0	\$0	0	\$0
Downsville	0	\$0	\$0	0	\$0
Farmerville	12	\$2,632,100	\$8,302	26	\$415,740
Junction City	0	\$0	\$0	0	\$0
Lillie	0	\$0	\$0	0	\$0
Marion	0	\$0	\$0	0	\$0
Spearsville	0	\$0	\$0	0	\$0
<b>Total</b>	298	\$47,681,700	\$221,903	375	\$8,648,243

\*While the Town of Bernice, Village of Downsville, Village of Junction City, Village of Lillie, Town of Marion, and Village of Spearsville do not participate in the NFIP, the parish will continue to promote NFIP participation through education and outreach.

Table 2-19: Summary of Community Flood Maps for Union Parish

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
220359#	Union Parish	9/13/1977	3/1/1987	7/4/2011	3/1/1987	No
220325#	Farmerville	5/2/1975	3/23/1982	7/4/2011	3/23/1982	No
220314#	Bernice	1/17/1975	7/4/2011	7/4/2011	Sanctioned (Not in NFIP)	No
-	Downsville	-	-	-	Not in NFIP	No
220335#	Junction City	7/18/1975	7/4/2011	7/4/2011	Sanctioned (Not in NFIP)	No
220390#	Lillie	4/3/1979	7/4/2011	7/4/2011	Sanctioned (Not in NFIP)	No
220338#	Marion	5/2/1975	7/4/2011	7/4/2011	Sanctioned (Not in NFIP)	No
220109#	Spearsville	-	7/4/2011	7/4/2011	Sanctioned (Not in NFIP)	No

The Village of Downsville has never participated in the NFIP, so no further information was available.

According to the Community Rating System (CRS) list of eligible communities, neither Union Parish nor any of the incorporated areas within Union Parish participate in the CRS.



### *Threat to People*

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

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

### *Flooding in Union Parish*

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

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

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

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

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

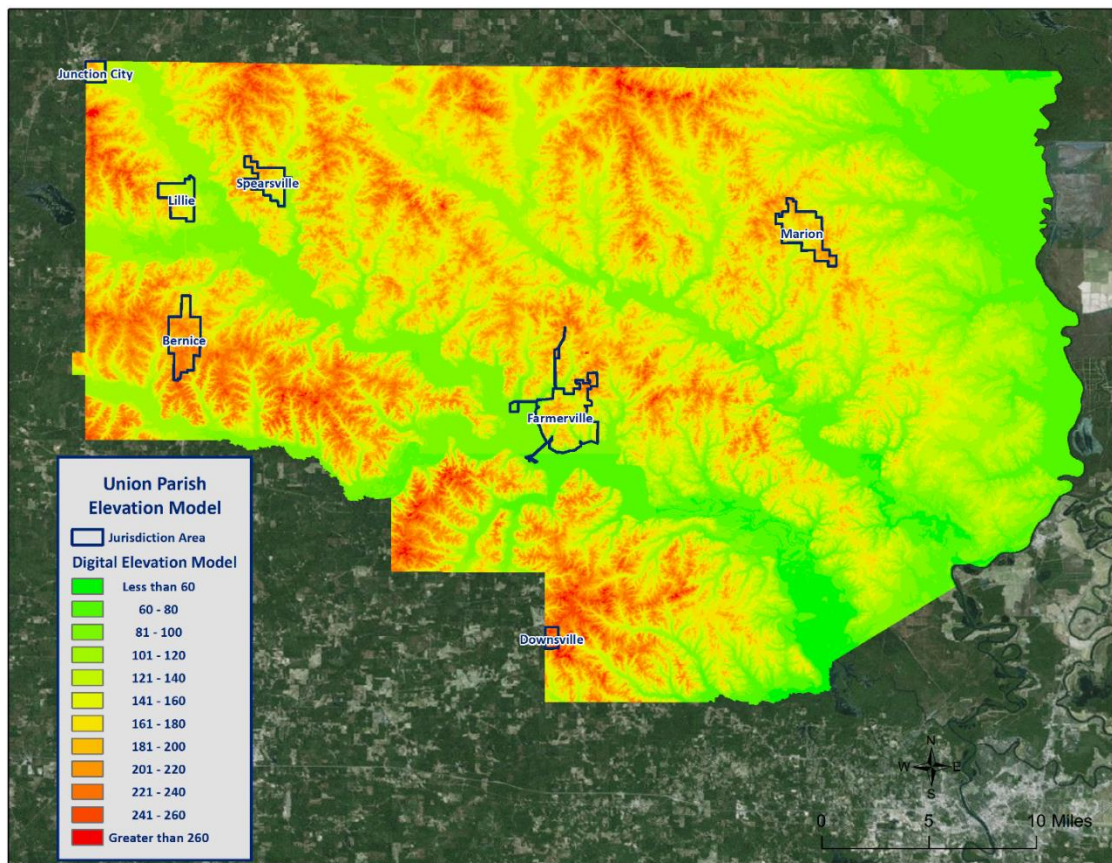


Figure 2-12: Elevation throughout Union Parish

Looking at the digital elevation model (DEM) in the figure above for Union Parish is instructive in visualizing where the low lying and high risk areas are for the parish. Elevations in the parish range from less than 50 feet to over 280 feet. The highest elevations in the parish are approximately 280 feet, located in the unincorporated areas of the parish. The incorporated areas range in elevation from 121 to 253 feet, with the Lillie averaging 121 feet, Farmerville averaging 171 feet, Spearsville and Junction City averaging 190 feet, Bernice averaging 223 feet, and Downsville averaging 253 feet.

#### Location

Union Parish has experienced significant flooding in its history and can expect more in the future. Approximately 20% of the total land area of Union Parish is located within FEMA's 100-year floodplain. The majority of the flood plain is found along the Ouachita River, Lake D'Arbonne, Bayou L'Outre, Little Comey Bayou, and Bayou D'Arbonne.



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

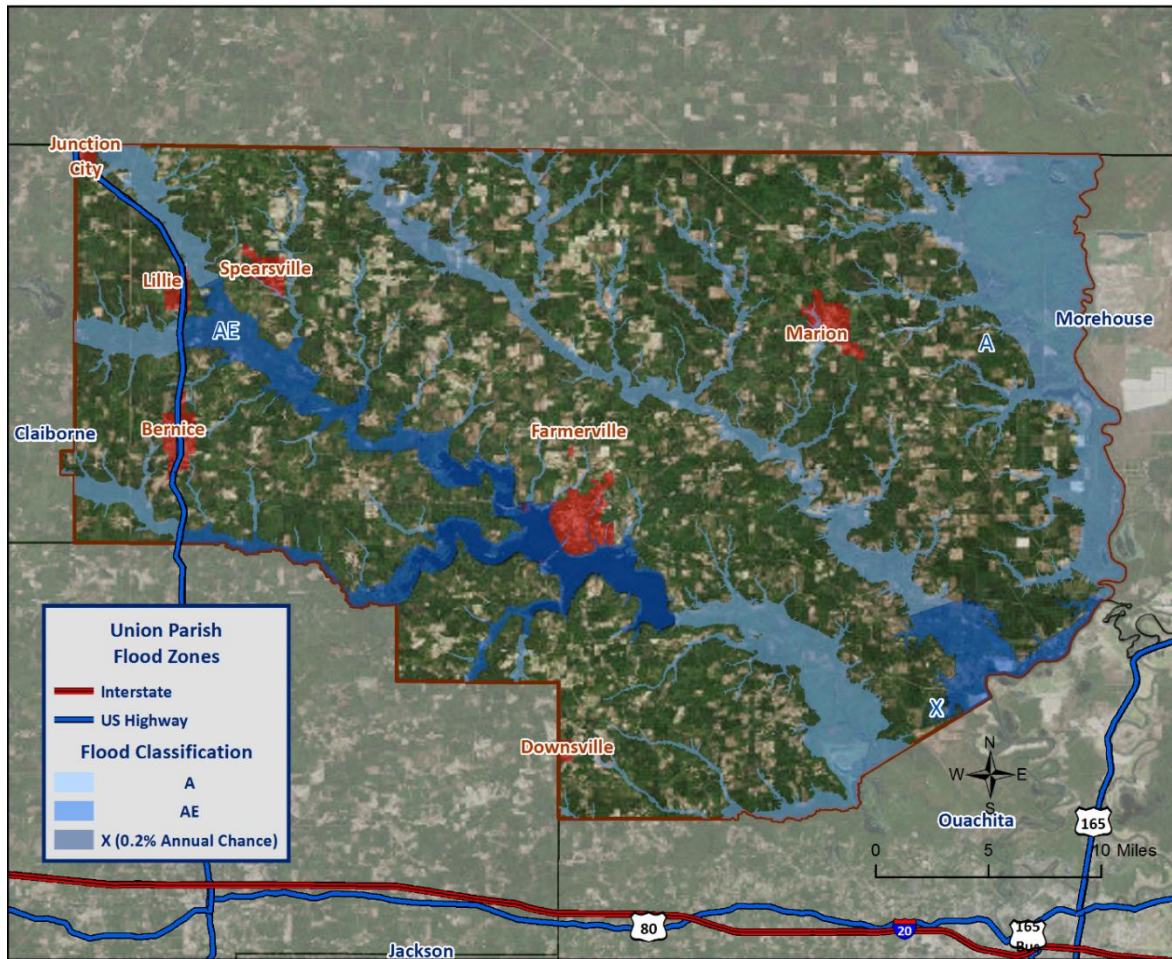


Figure 2-13: Union Parish Areas within the Flood Zones



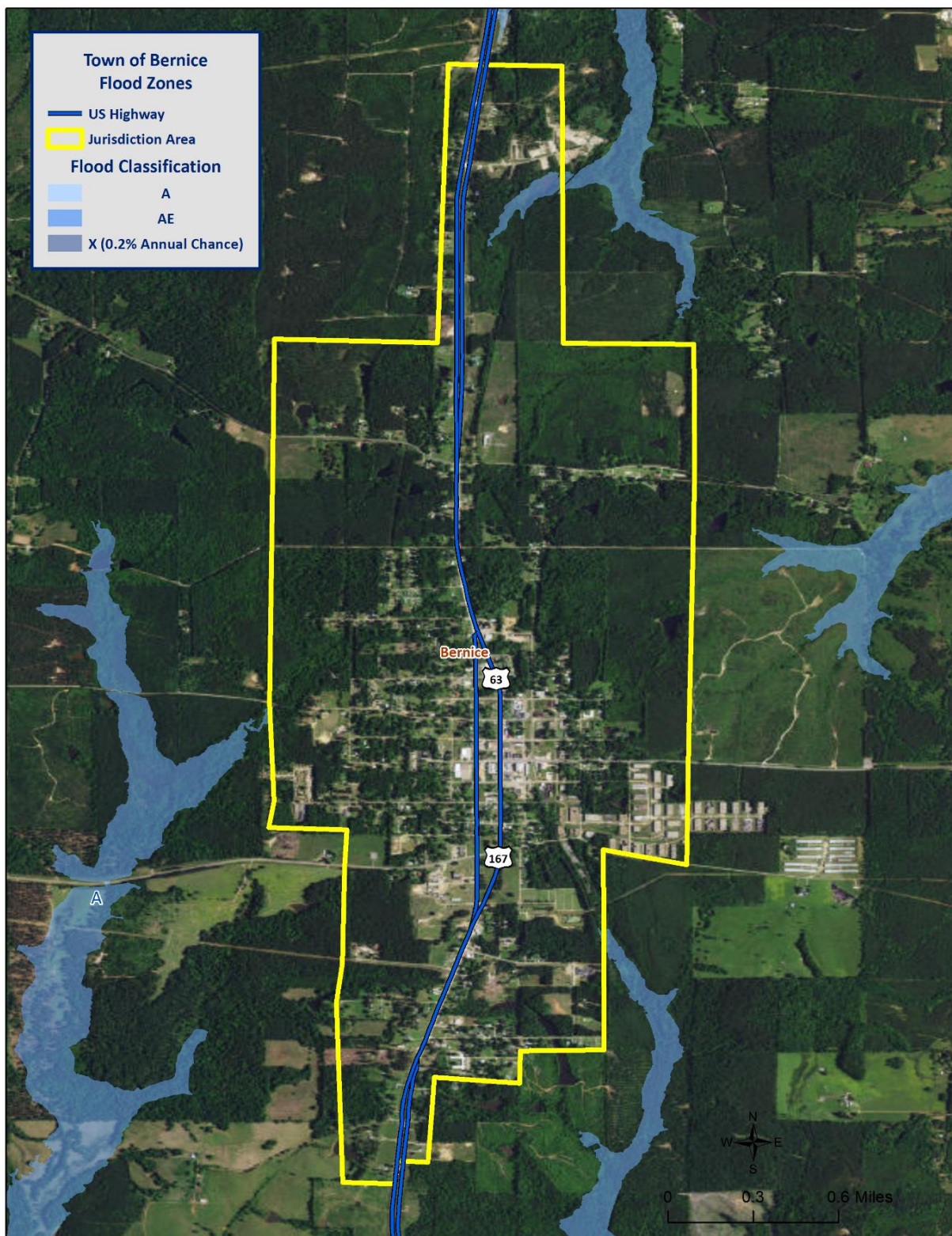


Figure 2-14: Town of Bernice Areas within the Flood Zones



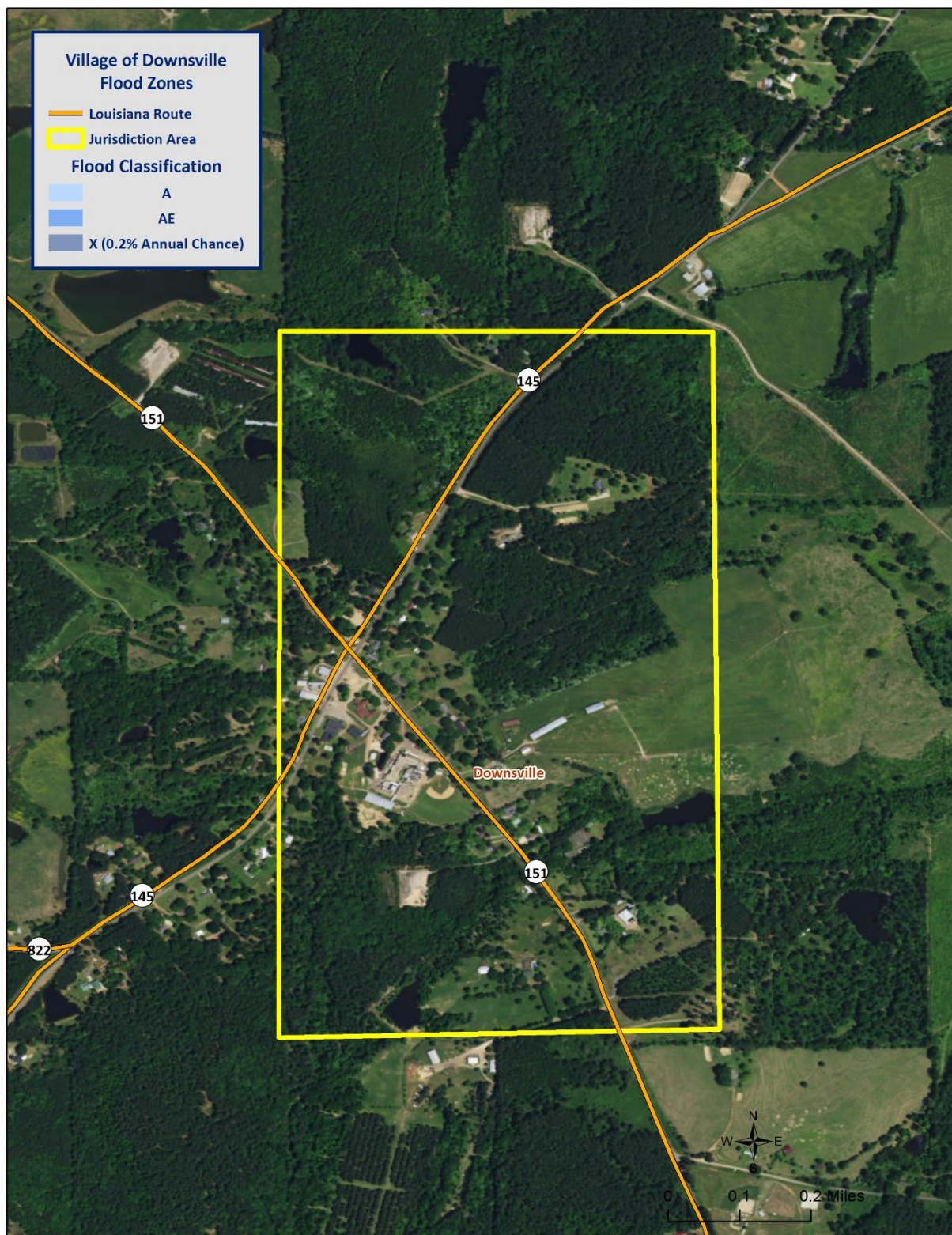


Figure 2-15: Village of Downsville Areas within the Flood Zones



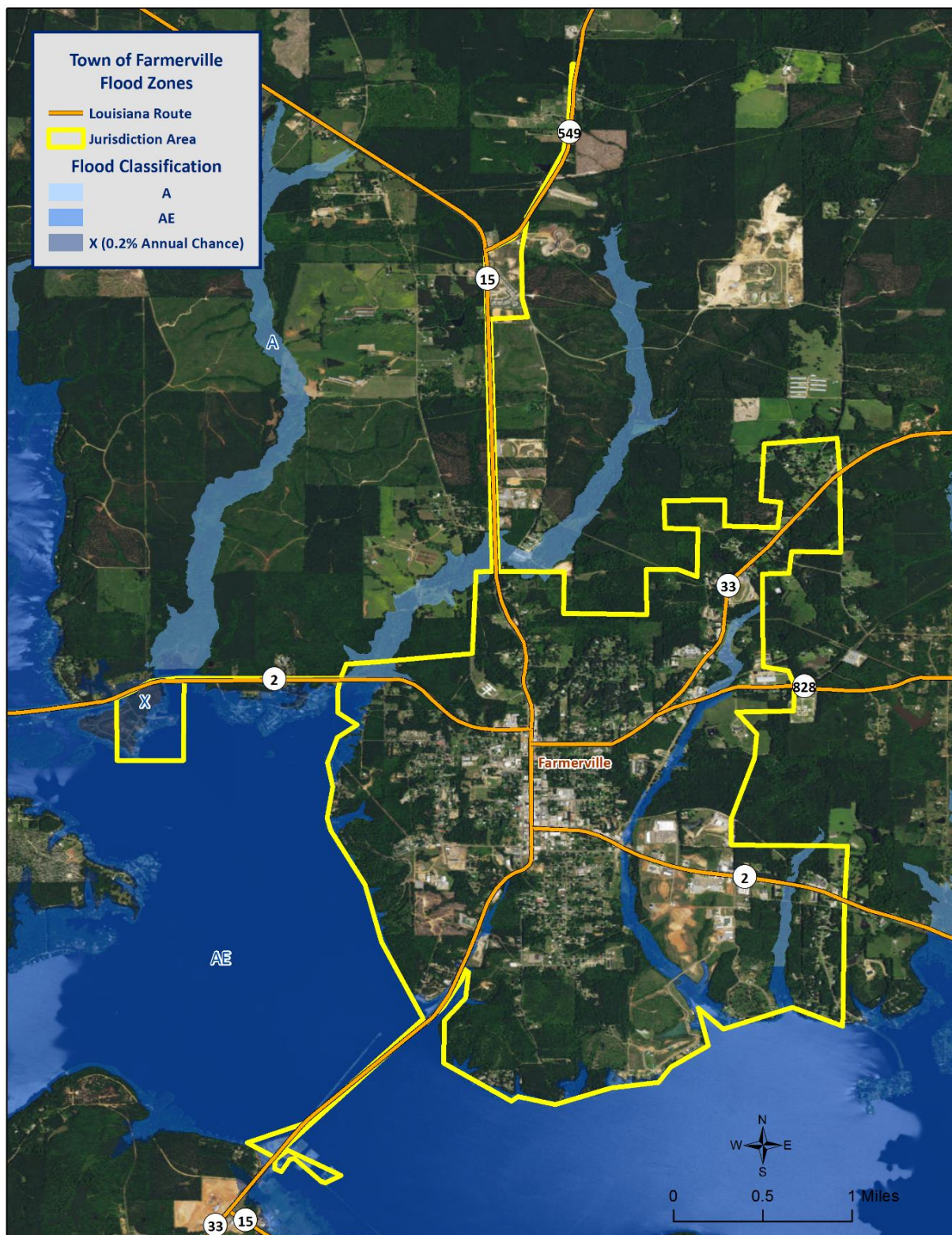


Figure 2-16: Town of Farmerville Areas within the Flood Zones





Figure 2-17: Village of Junction City Areas within the Flood Zones



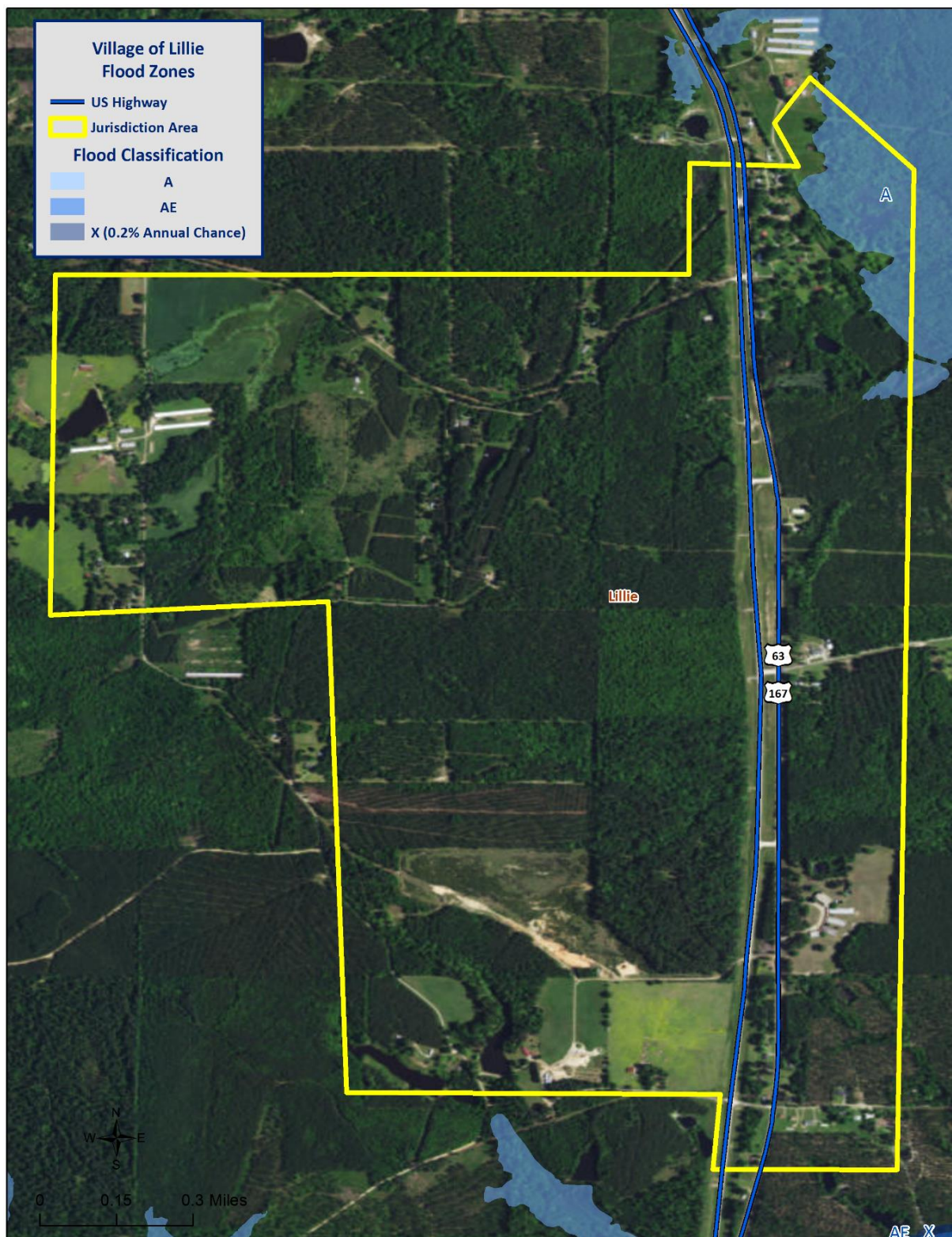


Figure 2-18: Village of Lillie Areas within the Flood Zones



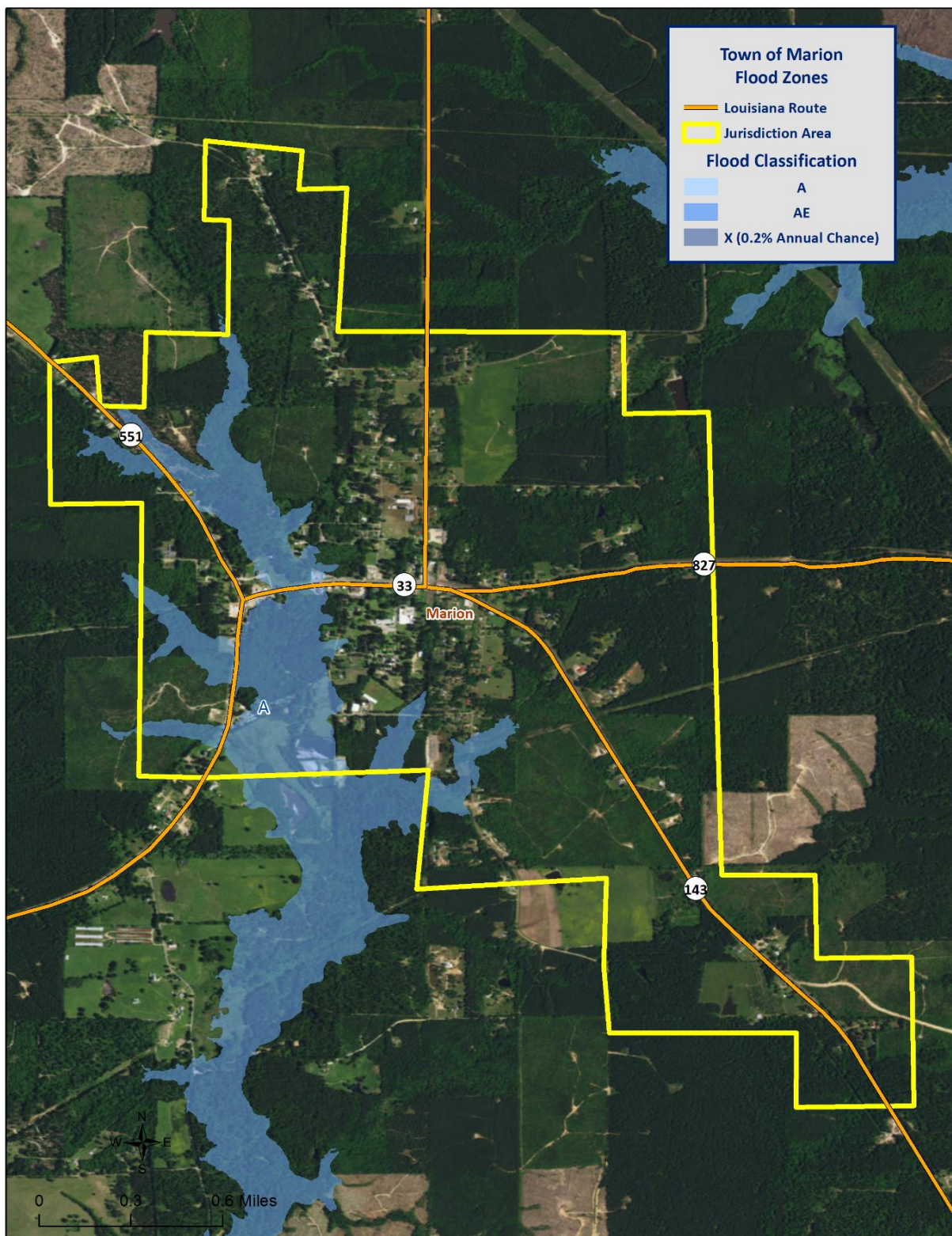


Figure 2-19: Town of Marion Areas within the Flood Zones



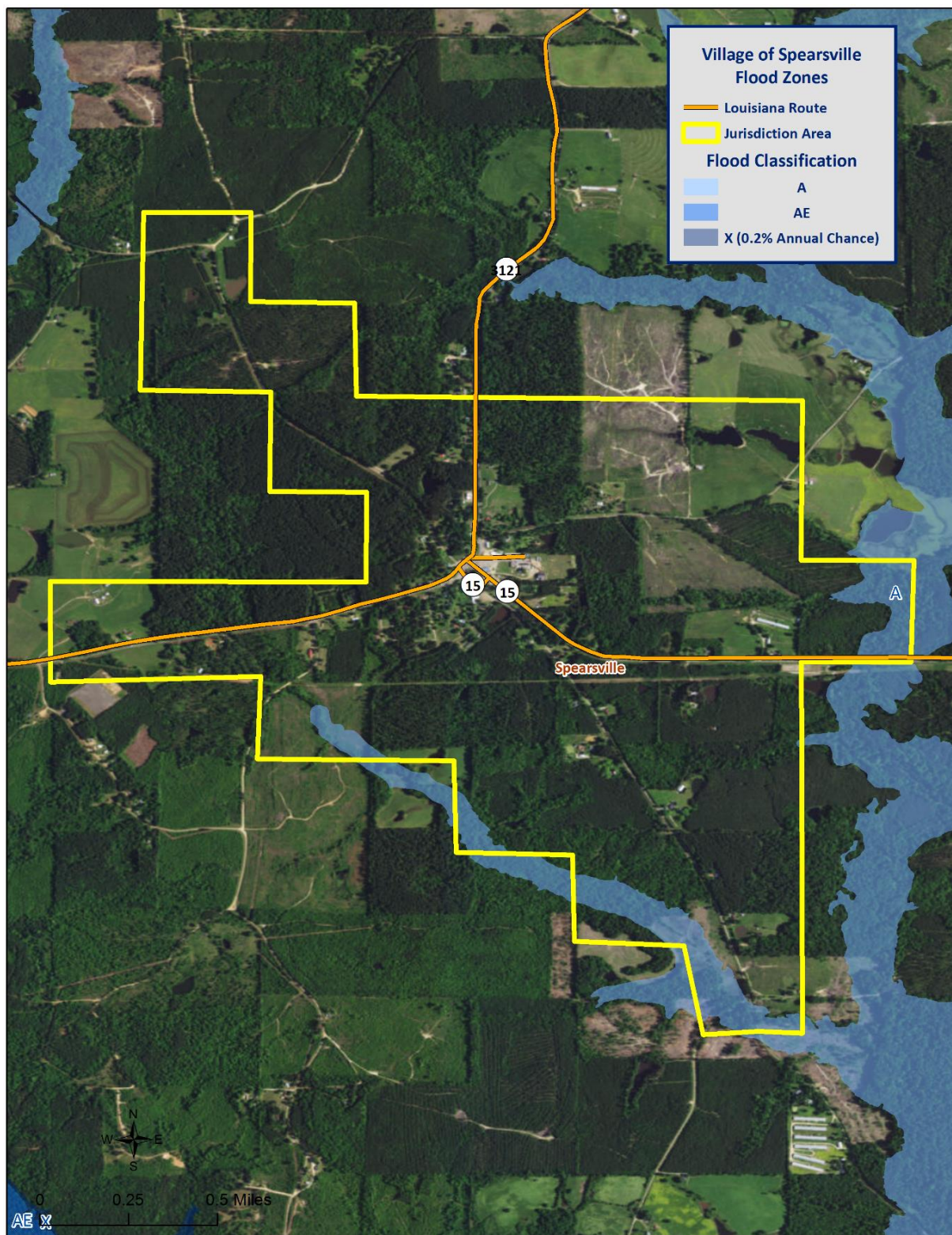


Figure 2-20: Village of Spearsville Areas within the Flood Zones

*Previous Occurrences / Extents*

Historically, there have been 34 flooding events that have created significant flooding in Union Parish between 1990 and 2015. Below is a brief synopsis of the four flooding events that have occurred since 2010, including flooding events that have occurred since the parish's last planning update.

*Table 2-20: Historical Floods in Union Parish with Locations from 2010 - 2015*

Date	Extents	Type of Flooding	Estimated Damages	Location
July 27, 2010	Deep tropical moisture associated with Tropical Storm Bonnie spread into the area causing heavy rainfall that resulted in flash floods. High water was reported on Gulley Street in Farmerville and 2 feet of water was reported over Highway 15 north of Farmerville.	Flash Flood	\$0	UNINCORPORATED AREA AND FARMERVILLE
March 21, 2012	Heavy rainfall caused flash floods throughout the parish. High water was reported across Highway 167 north of Grafton Crossing, LA Highway 2 had 6 to 8 inches of water across the roadway, and numerous roads were closed throughout the parish.	Flash Flood	\$0	PARISHWIDE
June 1, 2013	Flash floods occurred in Farmerville due to heavy rainfall in the region. High water was reported across Ward Chapel Road.	Flash Flood	\$0	FARMERVILLE

Since 2010, there have been no significant flooding events in the incorporated areas of Bernice, Downsville, Junction City, Marion, or Spearsville.

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 eight feet can be expected in the unincorporated areas of the parish. The incorporated area of Farmerville can expect flood depths from six to eight feet, while the incorporated area of Marion can expect flooding levels of approximately two to four feet. The incorporated areas of Bernice, Downsville, Lillie, Spearsville, and Junction City can expect flood levels of approximately one to two feet.

*Frequency / Probability*

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

*Table 2-21: Annual Flood Probabilities for Union Parish*

Jurisdiction	Annual Probability	Return Frequency
Union Parish (Unincorporated)	48%	2 – 3 years
Bernice	16%	6 – 7 years
Downsville	4%	25 years
Farmerville	36%	2 – 3 years
Junction City	4%	25 years
Lillie	16%	6 – 7 years
Marion	4%	25 years
Spearsville	12%	8 – 9 years

Based on historical record, the overall flooding probability for the entire Union Parish planning area is 100%, with 34 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 Union Parish from a 100-Year Flood Event*

(Source: Hazus 2.2)

Jurisdiction	Estimated Total Losses from 100-Year Flood Event
Union Parish (Unincorporated)	\$23,015,000
Bernice	\$0
Downsville	\$0
Farmerville	\$33,000
Junction City	\$0
Lillie	\$0
Marion	\$46,000
Spearsville	\$29,000
<b>Total</b>	<b>\$23,123,000</b>

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. These sectors are comprised of privately owned structures/facilities, as well as locally, state, and federally owned structures/facilities.



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

Union Parish (Unincorporated)	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$234,000
Commercial	\$859,000
Government	\$1,458,000
Industrial	\$574,000
Religious / Non-Profit	\$234,000
Residential	\$19,690,000
Schools	\$12,000
<b>Total</b>	<b>\$23,061,000</b>

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

Farmerville	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$0
Commercial	\$0
Government	\$6,000
Industrial	\$0
Religious / Non-Profit	\$0
Residential	\$27,000
Schools	\$0
<b>Total</b>	<b>\$33,000</b>

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

Marion	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$0
Commercial	\$0
Government	\$0
Industrial	\$14,000
Religious / Non-Profit	\$1,000
Residential	\$31,000
Schools	\$0
<b>Total</b>	<b>\$46,000</b>

Table 2-26: Estimated 100-Year Flood Losses for Spearsville by Sector

(Source: Hazus 2.2)

Spearsville	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$0
Commercial	\$0
Government	\$0
Industrial	\$0
Religious / Non-Profit	\$0
Residential	\$29,000
Schools	\$0
<b>Total</b>	<b>\$29,000</b>

*Threat to People*

The total population within the parish that is susceptible to a flood hazard is 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
Union Parish (Unincorporated)	15,429	751	4.9%
Bernice	1,689	0	0%
Downsville	141	0	0%
Farmerville	3,860	14	0.4%
Junction City	582	0	0%
Lillie	118	0	0%
Marion	765	19	2.5%
Spearsville	137	12	8.8%
<b>Total</b>	<b>192,768</b>	<b>796</b>	<b>3.5%</b>

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

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

Union Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	770	5.0%
Persons Under 5 Years	50	6.5%
Persons Under 18 Years	127	16.5%
Persons 65 Years and Over	127	16.5%
White	531	69.0%
Minority	239	31.0%

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

Farmerville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	14	0.4%
Persons Under 5 Years	1	8.0%
Persons Under 18 Years	3	18.8%
Persons 65 Years and Over	2	14.5%
White	4	29.0%
Minority	10	71.0%

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

Marion		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	19	2.5%
Persons Under 5 Years	2	8.4%
Persons Under 18 Years	3	16.5%
Persons 65 Years and Over	3	16.7%
White	7	37.8%
Minority	12	62.2%

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

Spearsville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	12	8.8%
Persons Under 5 Years	1	5.1%
Persons Under 18 Years	2	16.8%
Persons 65 Years and Over	3	24.1%
White	11	89.8%
Minority	1	10.2%

#### *Vulnerability*

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

## Thunderstorms

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

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

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

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

- *Severe Thunderstorm Watch:* Issued to alert people to the possibility of a severe thunderstorm developing in the area. Expected time frame for these storms is three to six hours.
- *Severe Thunderstorm Warning:* Issued when severe thunderstorms are imminent. This warning is highly localized and covers parts of one to several parishes (counties).



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

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

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

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

#### *Hazard Description*

##### *Hailstorms*

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

Table 2-32: 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 2-33: Spectrum of Hailstone Diameters and their Everyday Description  
(Source: National Weather Service)

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

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

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

#### High Winds

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

*Table 2-34: High Winds Categorized by Source, Frequency, and Duration  
(Source: Making Critical Facilities Safe from High Wind, FEMA)*

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

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

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

*Table 2-35: Beaufort Wind Scale*  
(Source: NOAA's SPC)

Beaufort Wind Scale			
Force	Wind (MPH)	WMO Classification	Appearance of Wind Effects on Land
			Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-17	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	18-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-30	Strong Breeze	Larger tree branches moving, whistling in wires
7	31-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Twigs breaking off trees, generally impedes progress
9	47-54	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	54-73	Violent Storm	N/A
12	74+	Hurricane	N/A

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

### Lightning

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

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

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

*Table 2-36: Lightning Activity Level (LAL) Grids*

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



### Hazard Profile

#### Hailstorms

##### Location

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

##### Previous Occurrences / Extents

The database reports 97 significant hailstorm events occurring within the boundaries of Union Parish between the years of 1990 - 2015. According to the National Climatic Data Center, hailstorm diameters experienced in Union Parish have ranged from 0.75 inches to 2.75 inches since 1990. The most frequently recorded hail size has been 0.75 inch diameters. [Figure 2-21](#) displays the density of hailstorms in Union Parish and adjacent parishes. Based on the National Climatic Data Center dataset, [Table 2-37](#) provides an overview of hailstorms that have impacted the Union Parish planning area since 2010. Union Parish can expect to experience hail up to 2.75 inches in diameter for future events.

*Table 2-37: Previous Occurrences of Hailstorms in PARISH NAME*  
(Source: NCDC)

Date	Recorded Hail Size (inches)	Location
April 24, 2010	1	MARION
April 24, 2010	1.25	COOLEY
May 25, 2011	1.75	BAYOU D ARBONNE LAKE
May 25, 2011	1.75	QUIGLEY
May 25, 2011	1	FARMERVILLE
March 2, 2012	1.75	BERNICE
March 2, 2012	1.75	FARMERVILLE
March 2, 2012	1.25	D ARBONNE
March 2, 2012	1	FARMERVILLE ARPT
April 3, 2012	0.75	BERNICE
April 3, 2012	0.75	FARMERVILLE ARPT
April 5, 2012	1.5	FARMERVILLE
April 5, 2012	0.88	FARMERVILLE
May 21, 2012	1	FARMERVILLE
March 28, 2014	1.75	MARION
June 8, 2014	1.5	SHILOH
June 8, 2014	0.88	FARMERVILLE
April 22, 2015	1.75	CONWAY
April 22, 2015	1.75	MARION

Since 2010, the incorporated areas of Downsville, Junction City, Lillie, and Spearsville have not experienced a significant hailstorm event.

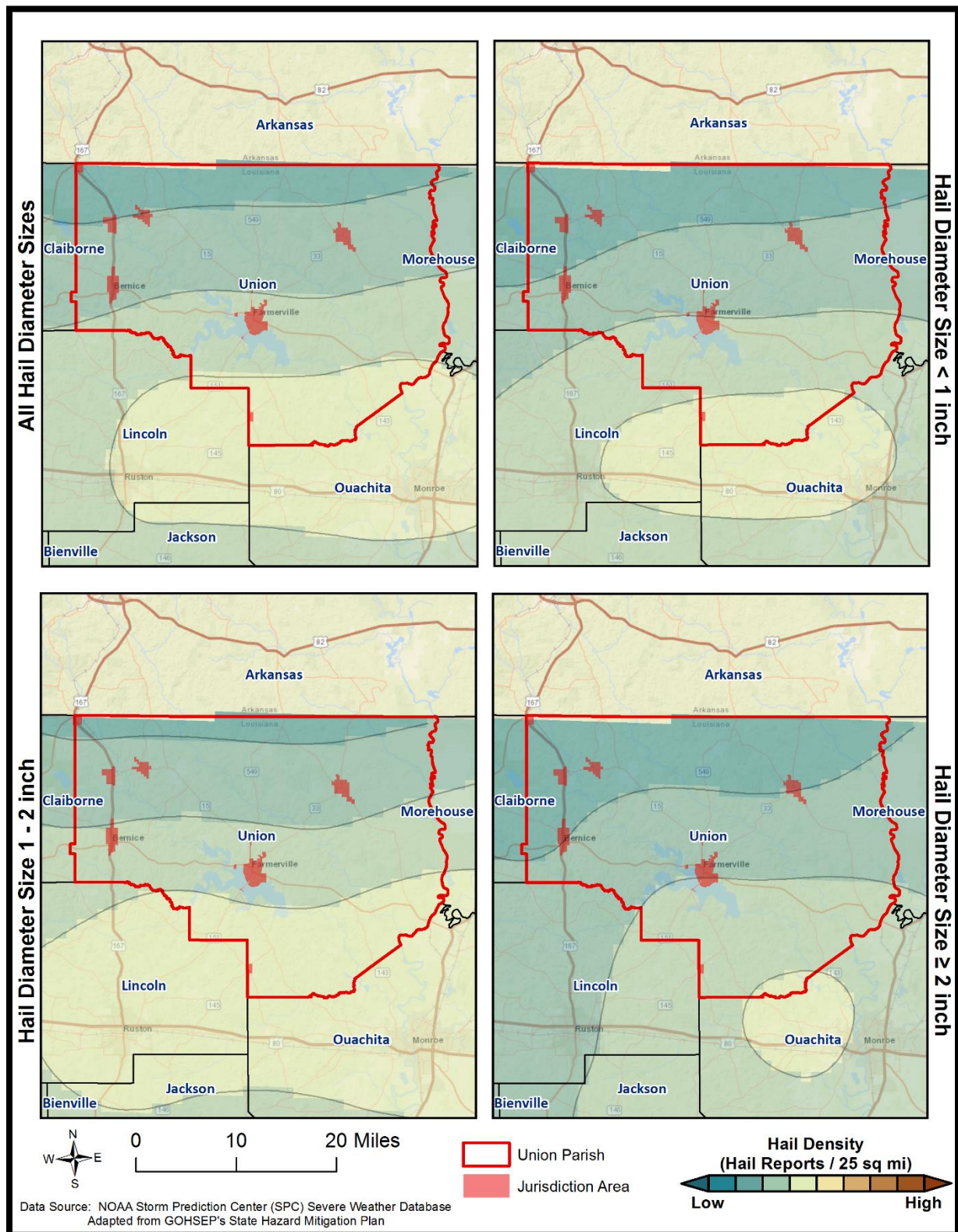


Figure 2-21: Density of Hailstorms by Diameter from 1950-2012  
(Source: State of Louisiana Hazard Mitigation Plan 2014)

### Frequency

Based on historical data from SHELUDS for the past 25 years, it is estimated the probability of occurrence for a significant hailstorm event is approximately 100%. The probability was determined based on a review of significant hail data that has caused damages in the last 25 years, in which Union Parish has had 97 recorded events.

### Estimated Potential Losses

According to the SHELUDS database, property damage due to hailstorms in Union Parish have totaled approximately \$26,486 since 1990. To estimate the potential losses of a hail event on an annual basis, the total damages recorded for hail events was divided by the total number of years of available hail data in SHELUDS (1990 – 2015). This provides an annual estimated potential loss of \$273. *Table 2-38* provides an estimate of potential property losses for Union Parish.

*Table 2-38: Estimated Annual Property Losses in Union Parish from Hailstorms*

Estimated Annual Potential Losses from Hailstorms for Union Parish			
Unincorporated Union Parish (67.9% of Population)	Bernice (7.4% of Population)	Downsville (0.6% of Population)	Farmerville (17% of Population)
\$719	\$79	\$7	\$180

*Table 2-38: Estimated Annual Property Losses in Union Parish from Hailstorms (Continued)*

Estimated Annual Potential Losses from Hailstorms for Union Parish			
Junction City (2.6% of Population)	Lillie (0.5% of Population)	Marion (3.4% of Population)	Spearsville 0.6% of Population)
\$27	\$6	\$36	\$6

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

### Vulnerability

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

### High Winds

#### Location

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

#### Previous Occurrences / Extents

The SHELUDS database reports a total of 169 thunderstorm wind events occurring within the boundaries of Union Parish between the years of 1990 to 2015. The significant thunderstorm wind events experienced in Union Parish have ranged in wind speed from 54 mph to 91 mph. Union Parish can expect to receive thunderstorm winds up to 91 mph for future high wind events. The table on the next page provides an overview of significant high wind events over the last five years.

Table 2-39: Previous Occurrences for Thunderstorm High Wind Events

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
CANBEAL	August 5, 2010	60	\$0	\$0
RUM CENTER	August 22, 2010	62	\$0	\$0
CONWAY	August 22, 2010	61	\$0	\$0
COOLEY	August 22, 2010	60	\$0	\$0
BERNICE	August 22, 2010	60	\$0	\$0
BAYOU D ARBONNE LAKE	April 15, 2011	60	\$0	\$0
FARMERVILLE	July 4, 2011	61	\$0	\$0
MARION	July 25, 2011	62	\$0	\$0
FARMERVILLE	July 25, 2011	61	\$0	\$0
OAKLAND	August 20, 2011	69	\$75,000	\$0
BERNICE	August 22, 2011	62	\$0	\$0
SPEARSVILLE	September 22, 2011	63	\$0	\$0
BERNICE	November 8, 2011	61	\$0	\$0
FARMERVILLE	March 2, 2012	63	\$0	\$0
MARION	March 2, 2012	63	\$0	\$0
CANBEAL	March 20, 2012	60	\$15,000	\$0
MARION	March 20, 2012	60	\$0	\$0
DOWNSVILLE	April 2, 2012	60	\$0	\$0
FARMERVILLE	April 2, 2012	62	\$0	\$0
SPEARSVILLE	April 3, 2012	60	\$0	\$0
LOCH LOMON	April 3, 2012	60	\$0	\$0
POINT	June 12, 2012	69	\$0	\$0
BERNICE	July 7, 2012	60	\$0	\$0
SPEARSVILLE	July 28, 2012	62	\$0	\$0
QUIGLEY	August 6, 2012	61	\$0	\$0
FARMERVILLE	August 6, 2012	61	\$0	\$0
SPEARSVILLE	August 9, 2012	60	\$0	\$0
TRUXNO	December 20, 2012	63	\$0	\$0
FARMERVILLE	December 20, 2012	63	\$0	\$0
FARMERVILLE	January 29, 2013	71	\$0	\$0
ROCKY BRANCH	January 29, 2013	69	\$30,000	\$0
FARMERVILLE	March 23, 2013	60	\$0	\$0
FARMERVILLE	June 1, 2013	61	\$0	\$0
FARMERVILLE	June 1, 2013	63	\$0	\$0
JUNCTION CITY	June 1, 2013	63	\$0	\$0
FARMERVILLE	July 11, 2013	62	\$0	\$0

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
SPEARSVILLE	July 26, 2013	62	\$0	\$0
FARMERVILLE	July 26, 2013	63	\$0	\$0
FARMERVILLE ARPT	July 26, 2013	63	\$0	\$0
BERNICE	December 21, 2013	62	\$0	\$0
FARMERVILLE	December 21, 2013	69	\$250,000	\$0
BAYOU D ARBONNE LAKE	June 8, 2014	62	\$0	\$0
FARMERVILLE	June 28, 2014	61	\$5,000	\$0
SPEARSVILLE	June 28, 2014	60	\$0	\$0
LILLIE	July 23, 2014	60	\$0	\$0
RANDOLPH	October 2, 2014	62	\$0	\$0
FARMERVILLE	April 19, 2015	60	\$0	\$0
MARION	April 19, 2015	60	\$0	\$0
TRUXNO	April 22, 2015	75	\$500,000	\$0
BERNICE	April 24, 2015	62	\$0	\$0
RANDOLPH	December 13, 2015	62	\$0	\$0
OAKLAND	December 28, 2015	62	\$0	\$0

### Frequency

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

### Estimated Potential Losses

Since 1990, there have been 169 significant wind events that have resulted in property damages according to the SHEL DUS database. The total property damages associated with those storms have totaled \$1,607,231. To estimate the potential losses of a wind event on an annual basis, the total damages recorded for wind events was divided by the total number of years of available wind data in SHEL DUS (1990 – 2015). This provides an annual estimated potential loss of \$64,289. The following tables provides an estimate of potential property losses for Union Parish.

*Table 2-40: Estimated Annual Property Losses in Union Parish Resulting from High Winds*

Estimated Annual Potential Losses from Thunderstorm Winds for Union Parish			
Unincorporated Union Parish (67.9% of Population)	Bernice (7.4% of Population)	Downsville (0.6% of Population)	Farmerville (17% of Population)
\$43,656	\$4,779	\$399	\$10,922



Table 2-40: Estimated Annual Property Losses in Union Parish Resulting from High Winds (Continued)

Estimated Annual Potential Losses from Thunderstorm Winds for Union Parish			
Junction City (2.6% of Population)	Lillie (0.5% of Population)	Marion (3.4% of Population)	Spearsville (0.6% of Population)
\$1,647	\$334	\$2,165	\$388

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 Union Parish.

##### Previous Occurrences / Extents

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

Table 2-41: Previous Occurrences of Significant Lightning Strikes in Union Parish from 2010 – 2015  
(Source: NCDC and SHELDUS)

Location	Date	Summary	Property Damage
UNINCORPORATED AREA	August 6, 2012	Lightning caused a grass fire to break out on Creek Road.	\$0

Since 2010, there have been no lightning events that have caused property damage or loss of life in the incorporated areas of Bernice, Downsview, Farmerville, Junction City, Lillie, Marion, and Spearsville.

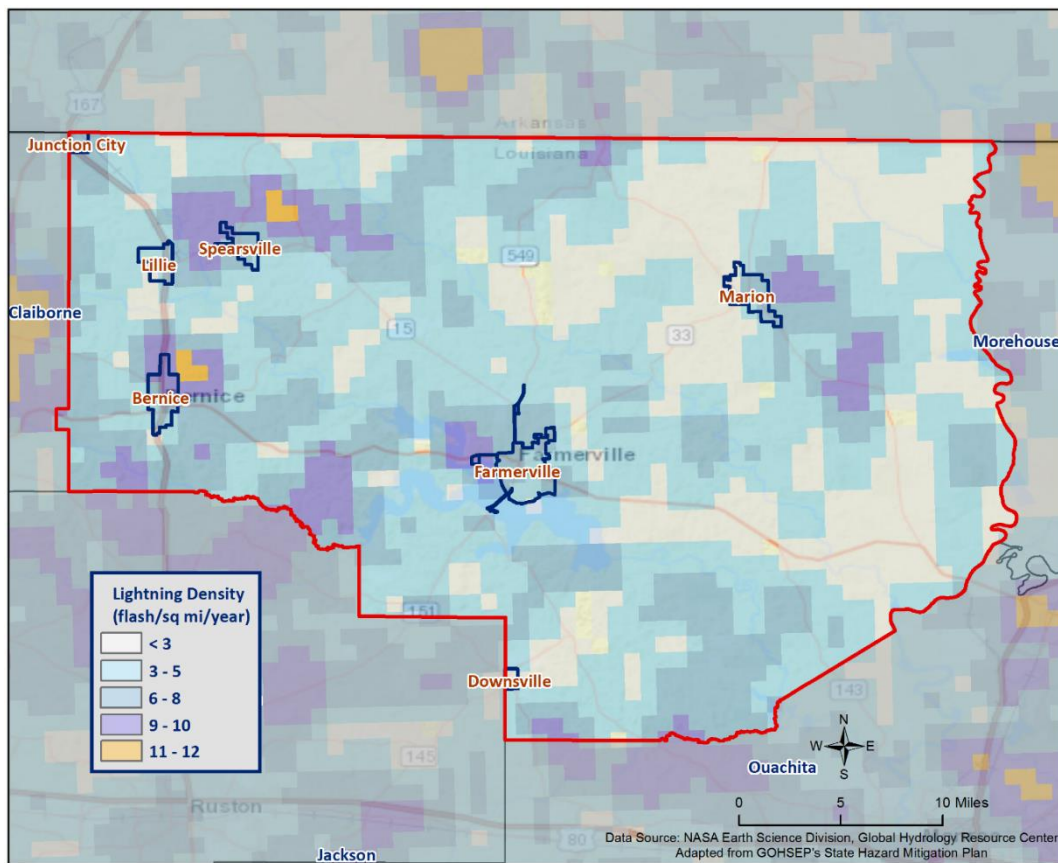


Figure 2-22: Lightning Density Reports for Union Parish

### Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in Union Parish is high. However, lightning that meets the definition that is used by SHELDUS and the NCDC that actually results in damages to property and injury or death is a less likely event. According to SHELDUS, there have been three lightning events that have caused property damages or injuries over the last 25 years, establishing an annual probability of 12%.

### Estimated Potential Losses

Since 1990, there have been three significant lightning events that have resulted in property damages according to the SHELDUS database. The total property damages associated with lightning events totaled \$213,148. To estimate the potential losses of a lightning event on an annual basis, the total damages recorded for lightning events was divided by the total number of years of available major lightning strike data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of \$8,526. The tables on the next page provides an estimate of potential property losses for Union Parish.

*Table 2-42: Estimated Annual Property Losses in Union Parish from Lightning*

Estimated Annual Potential Losses from Thunderstorm Lightning for Union Parish			
Unincorporated Union Parish (67.9% of Population)	Bernice (7.4% of Population)	Downsville (0.6% of Population)	Farmerville (17% of Population)
\$5,790	\$634	\$53	\$1,448

*Table 2-42: Estimated Annual Property Losses in Union Parish from Lightning (Continued)*

Estimated Annual Potential Losses from Thunderstorm Lightning for Union Parish			
Junction City (2.6% of Population)	Lillie (0.5% of Population)	Marion (3.4% of Population)	Spearsville (0.6% of Population)
\$218	\$44	\$287	\$51

There have been no reported injuries or fatalities in Union Parish as a result of a lightning strikes over the 25-year record.

#### *Vulnerability*

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

## Tornadoes

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

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. *Table 2-43* 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 2-43: Comparison of the Enhanced Fujita (EF) Scale to the Fujita (F) Scale*

Wind Speed (mph)	Enhanced Fujita Scale					
	EF0	EF1	EF2	EF3	EF4	EF5
	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 2-44: 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 off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4/EF4	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5/EF5	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

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

- *Tornado Watch:* Issued to alert people to the possibility of a tornado developing in the area. A tornado has not been spotted but the conditions are favorable for tornadoes to occur.
- *Tornado Warning:* Issued when a tornado has been spotted or when radar identifies a distinctive “hook-shaped” area within a thunderstorm line.

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

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

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

#### *Location*

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

#### *Previous Occurrences / Extents*

SHELDUS reports a total of 22 tornadoes or waterspouts occurring within the boundaries of Union Parish between the years of 1990 - 2015. The tornadoes experienced in Union Parish have from ranged EF0 to EF1 on the EF scale, and ranged from F0 to F2 on the F scale. The worst case scenario Union Parish can expect in the future is an EF2 tornado.

The tornado that caused the most damage to property occurred on December 18, 2002. The F2 tornado was responsible for over \$1 million in damage. The tornado destroyed two mobile homes and severely damaged six wooden homes. The tornado responsible for the most injuries occurred on August 26, 1992. The tornado was responsible for 4 injuries. There have been no fatalities in Union Parish as a result of tornadoes.



*Table 2-45: Historical Tornadoes in Union Parish with Locations from 2010 - 2015*

Date	Impacts	Property Damage	Location	Magnitude
May 25, 2011	6.23 mile path with a width of 400 yards. Significantly damaged several homes.	\$526,223	BAYOU D'ARBONNE LAKE	EF1
December 21, 2013	0.76 mile path with a width of 75 yards. Damaged several trees and a barn.	\$1,016	DOWNSVILLE	EF1

The incorporated areas of Bernice, Farmerville, Junction City, Lillie, Marion, and Spearsville have not experienced a tornado event from 2010 to the present. Since 2011, the year in which the last update to this hazard mitigation plan was written, Union Parish has had two tornadoes touchdown in the parish. The following is a brief synopsis of these events:

#### *May 25, 2011 – EF1 Tornado in Bayou D’Arbonne Lake*

A tornado touched down west of Farmerville just south of Highway 2 snapping numerous trees in a neighborhood along Bayou D’Arbonne. The tornado continued east along Highway 2 snapping trees and powerlines. The tornado eventually crossed the highway near Selig Street and moved across Marion Highway near Old Carr Road snapping trees and powerlines in its path. The tornado significantly damaged several homes and the maximum winds were estimated at 85 – 90 mph.

#### *December 21, 2013 – EF1 Tornado in Downsville*

A tornado touched down just outside Downsville where it damaged several trees and a barn. The tornado had a path length of just under a mile with a path width of 75 yards. Winds were estimated to be near 90 mph during the height of the tornado.

#### *Frequency / Probability*

Tornadoes are a sporadic occurrence within Union Parish, with an annual chance of occurrence calculated at 88% based on the records for the past 25 years (1990 - 2015). The figure on the next page displays the density of tornado touch downs in Union Parish and neighboring parishes.

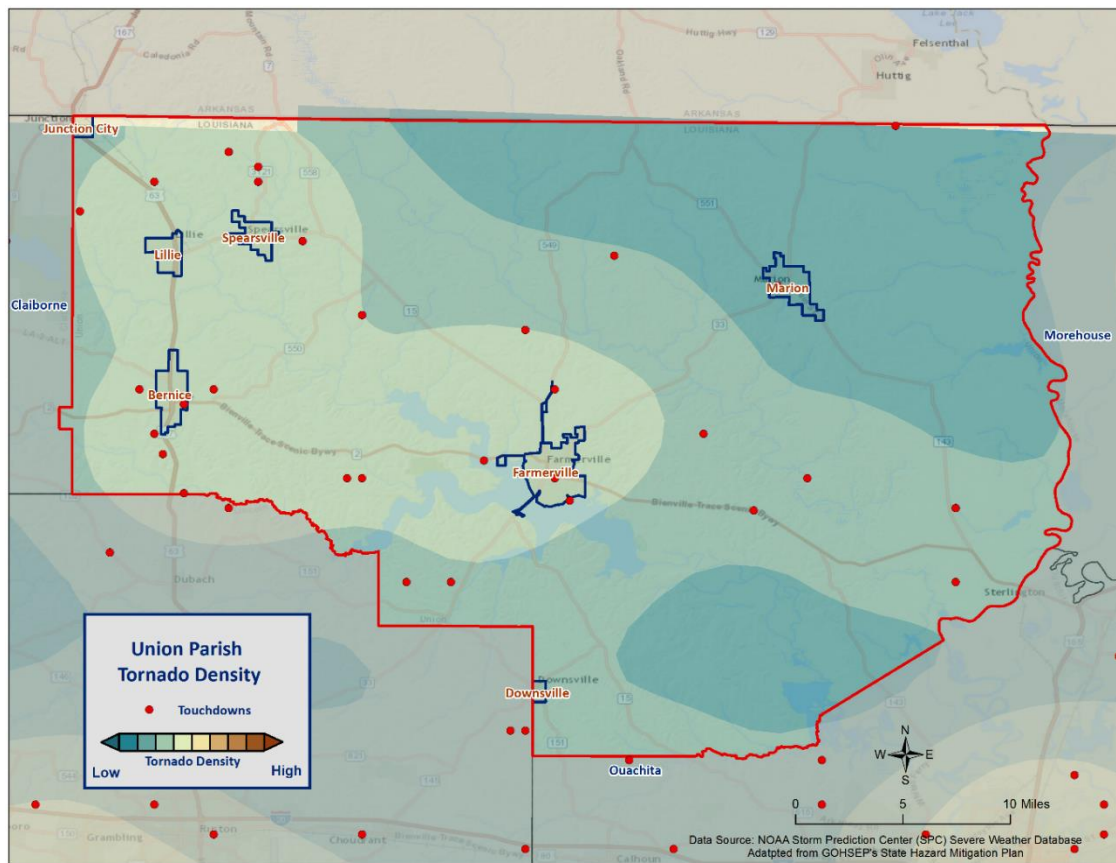


Figure 2-23: Location and Density of Tornadoes to Touch Down in Union Parish  
(Source: NOAA/SPC Severe Weather Database)

#### Estimated Potential Losses

According to the SHELATUS database, there have been 22 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is \$2,383,561, with an average cost of \$108,344 per tornado strike. When annualizing the total cost over the 25-year record, total annual losses based on tornadoes are estimated to be \$95,342. To provide an estimated annual estimated potential loss per jurisdiction, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. Based on the 2010 Census data, the following tables provides an annual estimate of potential losses for Union Parish.

Table 2-46: Estimated Annual Losses from Tornadoes in Union Parish

Estimated Annual Potential Losses from Tornadoes for Union Parish			
Unincorporated Union Parish (67.9% of Population)	Bernice (7.4% of Population)	Downsville (0.6% of Population)	Farmerville (17% of Population)
\$64,744	\$7,087	\$592	\$16,197

*Table 2-46: Estimated Annual Losses from Tornadoes in Union Parish (Continued)*

Estimated Annual Potential Losses from Tornadoes for Union Parish			
Junction City (2.6% of Population)	Lillie (0.5% of Population)	Marion (3.4% of Population)	Spearsville (0.6% of Population)
\$2,442	\$495	\$3,210	\$575

*Table 2-47* presents an analysis of building exposure that is susceptible to tornadoes by general occupancy type for Union Parish, along with the percentage of building stock that are mobile homes.

*Table 2-47: Building Exposure by General Occupancy Type for Tornadoes in Union 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 (%)
2,588,558	371,129	101,138	20,130	116,434	28,307	28,144	19.4%

The parish has suffered through a total of two days in which tornadoes or waterspouts have accounted for five injuries and no fatalities during this 25-year period (*Table 2-48*). The average number of injuries per event for Union Parish is 0.23 per tornado, with an average of 0.2 per year for the 25-year period.

*Table 2-48: Tornadoes in Union Parish by Magnitude that Caused Injuries or Deaths*

Date	Magnitude	Deaths	Injuries
August 26, 1992	F1	0	4
October 9, 2009	EF1	0	1

In assessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 19.4% of all housing in Union Parish consists of manufactured housing. Based on location data collected in a previous hazard mitigation project, there are seven known locations where manufactured housing is concentrated. Each of those seven locations have an overall number of manufactured houses ranging from three to 31. The location and density of manufactured houses can be seen in *Figure 2-24*.

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 Union Parish (*Table 2-49*). 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 2-49: Manufactured Home Distribution throughout Union Parish

Location	Number of Manufactured Home Parks	% of Manufactured Home Parks
Unincorporated Area	4	57.1%
Bernice	0	0%
Downsville	0	0%
Farmerville	3	42.9%
Junction City	0	0%
Lillie	0	0%
Marion	0	0%
Spearsville	0	0%

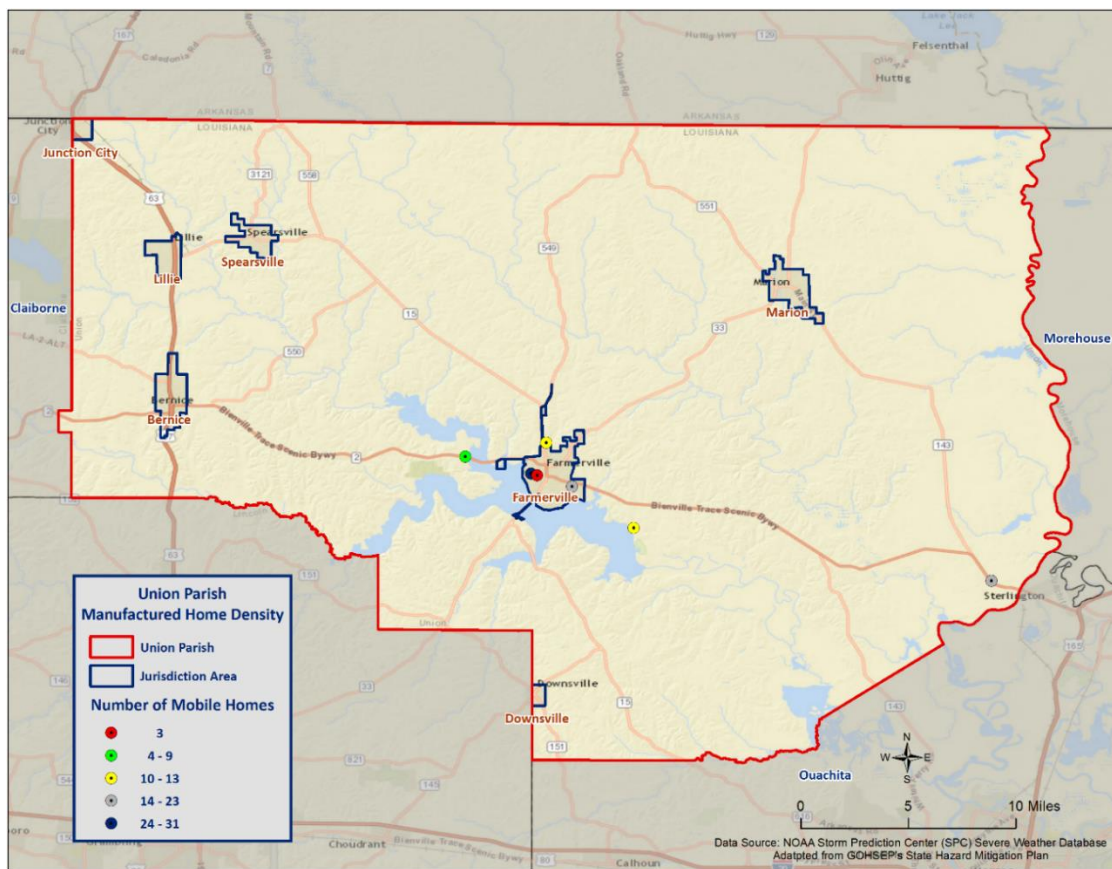


Figure 2-24: Location and Approximate Number of Units in Manufactured Housing Locations throughout Union Parish.

### 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, moving westward in the trade wind flow. The spinning of these thunderstorm clusters begins because of the formation of low pressure in a perturbation in the westerly motion of the storms associated with differential impacts of the Earth's rotation. The west-moving, counterclockwise-spinning collection of storms, now called a tropical disturbance, may then gather strength as it draws humid air toward its low-pressure center. This results in the formation of a tropical depression (defined when the maximum sustained surface wind speed is 38 mph or less), then a Tropical Cyclone (when the maximum sustained surface wind ranges from 39 mph to 73 mph), and finally a hurricane (when the maximum sustained surface wind speeds exceed 73 mph). On the next page, the table presents the Saffir-Simpson Hurricane Wind Scale, which categorizes tropical cyclones based on sustained winds.

Table 2-50: Saffir-Simpson Hurricane Wind Scale

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

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

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

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

#### *Location*

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

#### *Previous Occurrences / Extents*

The central Gulf of Mexico coastline is among the most hurricane-prone locations in the United States, and hurricanes can affect every part of the state. The SHELATUS database reports a total of two tropical cyclone events occurring within the boundaries of Union Parish between the years 2002 and 2014 (*Table 2-51*). The tropical cyclone events experienced in Union Parish include depressions, storms, and hurricanes. As a worst case scenario, Union Parish can expect to experience hurricanes at the Category 1 level in the future.

*Table 2-51: Historical Tropical Cyclone Events in Union Parish from 2002- 2015**(Source: SHEL DUS)*

Date	Name	Storm Type At Time of Impact
September 1, 2008	Gustav	Tropical Storm
September 13, 2008	Ike	Tropical Storm

#### Hurricane Gustav (2008)

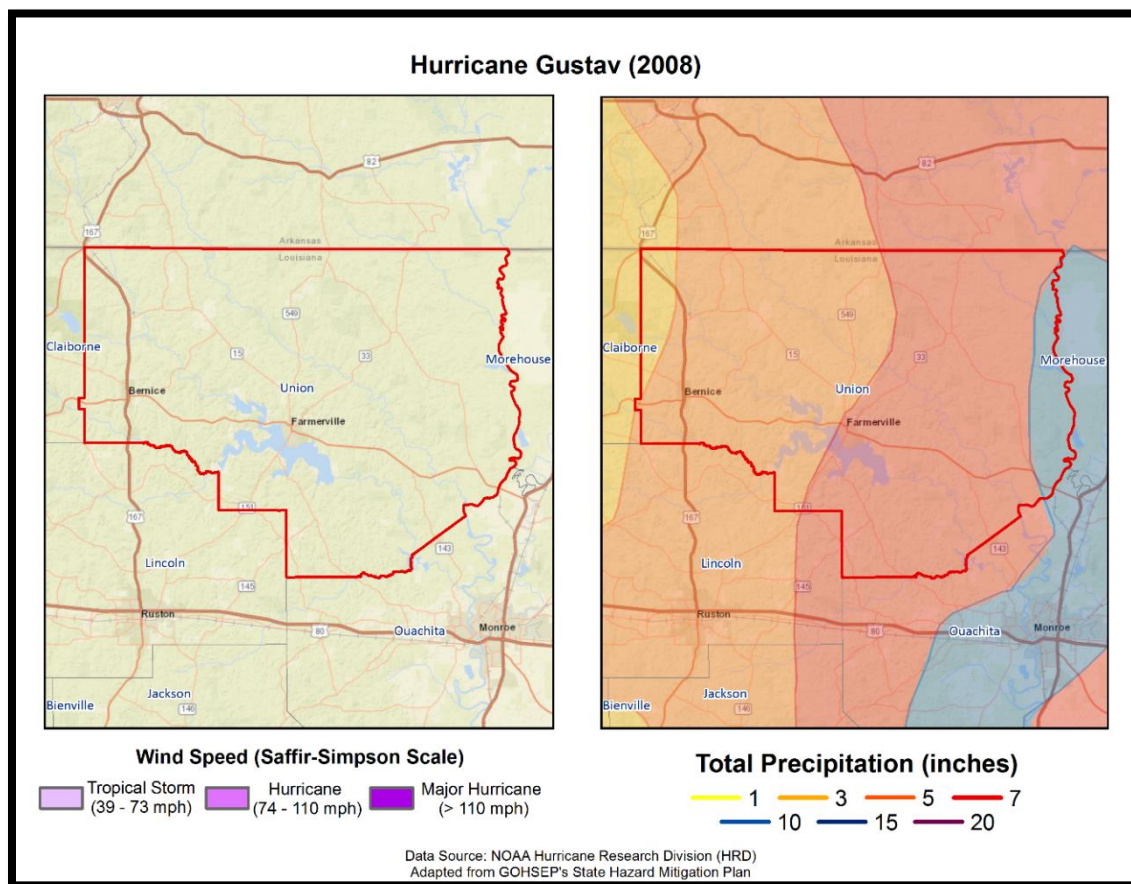
Hurricane Gustav entered the southeast Gulf of Mexico as a major Category 3 hurricane on August 31, 2008, after developing in the Caribbean Sea and moving across western Cuba. Gustav tracked northwestward across the Gulf toward Louisiana and made landfall as a Category 2 hurricane near Cocodrie, Louisiana,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

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

Gustav produced widespread wind damage across southeast Louisiana, especially in the area from Houma and Thibodaux through the greater Baton Rouge area. Hurricane force wind gusts occurred also across the inland areas, including the Baton Rouge area and surrounding parishes. A peak wind gust of 91 mph was recorded at the Baton Rouge (Ryan Field) Airport at 1:12 PM CST. This was only one mph less than the highest wind gust recorded during Hurricane Betsy in 1965. After the storm, the electric utility serving most of southeast Louisiana reported 75 to 100 percent of utility customers were without power, in areas ranging from Lafourche and Terrebonne Parishes northwest through the Baton Rouge area to central Louisiana and southwest Mississippi. Considerable damage occurred to many houses and structures as large tree limbs and trees were toppled by the hurricane force winds. Preliminary estimates from the American Red Cross indicated that around 13,000 single family dwellings were damaged by the hurricane in southeast Louisiana, and several thousand more apartments and mobile homes were also damaged. Early estimates from Louisiana Economic Development indicated that Gustav caused at least \$4.5 billion in property damage in Louisiana, including insured and uninsured losses.

The remnants of Hurricane Gustav resulted in scattered power outages across Union Parish. There are a few reports of trees downed across the parish as well including one which fell on top of a home at the corner of Laster Road and Highway 143 South. Another tree fell on top of car traveling down Railroad Street and Ward Chapel Road. No injuries or fatalities were reported.

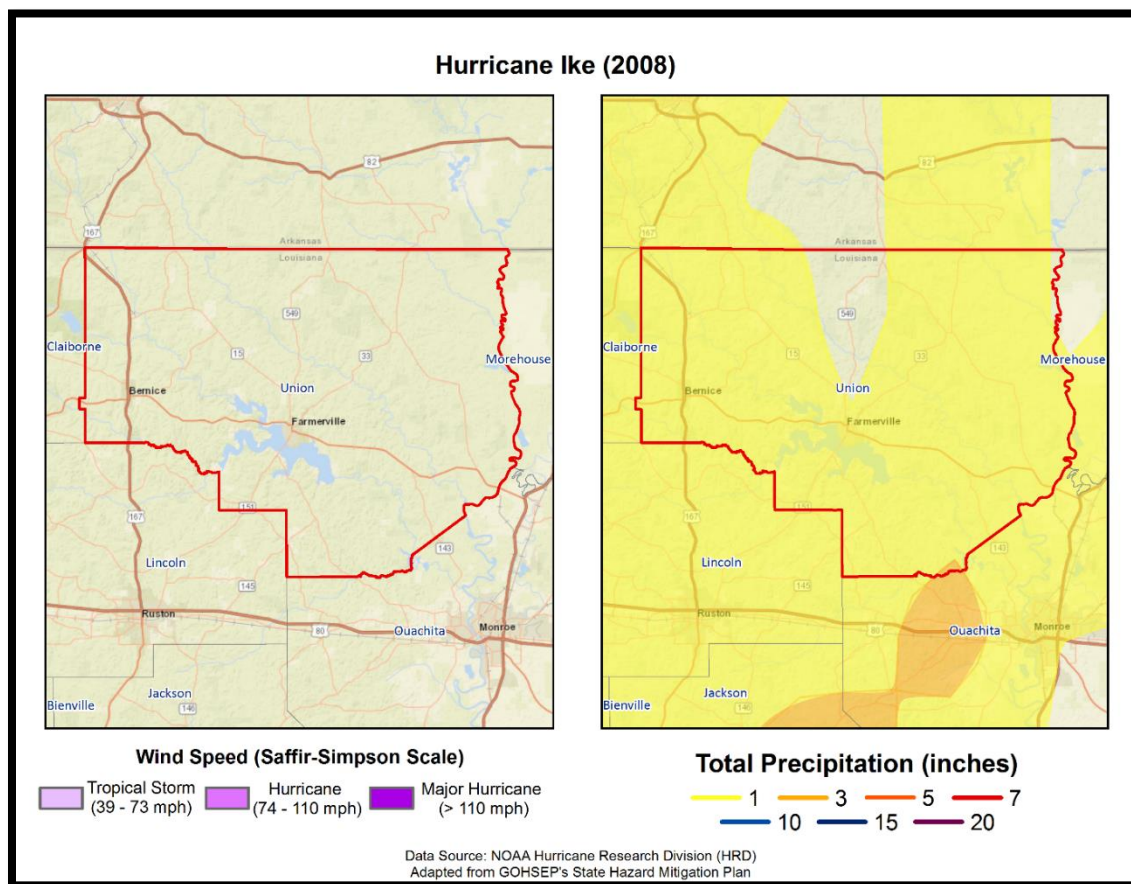




*Figure 2-25: Wind Speed and Precipitation Totals in Union Parish for Hurricane Gustav*

#### Hurricane Ike (2008)

Hurricane Ike caused wind damage, storm surge flooding, and tornadoes across southwest Louisiana. Ike made landfall near Galveston, TX early in the morning on September 13, 2008, as a strong category 2 hurricane. Sustained hurricane force winds were confined to extreme western Cameron Parish. The highest recorded winds in southwest Louisiana were experienced at Lake Charles Regional Airport, with sustained winds of 53 mph (46 kts) and gusts of 77 mph (67 kts). The lowest pressure reading occurred at Southland Field near Sulphur, LA, with a low of 994.6 millibars. Several tornadoes were reported across southwest Louisiana. The most significant one was near Mamou, where ten to fifteen homes were damaged, including one that lost its roof. Storm surge was a significant event. Water levels ranged from 14 feet in western Cameron Parish, to eight feet in St. Mary Parish. This resulted in widespread flooding of the same areas that flooded during Hurricane Rita in 2005. Most of Cameron Parish was under water. Over 3,000 homes were flooded. This extended north into Calcasieu Parish, where another 1,000 homes flooded in Lake Charles, Westlake, and Sulphur. In Vermilion Parish, at least 1,000 homes flooded in Pecan Island, Forked Island, Intracoastal City, and Henry. This extended east into Iberia Parish, where another 1,000 homes flooded south of Highway 14 and Highway 90. In St. Mary Parish, some of the worst flooding occurred in Franklin, where a man-made levee failed, flooding over 450 homes. Maximum storm total rainfall ranged from six to eight inches across Cameron, Calcasieu, and Beauregard Parishes. No fatalities were reported in southwest Louisiana. Total property damages, however, were high. Losses were estimated to be almost \$420 million across southwest Louisiana. Agricultural losses were over \$225 million.



*Figure 2-26: Wind Speed and Precipitation Totals in Union Parish for Hurricane Ike*

Tropical storm force winds in association with the remnants of Hurricane Ike resulted in scattered trees and power lines downed throughout Union Parish. Two people were freed from a fallen tree in Farmerville at the height of the storm. They were slightly injured with non life-threatening injuries. Another tree fell on top of the Mount Nebo Community Church on Highway 15 near Downs ville.

The figure on the next page displays the wind zones that affect Union Parish in relation to critical facilities throughout the parish.

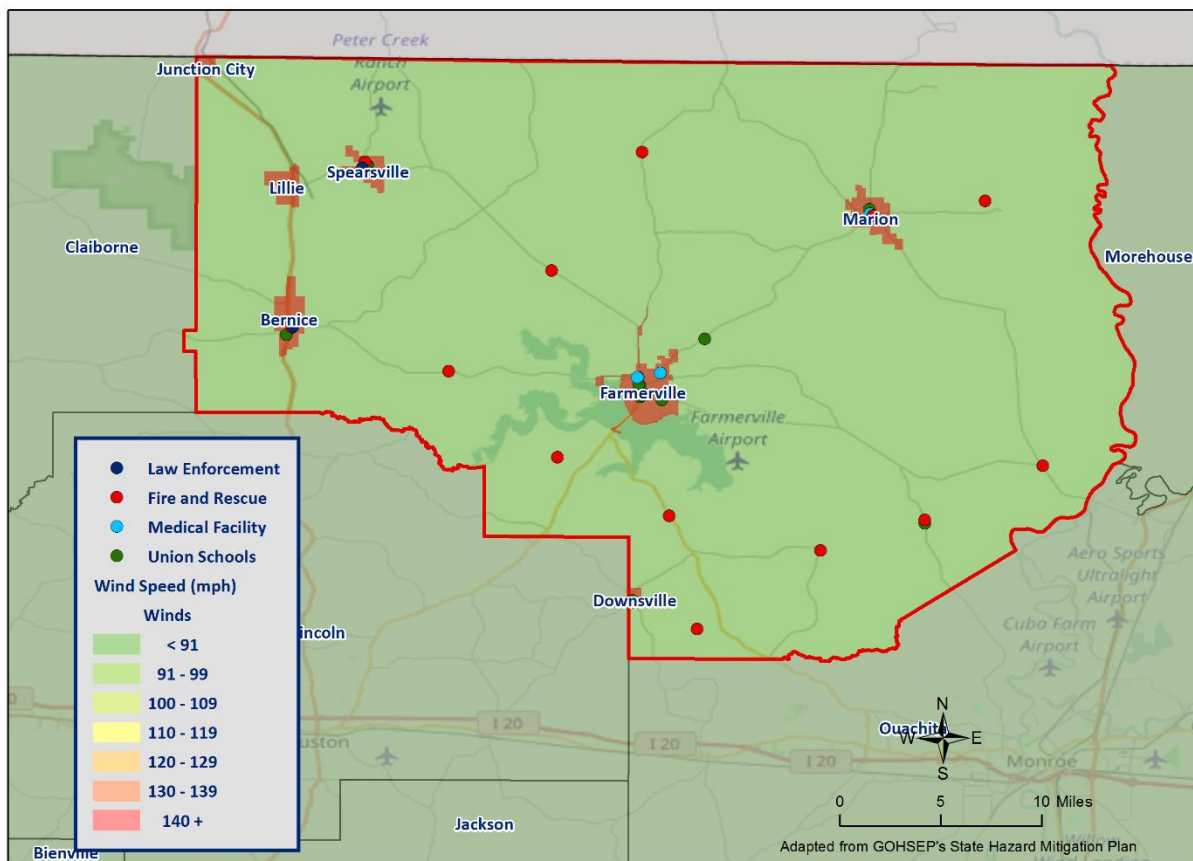


Figure 2-27: Winds Zones for Union Parish in Relation to Critical Facilities

#### Frequency / Probability

Tropical cyclones are large natural hazard events that regularly impact Union Parish. The annual chance of occurrence for a tropical cyclone is estimated at 8% for Union Parish and its municipalities, with two events occurring within 25 years. The tropical cyclone season for the Atlantic Basin is from June 1st through November 30<sup>th</sup>, with most of the major hurricanes (Saffir-Simpson Categories 3, 4, & 5) occurring between the months of August and October.

#### Estimated Potential Losses

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

*Table 2-52: Total Estimated Losses for a 100-Year Hurricane Event**(Source: Hazus 2.2)*

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
Union Parish (Unincorporated)	\$524,667
Bernice	\$57,435
Downsville	\$4,795
Farmerville	\$131,260
Junction City	\$19,791
Lillie	\$4,013
Marion	\$26,014
Spearsville	\$4,659
<b>Total</b>	<b>\$772,633</b>

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

*Table 2-53: Ratio of Total Losses to Total Estimated Value of Assets for each Jurisdiction in Union Parish**(Source: Hazus 2.2)*

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
Union Parish (Unincorporated)	\$524,667	\$2,173,245,000	0.0%
Bernice	\$57,435	\$264,887,000	0.0%
Downsville	\$4,795	\$21,003,000	0.0%
Farmerville	\$131,260	\$567,331,000	0.0%
Junction City	\$19,791	\$51,156,000	0.0%
Lillie	\$4,013	\$29,721,000	0.0%
Marion	\$26,014	\$125,041,000	0.0%
Spearsville	\$4,659	\$21,456,000	0.0%

Based on the Hazus 2.2 Hurricane Model, estimated total losses were less than 0.1% of the total estimated value of all assets for the unincorporated area of Union Parish and the incorporated areas of Bernice, Downsville, Farmerville, Junction City, Lillie, Marion, and Spearsville.

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



*Table 2-54: Estimated Losses in Unincorporated Union Parish for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Union Parish (Unincorporated)	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$274
Commercial	\$2,403
Government	\$186
Industrial	\$1,020
Religious / Non-Profit	\$1,265
Residential	\$519,365
Schools	\$154
<b>Total</b>	<b>\$524,667</b>

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

Bernice	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$30
Commercial	\$263
Government	\$20
Industrial	\$112
Religious / Non-Profit	\$138
Residential	\$56,854
Schools	\$17
<b>Total</b>	<b>\$57,435</b>

*Table 2-56: Estimated Losses in Downsville for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Downsville	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$3
Commercial	\$22
Government	\$2
Industrial	\$9
Religious / Non-Profit	\$12
Residential	\$4,746
Schools	\$1
<b>Total</b>	<b>\$4,795</b>

*Table 2-57: Estimated Losses in Farmerville for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

<b>Farmerville</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
Agricultural	\$68
Commercial	\$601
Government	\$47
Industrial	\$255
Religious / Non-Profit	\$317
Residential	\$129,934
Schools	\$39
<b>Total</b>	<b>\$131,260</b>

*Table 2-58: Estimated Losses in Junction City for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

<b>Junction City</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
Agricultural	\$10
Commercial	\$91
Government	\$7
Industrial	\$38
Religious / Non-Profit	\$48
Residential	\$19,591
Schools	\$6
<b>Total</b>	<b>\$19,791</b>

*Table 2-59: Estimated Losses in Lillie for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

<b>Lillie</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
Agricultural	\$2
Commercial	\$18
Government	\$1
Industrial	\$8
Religious / Non-Profit	\$10
Residential	\$3,972
Schools	\$1
<b>Total</b>	<b>\$4,013</b>

Table 2-60: Estimated Losses in Marion for a 100-Year Hurricane Event

(Source: Hazus 2.2)

Marion	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$14
Commercial	\$119
Government	\$9
Industrial	\$51
Religious / Non-Profit	\$63
Residential	\$25,751
Schools	\$8
<b>Total</b>	<b>\$26,014</b>

Table 2-61: Estimated Losses in Spearsville for a 100-Year Hurricane Event

(Source: Hazus 2.2)

Spearsville	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$2
Commercial	\$21
Government	\$2
Industrial	\$9
Religious / Non-Profit	\$11
Residential	\$4,612
Schools	\$1
<b>Total</b>	<b>\$4,659</b>

*Threat to People*

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

Table 2-62: Number of People Susceptible to a 100-Year Hurricane Event in Union Parish

(Source: Hazus 2.2)

Number of People Exposed to Hurricane Hazards			
Location	# in Community	# in Hazard Area	% in Hazard Area
Parish (Unincorporated)	15,429	15,429	100.0%
Bernice	1,689	1,689	100.0%
Downsville	141	141	100.0%
Farmerville	3,860	3,860	100.0%
Junction City	582	582	100.0%
Lillie	118	118	100.0%
Marion	765	765	100.0%
Spearsville	137	137	100.0%
<b>Total</b>	<b>22,721</b>	<b>22,721</b>	<b>100.0%</b>

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

*Table 2-63: Vulnerable Populations in Unincorporated Union Parish for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Union Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	15,429	100.0%
Persons Under 5 Years	1,001	6.5%
Persons Under 18 Years	2,549	16.5%
Persons 65 Years and Over	2,546	16.5%
White	10,649	69.0%
Minority	4,780	31.0%

*Table 2-64: Vulnerable Populations in Bernice for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Bernice		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	1,689	100.0%
Persons Under 5 Years	154	9.1%
Persons Under 18 Years	353	20.9%
Persons 65 Years and Over	239	14.2%
White	416	24.6%
Minority	1,273	75.4%

*Table 2-65: Vulnerable Populations in Downsview for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Downsville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	141	100.0%
Persons Under 5 Years	15	10.6%
Persons Under 18 Years	22	15.6%
Persons 65 Years and Over	17	12.1%
White	130	92.2%
Minority	11	7.8%



*Table 2-66: Vulnerable Populations in Farmerville for a 100-Year Hurricane Event*  
(Source: Hazus 2.2)

Farmerville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	3,860	100.0%
Persons Under 5 Years	307	8.0%
Persons Under 18 Years	727	18.8%
Persons 65 Years and Over	560	14.5%
White	1,121	29.0%
Minority	2,739	71.0%

*Table 2-67: Vulnerable Populations in Junction City for a 100-Year Hurricane Event*  
(Source: Hazus 2.2)

Junction City		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	20,410	100.0%
Persons Under 5 Years	1,551	7.6%
Persons Under 18 Years	3,674	18.0%
Persons 65 Years and Over	2,910	14.3%
White	18,332	89.8%
Minority	2,078	10.2%

*Table 2-68: Vulnerable Populations in Lillie for a 100-Year Hurricane Event*  
(Source: Hazus 2.2)

Lillie		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	118	100.0%
Persons Under 5 Years	5	4.2%
Persons Under 18 Years	15	12.7%
Persons 65 Years and Over	20	17.0%
White	68	57.6%
Minority	50	42.4%

*Table 2-69: Vulnerable Populations in Marion for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Marion		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	765	100.0%
Persons Under 5 Years	64	8.4%
Persons Under 18 Years	126	16.5%
Persons 65 Years and Over	128	16.7%
White	289	37.8%
Minority	476	62.2%

*Table 2-70: Vulnerable Populations in Spearsville for a 100-Year Hurricane Event  
(Source: Hazus 2.2)*

Spearsville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	137	100.0%
Persons Under 5 Years	7	5.1%
Persons Under 18 Years	23	16.8%
Persons 65 Years and Over	33	24.1%
White	123	89.8%
Minority	14	10.2%

#### *Vulnerability*

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

## Wildfires

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

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

According to the State of Louisiana Forestry Division, most forest fires in Louisiana are caused by intentional acts (arson) or carelessness and negligence committed by people, exacerbated by human confrontation with nature. The wildland–urban interface is the area in which development meets wildland vegetation, where both vegetation and the built environment provide fuel for fires. As development near wildland settings continues, more people and property are exposed to wildfire danger. [Figure 2-28](#) displays the areas of wildland-urban interaction in Union 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 2-71: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale  
(Source: Southern Wildfire Assessment Portal)

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

### Location

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

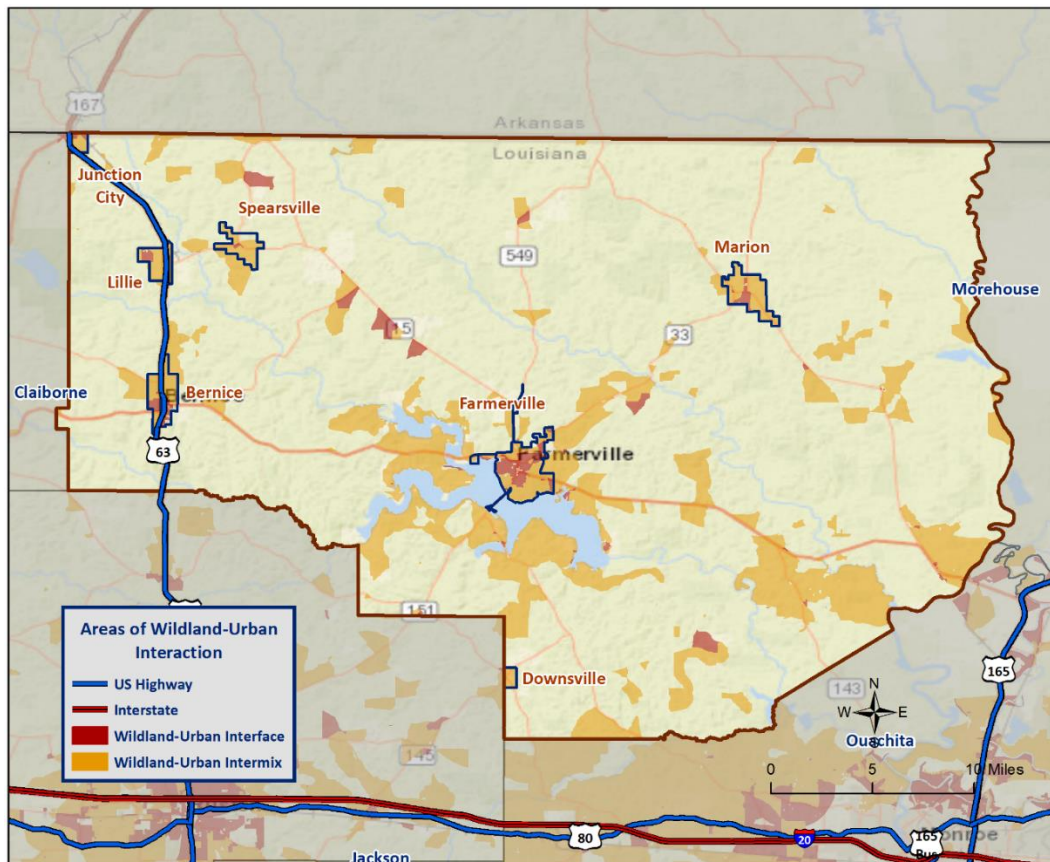


Figure 2-28: Wildland-Urban Interaction in Union Parish



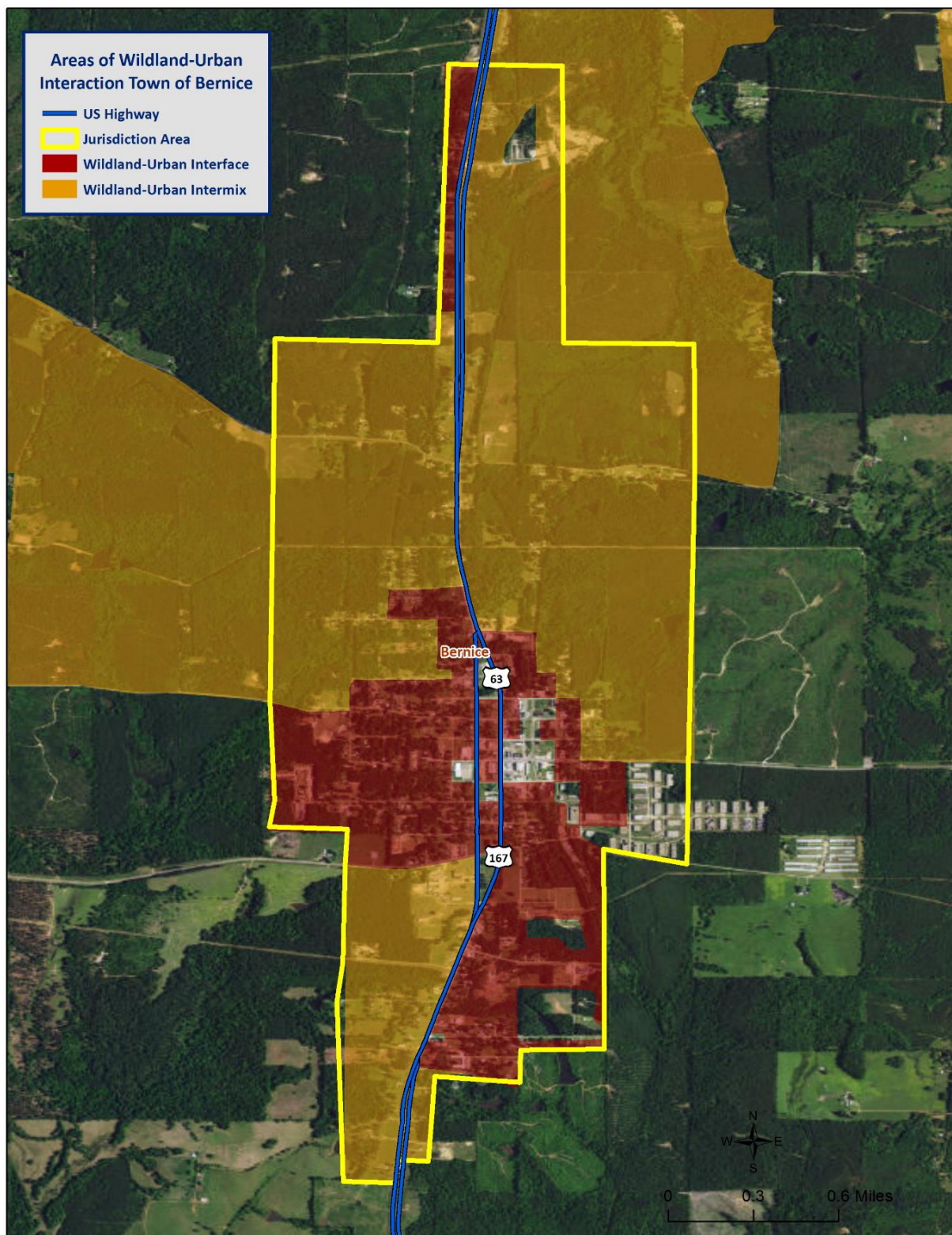


Figure 2-29: Wildland-Urban Interactions in the Town of Bernice



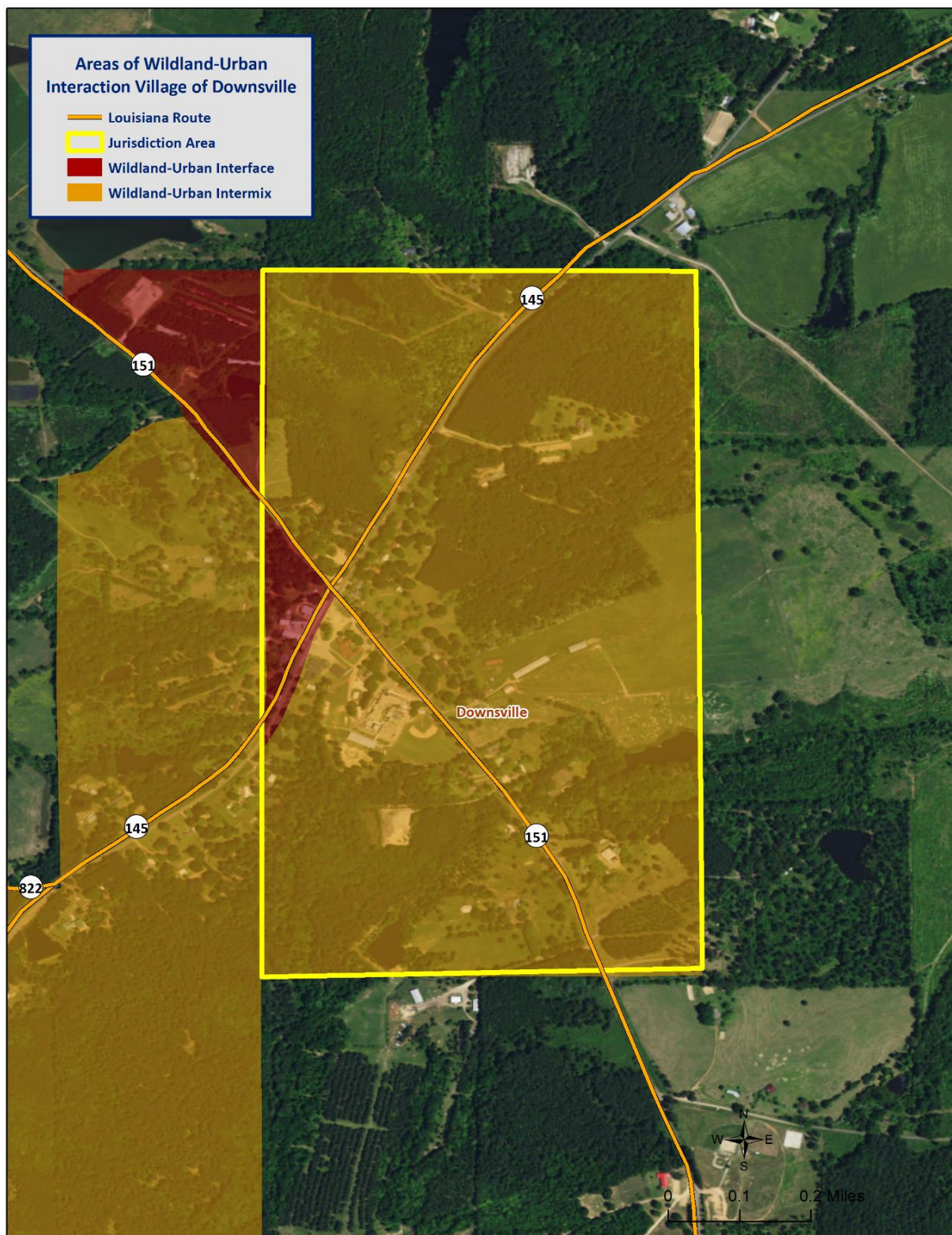


Figure 2-30: Wildland-Urban Interactions in the Village of Downsville



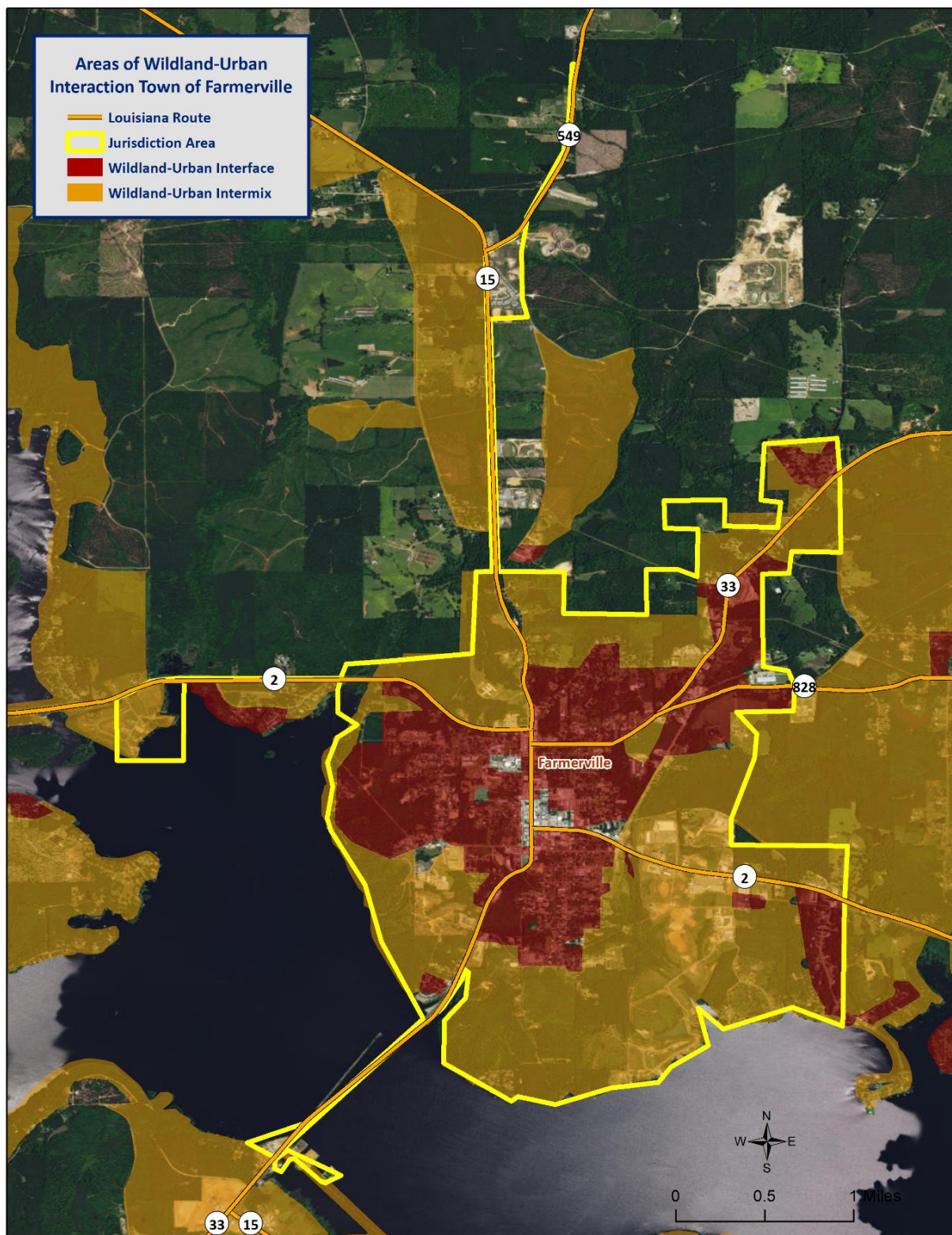


Figure 2-31: Wildland-Urban Interactions in the Town of Farmerville



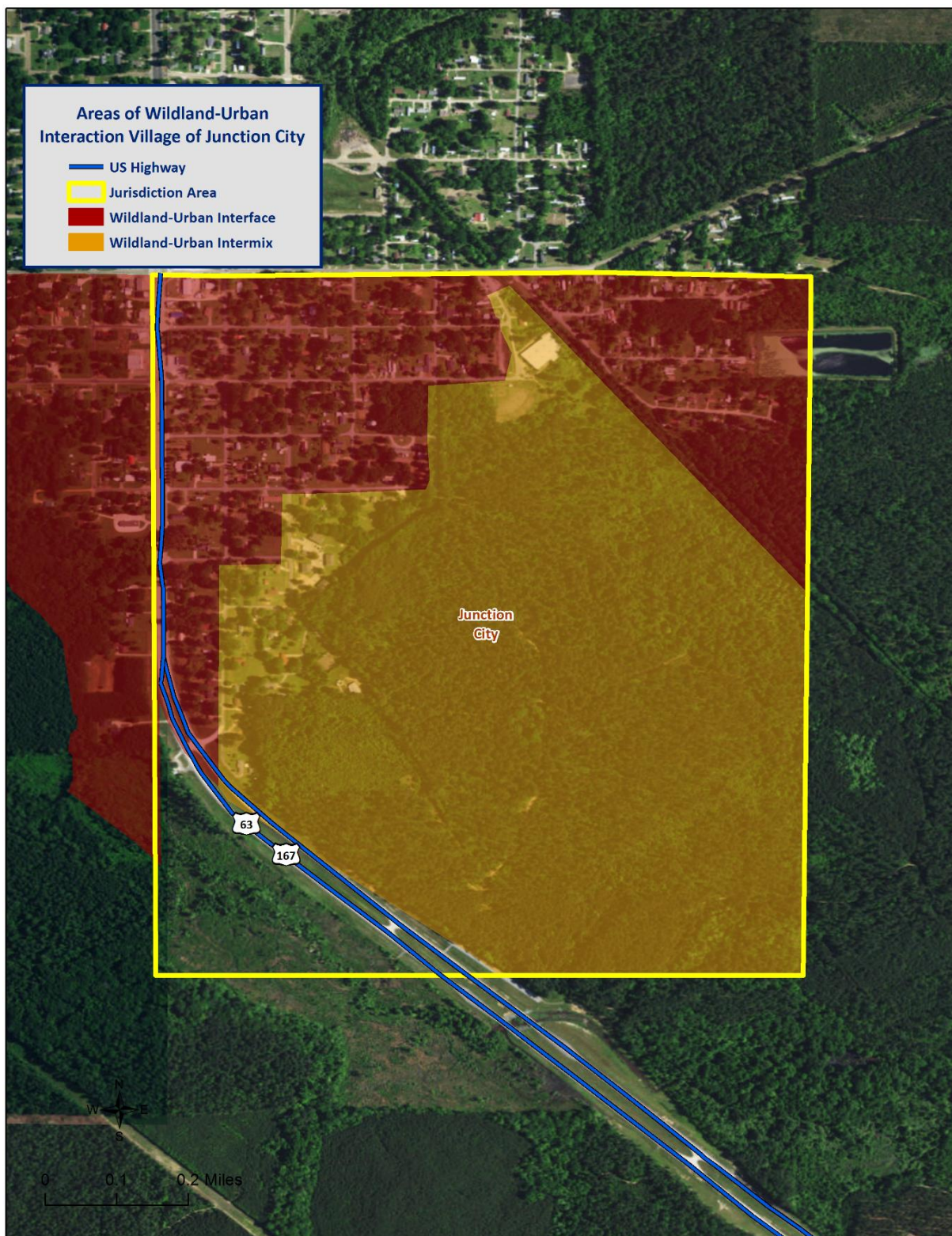


Figure 2-32: Wildland-Urban Interactions in the Village of Junction City



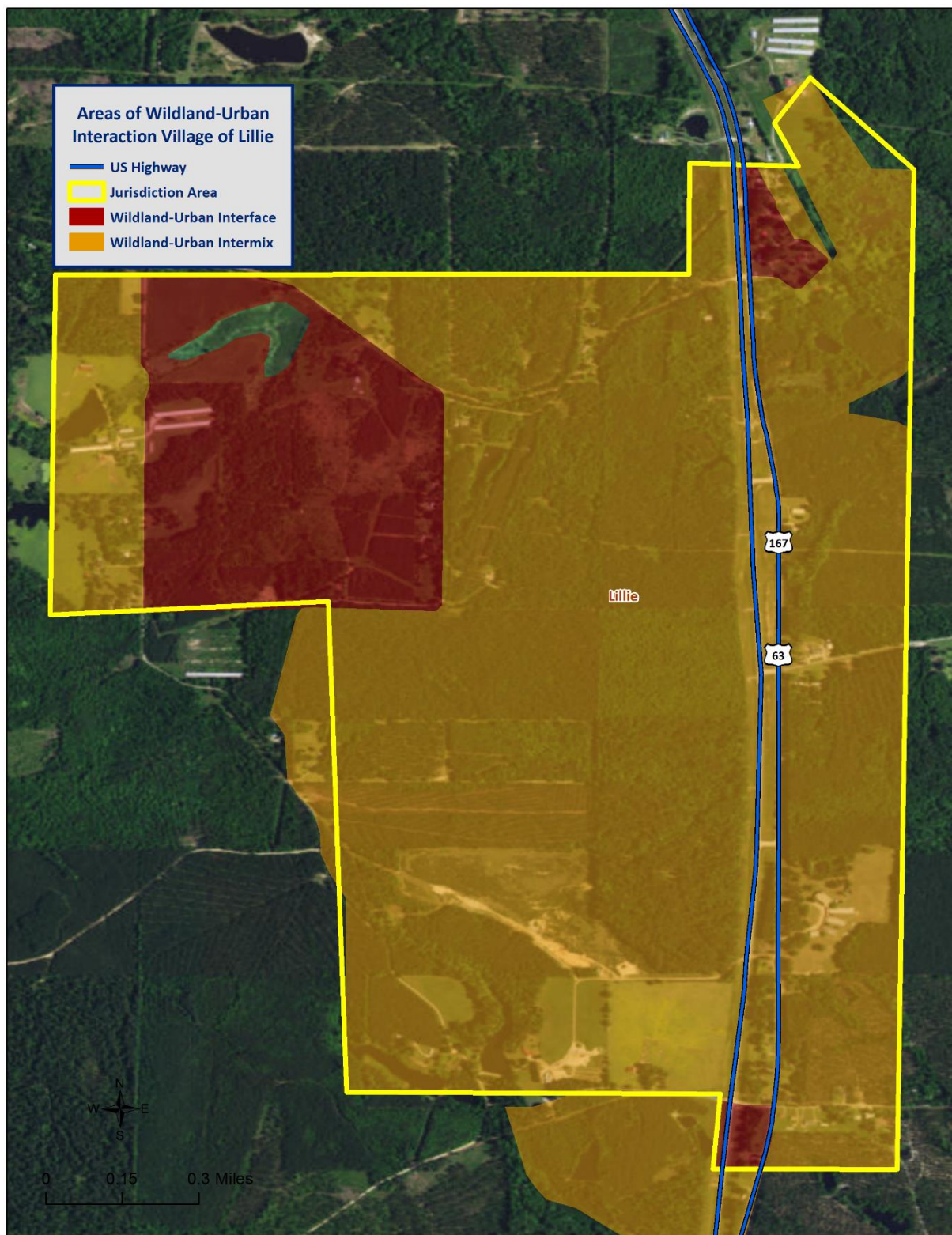


Figure 2-33: Wildland-Urban Interactions in the Village of Lillie



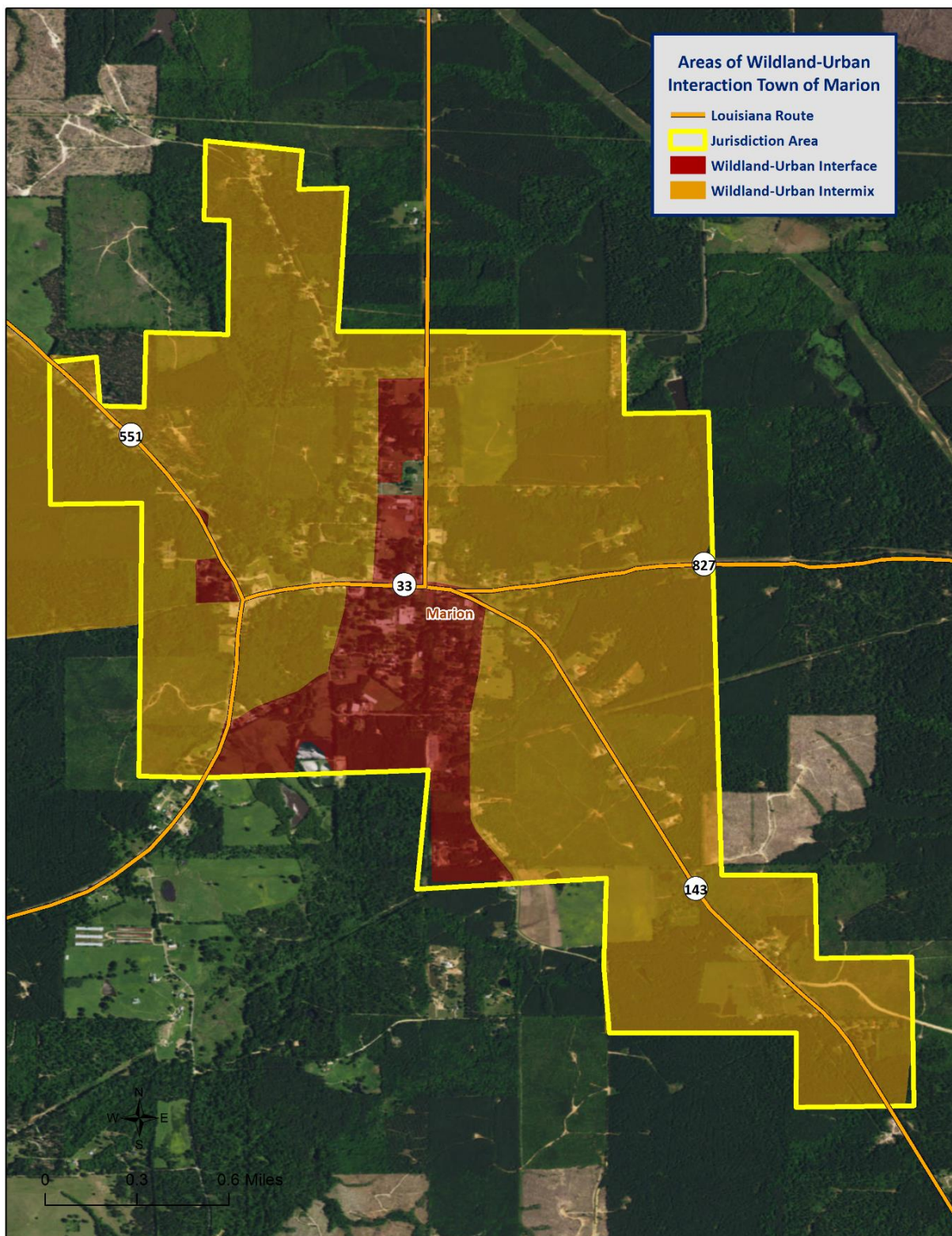


Figure 2-34: Wildland-Urban Interactions in the Town of Marion



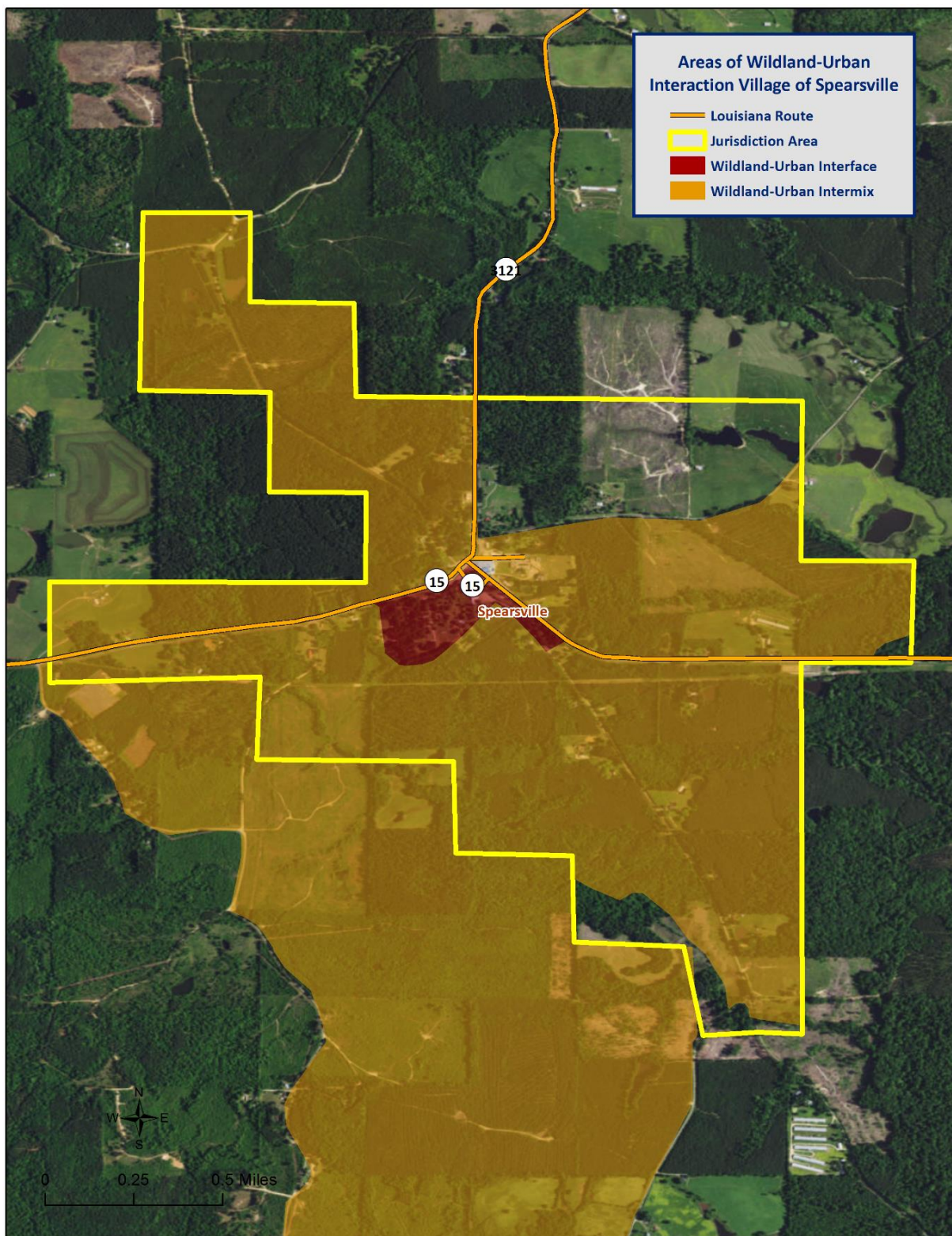


Figure 2-35: Wildland-Urban Interactions in the Village of Spearsville

### *Previous Occurrences / Extents*

There have been no reported wildfire events that have occurred within the boundaries of Union Parish between the years of 1990 and 2015. Since 2010, there have been no reported wildfire events in the unincorporated areas of Union Parish and the incorporated areas of Bernice, Downsville, Farmerville, Junction City, Lillie, Marion, and Spearsville.

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

*Table 2-72: Potential Wildfire Intensity Levels for Union Parish  
(Source: Southern Wildfire Assessment Portal)*

Potential Wildfire Intensity	
Union Parish (Unincorporated)	Highest Intensity Level 5
Bernice	Moderate Intensity Level 3
Downsville	High Intensity Level 4
Farmerville	Moderate to High Intensity Level 3.5
Junction City	High Intensity Level 4
Lillie	Moderate Intensity Level 3
Marion	High Intensity Level 4
Spearsville	Moderate Intensity Level 3

### *Frequency / Probability*

With no recorded events in 25 years, wildfire events within the boundaries of Union Parish have an annual chance of occurrence calculated at less than 1%.

### *Estimated Potential Losses*

There have been no wildfire events that have caused property damage, crop damage, injuries, or fatalities in Union Parish since 1990. 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 2-28* displays the areas of wildland-urban interaction in Union Parish.

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

*Table 2-73: Total Building Exposure by Wildland-Urban Interaction Areas  
(Source: Hazus 2.2)*

Jurisdiction	Estimated Total Building Exposure
Union Parish (Unincorporated)	\$1,717,717,000
Bernice	\$259,903,000
Downsville	\$26,512,000
Farmerville	\$559,957,000
Junction City	\$51,414,000
Lillie	\$29,979,000
Marion	\$125,810,000
Spearsville	\$21,456,000
<b>Total</b>	<b>\$2,792,748,000</b>

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

*Table 2-74: Estimated Exposure for Unincorporated Union Parish by Sector  
(Source: Hazus 2.2)*

Union Parish (Unincorporated)	Estimated Total Building Exposure by Sector
Agricultural	\$8,754,000
Commercial	\$69,736,000
Government	\$3,496,000
Industrial	\$38,274,000
Religious / Non-Profit	\$46,320,000
Residential	\$1,544,207,000
Schools	\$6,930,000
<b>Total</b>	<b>\$1,717,717,000</b>

*Table 2-75: Estimated Exposure for Bernice by Sector**(Source: Hazus 2.2)*

<b>Bernice</b>	<b>Estimated Total Building Exposure by Sector</b>
Agricultural	\$268,000
Commercial	\$63,674,000
Government	\$1,686,000
Industrial	\$11,675,000
Religious / Non-Profit	\$6,842,000
Residential	\$171,938,000
Schools	\$3,820,000
<b>Total</b>	<b>\$259,903,000</b>

*Table 2-76: Estimated Exposure for Downsville by Sector**(Source: Hazus 2.2)*

<b>Downsville</b>	<b>Estimated Total Building Exposure by Sector</b>
Agricultural	\$422,000
Commercial	\$0
Government	\$766,000
Industrial	\$6,900,000
Religious / Non-Profit	\$2,608,000
Residential	\$15,816,000
Schools	\$0
<b>Total</b>	<b>\$26,512,000</b>

*Table 2-77: Estimated Exposure for Farmerville by Sector**(Source: Hazus 2.2)*

<b>Farmerville</b>	<b>Estimated Total Building Exposure by Sector</b>
Agricultural	\$2,390,000
Commercial	\$179,735,000
Government	\$14,844,000
Industrial	\$6,195,000
Religious / Non-Profit	\$24,566,000
Residential	\$318,529,000
Schools	\$13,698,000
<b>Total</b>	<b>\$559,957,000</b>



*Table 2-78: Estimated Exposure for Junction City by Sector**(Source: Hazus 2.2)*

Junction City	Estimated Total Building Exposure by Sector
Agricultural	\$0
Commercial	\$0
Government	\$250,000
Industrial	\$0
Religious / Non-Profit	\$0
Residential	\$51,164,000
Schools	\$0
<b>Total</b>	<b>\$51,414,000</b>

*Table 2-79: Estimated Exposure for Lillie by Sector**(Source: Hazus 2.2)*

Lillie	Estimated Total Building Exposure by Sector
Agricultural	\$0
Commercial	\$592,000
Government	\$0
Industrial	\$15,525,000
Religious / Non-Profit	\$1,304,000
Residential	\$12,558,000
Schools	\$0
<b>Total</b>	<b>\$29,979,000</b>

*Table 2-80: Estimated Exposure for Marion by Sector**(Source: Hazus 2.2)*

Marion	Estimated Total Building Exposure by Sector
Agricultural	\$134,000
Commercial	\$21,645,000
Government	\$1,420,000
Industrial	\$3,937,000
Religious / Non-Profit	\$1,666,000
Residential	\$97,008,000
Schools	\$0
<b>Total</b>	<b>\$125,810,000</b>

*Table 2-81: Estimated Exposure for Spearsville by Sector*  
*(Source: Hazus 2.2)*

Spearsville	Estimated Total Building Exposure by Sector
Agricultural	\$0
Commercial	\$0
Government	\$0
Industrial	\$0
Religious / Non-Profit	\$6,670,000
Residential	\$14,786,000
Schools	\$0
<b>Total</b>	<b>\$21,456,000</b>

#### *Threat to People*

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

*Table 2-82: 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
Union (Unincorporated)	15,429	12,648	82.0%
Bernice	1,689	1,456	86.2%
Downsville	141	124	87.9%
Farmerville	3,860	3,621	93.8%
Junction City	582	501	86.1%
Lillie	118	101	85.6%
Marion	765	742	97.0%
Spearsville	137	130	94.9%
<b>Total</b>	<b>22,721</b>	<b>19,323</b>	<b>85.0%</b>

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

*Table 2-83: Population in Unincorporated Union Parish Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Union Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	12,648	82.0%
Persons Under 5 Years	821	6.5%
Persons Under 18 Years	2,089	16.5%
Persons 65 Years and Over	2,087	16.5%
White	8,730	69.0%
Minority	3,918	31.0%

*Table 2-84: Population in Bernice Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Bernice		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	1,456	86.2%
Persons Under 5 Years	133	9.1%
Persons Under 18 Years	304	20.9%
Persons 65 Years and Over	206	14.2%
White	359	24.6%
Minority	1,097	75.4%

*Table 2-85: Population in Downsview Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Downsview		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	124	87.9%
Persons Under 5 Years	13	10.6%
Persons Under 18 Years	19	15.6%
Persons 65 Years and Over	15	12.1%
White	114	92.2%
Minority	10	7.8%

*Table 2-86: Population in Farmerville Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Farmerville		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	3,621	93.8%
Persons Under 5 Years	288	8.0%
Persons Under 18 Years	682	18.8%
Persons 65 Years and Over	525	14.5%
White	1,052	29.0%
Minority	2,569	71.0%

*Table 2-87: Population in Junction City Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Junction City		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	501	86.1%
Persons Under 5 Years	33	6.5%
Persons Under 18 Years	93	18.6%
Persons 65 Years and Over	98	19.6%
White	245	49.0%
Minority	256	51.0%

*Table 2-88: Population in Lillie Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Lillie		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	101	85.6%
Persons Under 5 Years	4	4.2%
Persons Under 18 Years	13	12.7%
Persons 65 Years and Over	17	17.0%
White	58	57.6%
Minority	43	42.4%



*Table 2-89: Population in Marion Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Marion		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	742	97.0%
Persons Under 5 Years	62	8.4%
Persons Under 18 Years	122	16.5%
Persons 65 Years and Over	124	16.7%
White	280	37.8%
Minority	462	62.2%

*Table 2-90: Population in Spearsville Located within a Wildland-Urban Interaction Area  
(Source: 2010 U.S. Census Data)*

Spearsville		
Category	Total Numbers	Percentage of People in Wildland-Urban Interaction Area
Number in Hazard Area	130	94.9%
Persons Under 5 Years	7	5.1%
Persons Under 18 Years	22	16.8%
Persons 65 Years and Over	31	24.1%
White	117	89.8%
Minority	13	10.2%

#### *Vulnerability*

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

### Winter Storms

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

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

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

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

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

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

*Table 2-91: Sperry-Piltz Ice Accumulation Index*

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

*Location*

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

*Previous Occurrences / Extents*

According to SHEL DUS, there have been 14 reported winter storm events that have occurred within the boundaries of Union Parish between the years of 1990 and 2015. The table on the next page provides a brief synopsis of each event. Based on historic data, Union Parish can expect an ice damage index of 2 on the Sperry-Piltz Ice Accumulation Index.

*Table 2-92: Previous Occurrences for Winter Storm Events from 2010 - 2015*

Date	Synopsis	Property Damage	Crop Damage
February 11, 2010	Snow began accumulating during the morning hours of February 11 <sup>th</sup> . Snowfall totals across the parish ranged from 1 to 3 inches with 3 inches measured in Farmerville.	\$0	\$0
January 9, 2011	A significant winter storm affected the parish with rain, sleet, and snow (wintery mix) impacting the entire parish planning area.	\$0	\$0
February 3, 2011	A cold arctic air mass impacted the region bringing mostly freezing rain to Union Parish. Approximately 0.20 inches of ice accumulated in the parish due to the event.	\$0	\$0
January 14, 2013	A mixture of sleet and freezing rain fell throughout the parish. Bridges and overpasses became slick and some minor power outages reported.	\$0	\$0
January 24, 2013	A period of freezing rain and sleet occurred throughout the parish. Less than a quarter of an inch of ice accumulated.	\$0	\$0
February 7, 2014	Approximately one tenth of an inch of ice accumulated in the parish.	\$0	\$0
February 11, 2014	Ice accumulations of approximately one quarter of inch occurred in Union Parish resulting in downed trees and power lines.	\$0	\$0
January 11, 2015	Ice accumulations near one tenth of an inch occurred in Union Parish due to an arctic air mass.	\$0	\$0
February 23, 2015	A mixture of freezing rain and sleet fell as the temperatures began to fall resulting in freezing rain and sleet accumulations of less than one tenth of an inch.	\$0	\$0
March 4, 2015	Freezing rain, sleet, and snow occurred in the parish. Approximately one half to one inch of snow and one tenth of an inch of ice accumulated.	\$0	\$0

Based on previous winter storm events, the worst-case scenario for the unincorporated area of Union Parish and the incorporated areas of Union Parish of Vinton is approximately two to three inches of snow accumulation and approximately one tenth to one half inch of ice accumulation.

#### *Frequency / Probability*

With 14 recorded events in 25 years, winter storm events within the boundaries of Union Parish have an annual chance of occurrence calculated at 56% based on the SHELDUS dataset.

#### *Estimated Potential Losses*

Since 1990, there have been 14 reported winter weather events that have resulted in property and/or crop damages according to the SHELDUS database. The total property damages associated with these storms have totaled \$22,050,456. To estimate the potential losses of a winter weather event on an annual basis, the total damage recorded for winter weather events was divided by the total number of years of available winter weather data in SHELDUS (1990 – 2015). This provides an annual estimated potential loss of \$882,018. To



assess potential losses to the participating jurisdictions, the 2010 Census population was used to assign the estimated potential losses proportionally across the jurisdictions. The following tables provides an estimate of potential property losses for Union Parish based on the 2010 Census data:

*Table 2-93: Estimated Annual Losses for Winter Weather Events in Union Parish*

Estimated Annual Potential Losses from Winter Weather for Union Parish			
Unincorporated Union Parish (67.9% of Population)	Bernice (7.4% of Population)	Downsville (0.6% of Population)	Farmerville (17% of Population)
\$598,946	\$65,566	\$5,474	\$149,843

*Table 2-93: Estimated Annual Losses for Winter Weather Events in Union Parish (Continued)*

Estimated Annual Potential Losses from Winter Weather for Union Parish			
Junction City (2.6% of Population)	Lillie (0.5% of Population)	Marion (3.4% of Population)	Spearsville (0.6% of Population)
\$22,593	\$4,581	\$29,697	\$5,318

From 1990 to 2015, there have been no injuries or fatalities in Union Parish due to winter weather.

#### *Vulnerability*

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

### Dam Failure

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

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

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

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

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

### Location

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

*Previous Occurrences / Extents*

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

*Frequency / Probability*

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

### Levee Failure

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

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

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

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

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

### Location

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

### Previous Occurrences / Extents

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

### Frequency / Probability

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



### 3. Capability Assessment

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

#### Policies, Plans, and Programs

Union Parish capabilities are unique to the parish, including planning, regulatory, administrative, technical, financial, and education and outreach resources. There are a number of mitigation-specific acts, plans, executive orders, and policies that lay out specific goals, objectives, and policy statements which already support or could support pre- and post-disaster hazard mitigation. Many of the ongoing plans and policies hold significant promise for hazard mitigation. They take an integrated and strategic look holistically at hazard mitigation in Union 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 Union Parish and its jurisdictions are shown in the table on the following page.

Table 3-1: Union Parish Planning and Regulatory Capabilities

Planning and Regulatory									
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.									
	Union Parish	Bernice	Downsville	Farmerville	Junction City	Lillie	Marion	Spearsville	
Plans	Yes / No								
Comprehensive / Master Plan	No	No	No	No	No	No	No	No	
Capital Improvements Plan	No	No	No	No	No	No	No	No	
Economic Development Plan	No	No	No	No	No	No	No	No	
Local Emergency Operations Plan	No	No	No	No	No	No	No	No	
Continuity of Operations Plan	No	No	No	No	No	No	No	No	
Transportation Plan	No	No	No	No	No	No	No	No	
Stormwater Management Plan	No	No	No	No	No	No	No	No	
Community Wildfire Protection Plan	No	No	No	No	No	No	No	No	
Other plans (redevelopment, recovery, coastal zone management)	No	No	No	No	No	No	No	No	
Building Code, Permitting and Inspections	Yes / No								
Building Code	Yes	Yes	No	Yes	No	No	No	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No		No	No	No	No	No	No	
Fire Department ISO/PIAL rating	No	No	No	No	No	No	4	7	
Site plan review requirements	No	No	No	No	No	No	No	No	
Land Use Planning and Ordinances	Yes / No								
Zoning Ordinance	Yes	Yes	No	Yes	No	No	No	No	
Subdivision Ordinance	Yes	No	No	Yes	No	No	No	No	
Floodplain Ordinance	Yes	No	No	Yes	No	No	Yes	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	No	No	No	No	No	No	No	
Flood Insurance Rate Maps	Yes	Yes	No	Yes	No	No	No	No	
Acquisition of land for open space and public recreation uses	No	No	No	No	No	No	No	No	
Other	No	No	No	No	No	No	No	No	

### Building Codes, Permitting, Land Use Planning and Ordinances

The Union Parish Police Jury provides oversight for building permits and codes, land use planning, and all parish ordinances where applicable.

As of the 2017 update, Union Parish and its jurisdictions ensure that all adopted building codes are enforced and in compliance relating to the construction of any structure within the boundaries of the parish. Building permits are required prior to beginning any type of construction or renovation projects, installation of electrical wiring, plumbing or gas piping, moving manufactured/modular or portable buildings, and reroofing or demolitions.

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

The Union Parish Police Jury meets regularly to consider any proposed ordinance changes, and to take final actions on proposed changes.

While local capabilities for mitigation can vary from community to community, Union Parish as a whole has a system in place to coordinate and share these capabilities through Union 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, Union Parish has administrative and technical capabilities in place that may be utilized in reducing hazard impacts or implementing hazard mitigation activities. Such capabilities include staff, skillset, and tools available in the community that may be accessed to implement mitigation activities and to effectively coordinate resources. The ability to access and coordinate these resources is also important. The table below shows examples of resources in place in Union Parish and its jurisdictions.

*Table 3-2: Union Parish Administrative and Technical Capabilities*

Administration and Technical									
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.									
	Union Parish	Bernice	Downsville	Farmerville	Junction City	Lillie	Marion	Spearsville	Comments
<b>Administration</b>	Yes / No								
Planning Commission	No	No	No	No	No	No	No	No	
Mitigation Planning Committee	No	No	No	No	No	No	No	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	Yes	No	No	No	No	Yes	No	
Mutual Aid Agreements	No	No	No	No	No	No	No	No	
<b>Staff</b>	Yes / No; FT/PT; % Hazard Mitigation								
Chief Building Official	Yes	Yes	No	Yes	No	No	Yes	No	
Floodplain Administrator	Yes	No	No	Yes	No	No	No	No	
Emergency Manager	Yes	No	No	Yes	No	No	Yes	No	
Community Planner	No	No	No	No	No	No	Yes	No	
Civil Engineer	Yes	No	No	Yes	No	No	No	No	
GIS Coordinator	No	No	No	No	No	No	No	No	
Grant Writer	Yes	No	No	Yes	No	No	No	No	
Other	No	No	No	No	No	No	No	No	
<b>Technical</b>	Yes / No								
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	No	No	No	No	No	No	No	
Hazard Data & Information	No	No	No	No	No	No	No	No	
Grant Writing	Yes	No	No	Yes	No	No	No	No	
Hazus Analysis	No	No	No	No	No	No	No	No	
Other	No	No	No	No	No	No	No	No	

Financial capabilities are the resources that Union 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 Union Parish and its jurisdictions:

*Table 3-3: Union Parish Financial Capabilities*

Financial									
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.									
	Union Parish	Bernice	Downsville	Farmerville	Junction City	Lillie	Marion	Spearsville	Comments
<b>Funding Resource</b>	Yes / No								
Capital Improvements project funding	No	No	No	No	No	No	No	No	
Authority to levy taxes for specific purposes	Yes	No	No	Yes	No	No	Yes	No	
Fees for water, sewer, gas, or electric services	No	Yes	No	No	Yes	No	Yes	No	
Impact fees for new development	No	No	No	No	No	No	No	No	
Stormwater Utility Fee	No	No	No	No	No	No	No	No	
Community Development Block Grant (CDBG)	Yes	Yes	No	Yes	No	No	Yes	No	
Other Funding Programs	No	No	No	No	No	No	CWEF & LGAP	No	

## Education and Outreach

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

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

*Table 3-4: Union Parish Education and Outreach Capabilities*

Education and Outreach									
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.									
	Union Parish	Berwick	Downsville	Farmerville	Junction City	Lillie	Marion	Sparksville	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	No	No	No	No	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	No	No	No	Yes	No	No	No	
Natural Disaster or safety related school program	No	No	No	No	Yes	No	No	No	
Storm Ready certification	No	No	No	No	No	No	No	No	
Firewise Communities certification	No	No	No	No	No	No	No	No	
Public/Private partnership initiatives addressing disaster-related issues	No	No	No	No	No	No	No	No	
Other	No	No	No	No	No	No	No	No	

In some cases, the jurisdictions rely on Union Parish OHSEP and/or Union 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, Union Parish and its jurisdiction remains committed to expanding and improving on the existing capabilities within the parish. Each participating jurisdiction will work toward increased participation in funding opportunities and available mitigation programs. Should funding become available, the hiring of additional personnel to dedicate to hazard mitigation initiatives and programs, as well as increasing ordinances within the jurisdictions, will help to enhance and expand risk reduction measures within the parish.



With the sharing of these capabilities, the following municipalities and entities are recognized by the Parish of Union 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:

- Union Parish
- Town of Bernice
- Village of Downsville
- Town of Farmerville
- Village of Junction City
- Village of Lillie
- Town of Marion
- Village of Spearsville

### Flood Insurance and Community Rating System

Union Parish is not a participant in the Community Rating System (CRS), nor are any of its jurisdictions. Obtaining the CRS rating for the parish and participating jurisdictions is recognized as an eventual goal by the Hazard Mitigation Steering Committee. Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements.

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

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

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

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.			

During the last update, 38 Louisiana communities participated, including Lake Charles (class 8) and Calcasieu Parish (class 8). Mandeville, Shreveport, and Jefferson and East Baton Rouge Parishes had the best classifications in the state, class 7. As of the 2017 update, Jefferson, East Baton Rouge, and Terrebonne Parishes all lead the state with best classifications, class 6.

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

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

As of May 2012, 310 communities in the State of Louisiana participate in the Federal Emergency Management Agency's NFIP. Of these communities, 41 (or 13%) participate in the Community Rating System (CRS). Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 27 participate in

the CRS. The remaining 23 communities present an outreach opportunity for encouraging participation in the CRS.

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

First, the parish 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<sup>1</sup>, 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.

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<sup>1</sup> <https://www.fema.gov/national-flood-insurance-program-community-rating-system>

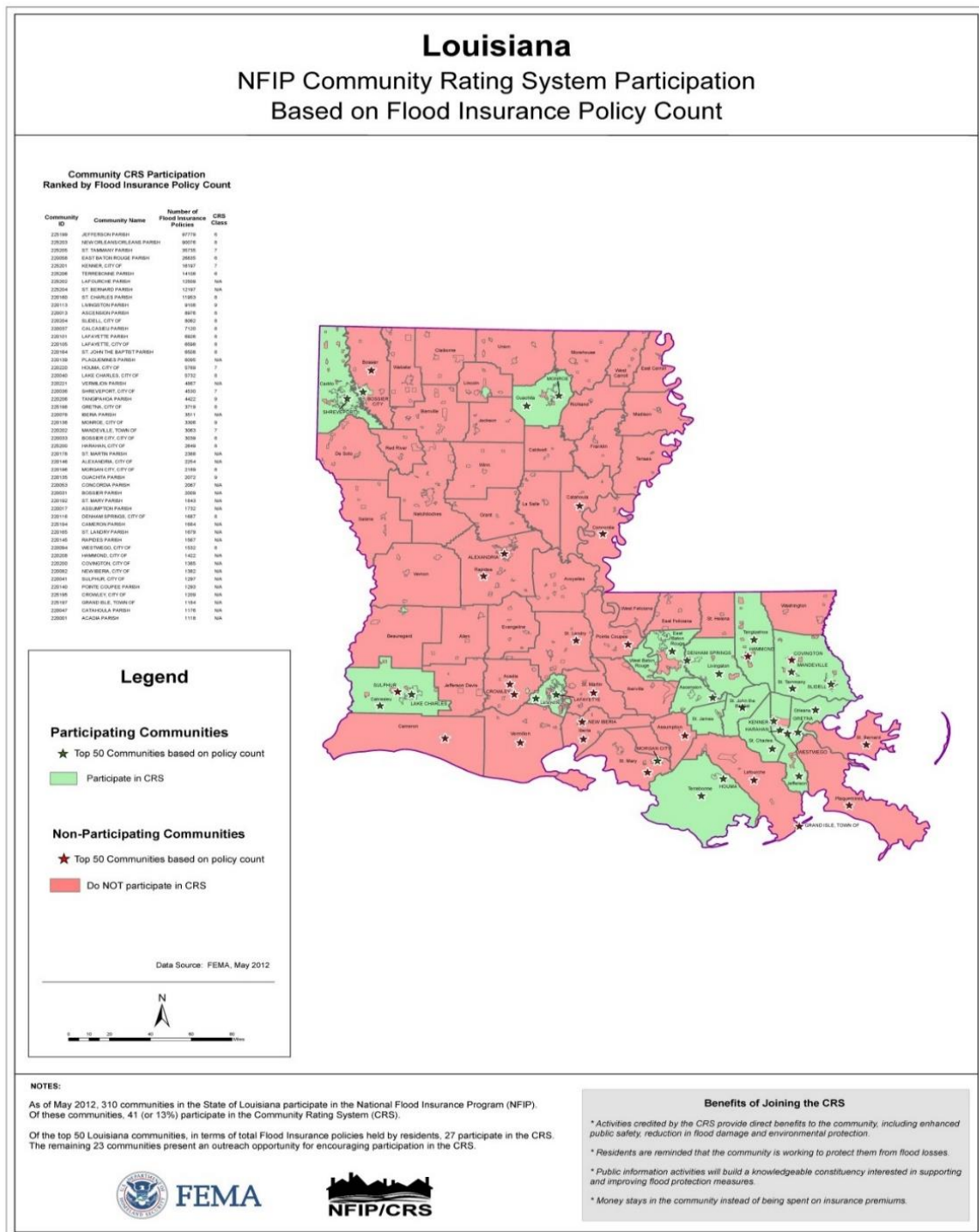


Figure 3-2: Louisiana CRS NFIP Participation  
(Source: FEMA<sup>2</sup>)

<sup>2</sup> [http://www.fema.gov/media-library-data/20130726-2128-31471-9581/ks\\_ky\\_la\\_crs\\_may\\_2012\\_508.zip](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](http://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

Union 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.

Union Parish confirmed the goals, objectives, actions, and projects over the period of the Hazard Mitigation Plan Update process. The mitigation actions and projects in this 2017 update are a product of analysis and review of the Union Parish Hazard Mitigation Plan Steering Committee, under the coordination of the Union Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2011 plan, for review from December 2016 – April 2017

An online public opinion survey was conducted of Union Parish residents between December 2016 and April 2017. The survey was designed to capture public perceptions and opinions regarding natural hazards in Union Parish. In addition, the survey sought to collect information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

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

<https://www.surveymonkey.com/r/UnionParish>

During the public meeting in March, the committee provided a status of the projects from 2011 and the proposed actions for the 2017 update. Committee members then agreed on the submission of each project based on feasibility for funding, ease of completion and other community specific factors. The actions were later prioritized.

### Goals

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

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

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

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

The goals are as follows:

- Improve education and outreach efforts, specifically to the public, parish/municipal employees, and local business, regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact
- Improve data collection, use, and sharing, specifically with neighboring communities, among municipalities, and with the State, to reduce the impact of hazards
- Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation project, programs, and activities, especially through the use of GIS, coordination with universities, and public/private partnerships
- Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities, with a focus on existing structures, future structures, protection of existing infrastructure, and protection of future infrastructure

The Mitigation Action Plan focuses on actions to be taken by Union 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.

### [2017 Mitigation Actions and Update on Previous Plan Actions](#)

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

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

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

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

#### Union 2011 Hazard Mitigation Action Update

Union Parish-Unincorporated Areas					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
U1: Maintenance of Flood Control Infrastructure	Maintain existing minor flood control infrastructure to ensure optimal functionality during flood events; clear debris from dedicated drainage ditches	Local budgets, grants	Union Parish Police Jury Highway Department, Town(s) / Village(s) Public Works Department	Communicable Disease, Flooding (Flash and Riverine)	Carried Over
U2: New Flood Control Infrastructure	Resize culverts and replace catch basins at Scott's Hide Away Road, Spring Road, Lake Road, Flops Road, and Larry's Road	Project submitted for funding under Katrina/Rita HMGP allocations	Union Parish Police Jury Highway Department, Town(s)/Village(s) Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
U3: New Flood Control Infrastructure	Improve channelization on Highway 15 at the Cornet Bayou crossing (between Spearsville and Lillie)	HMGP, FMA	LADoT, Union Parish Police Jury Highway Department, Town(s)/Village(s) Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
U4: New Flood Control Infrastructure	Reduce/Eliminate flooding on Rocky Branch Road	HMGP, FMA	Union Parish Police Jury Highway Department, Town(s)/Village(s) Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
U5: Repetitive Loss Properties (9)	Offer relocation incentives to current flood hazard area residents and businesses (9); develop a community program to acquire repetitive loss structures identified by FEMA	HMGP, FMA, RFC, SRL, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town/Village Mayor's Offices	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over

U6: Protection of Critical Infrastructure and Facilities	Harden 10 airport hangars to prevent/reduce structural and contents damage		Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager	Thunderstorm, Tornado, Tropical System	Completed
U7: Retrofit Existing Structures to Function as Safe Rooms	Harden Union Parish Courthouse to protect life and prevent injury of those housed inside	Project submitted for funding under Gustav/Ike HMGP allocations	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager	Thunderstorm, Tornado, Tropical System	Completed
U8: Community Shelters – Retrofit Existing Facility	Retrofit D'Arbonne State Park Facility to provide immediate protection of life and injury for events with little or no warning, and to provide and meet temporary sheltering needs	Local budgets, HMGP, PDM, CDBG	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager	Thunderstorm, Tornado, Tropical System	Completed
U9: Protection of Critical Infrastructure and Facilities	Upgrade and harden Antioch Ward Chapel Water System, D'Arbonne Water System, North Water System and South Water System to ensure operation and adequate pressure in the event of power outage	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Water District	Thunderstorm, Tornado, Tropical System	Completed
U10: Protection of Critical Infrastructure and Facilities	Create wildfire safety zones around critical facilities by managing and altering landscaping and vegetation	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town/Village Mayor's Offices	Wildfire	Carried Over

Town of Bernice					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
B1: Flood Control Infrastructure	Resize culverts on Railroad Street	Local budgets, HMGP, PDM, FMA, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office, Town of Bernice Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Delete
B2: Flood Control Infrastructure	Resize culverts near US Highway 167 N and 2nd Street	Local budgets, HMGP, PDM, FMA, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office, Town of Bernice Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Complete
B3: Flood Control Infrastructure	Resize culverts on Elm Street, between 3rd and 4th Streets	Local budgets, HMGP, PDM, FMA, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office, Town of Bernice Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Complete
B4: Flood Control Infrastructure	Resize culverts at intersection of Church Street and Rodgers Street	Local budgets, HMGP, PDM, FMA, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office, Town of Bernice Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Complete
B5: Flood Control Infrastructure	Resize culverts at intersection of Vine Street and Gary Street	Local budgets, HMGP, PDM, FMA, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office, Town of Bernice Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Delete
B6: Flood Control Infrastructure	Resize culverts at intersection of Cemetery Street and Walnut Street	Local budgets, HMGP, PDM, FMA, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office, Town of Bernice Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carry Over
B7: Retrofit of Critical Facilities	Retrofit roof of Bernice Police Department	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B8: Retrofit of Critical Facilities	Retrofit roof of Bernice Fire Station	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B9: Retrofit of Critical Facilities	Retrofit roof of Bernice Civic Center	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B10: Emergency Generator	Install emergency generator at Bernice Town Hall	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B11: Emergency Generator	Install emergency generator at Bernice Fire Department	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete



B12: Emergency Generator	Install emergency generator at Bernice Civic Center	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B13: Emergency Generator	Install emergency generator at Clubhouse Civic Center	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B14: Emergency Generator	Install emergency generator at Bernice Public Works Department building	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B15: Emergency Generator	Install 4 emergency generators at Bernice Water System	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B16: Emergency Generator	Procure temporary emergency generator for Bernice Sewer Treatment Plant	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B17: Harden Critical Facilities	Harden bay doors and install wind strapping at Bernice Fire Station	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B18: Harden Critical Facilities	Install wind strapping at Bernice Police Station	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Thunderstorm; Tornado	Delete
B19: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Bernice High School to protect life and prevent injury of those housed inside	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Delete
B20: Emergency Generator	Install emergency generator in Bernice High School	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Delete
B21: Community Shelters (New Construction)	Construct community shelter to provide immediate life protection for events with little or no warning	State or federal grants, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Delete
B22: Equipment Purchase	Purchase fire truck with extension ladder	Local budget, grants	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Wildfire	Delete
B23: Protection of Critical Infrastructure	Winterize/weatherize Bernice Water System infrastructure	Local budget, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Bernice Mayor's Office	Winter Storm	Delete

Village of Downsville					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
D1: New Flood Control Infrastructure	Resize culverts and replace catch basins north and northeast of the 151/145 Intersection	HMGP, FMA, LADoT	Union Parish Police Jury Highway Department, Village of Downsville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
D2: Emergency Generator	Install emergency generator at Downsville Fire Station	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Downsville Mayor's Office	Thunderstorm; Tornado	Carried Over
D3: Emergency Generator	Install emergency generator for Downsville Water System	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Downsville Mayor's Office	Thunderstorm; Tornado	Carried Over
D4: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Downsville High School to protect life and prevent injury of those housed inside	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
D5: Emergency Generator	Install emergency generator at Downsville High School	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
D6: Community Safe Room (New Construction)	Construct community shelter to provide immediate life protection for events with little or no warning	HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
D7: Protection of Critical Infrastructure	Winterize/weatherize Downsville Water System infrastructure	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Downsville Mayor's Office	Winter Storm	Carried Over

Town of Farmerville					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
F1: Vector Control	Drainage projects to alleviate standing water issues in the Lake View Drive area	Local budgets, grants	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office, Town of Farmerville Public Works Department	Communicable Disease	Carried Over
F2: Vector Control	Drainage projects to alleviate standing water issues in the Olin Hills Road area	Local budgets, grants	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office, Town of Farmerville Public Works Department	Communicable Disease	Carried Over
F3: Vector Control	Drainage projects to alleviate standing water issues in the Marion Street area	Local budgets, grants	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office, Town of Farmerville Public Works Department	Communicable Disease	Carried Over
F4: Flood Control Infrastructure	Resize culverts and replace catch basins on Gulley Street	Project has been approved for funding under Gustav/Ike HMGP allocation	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F5: Flood Control Infrastructure	Resize culvert(s) on South Circle Drive	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F6: Flood Control Infrastructure	Resize culvert(s) on Railroad Street	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F7: Flood Control Infrastructure	Resize culvert(s) on Lakeview Drive	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F8: Flood Control Infrastructure	Resize culvert(s) at intersection of Bernice Street and Boundary Street	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F9: Flood Control Infrastructure	Resize culvert(s) on Porter Street	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over

F10: Flood Control Infrastructure	Resize culvert(s) at intersection of S Main Street and Baron Drive	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F11: Flood Control Infrastructure	Resize culvert and construct approximately 500 feet of curb and gutter near Charter School off of LA Highway 2 East	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F12: Flood Control Infrastructure	Resize culvert near Anderson's Sporting Goods	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F13: Flood Control Infrastructure	Install a catch basin on the west side of Napa Street	Local budgets, HMGP, PDM, FMA	Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F14: Structural Mitigation	Elevate/Acquire/Reconstruct flood-prone residential structures in Cox Ferry Road area	Local budgets, HMGP, PDM, FMA, SRL, RFC	Union Parish Office of Homeland Security and Emergency Preparedness, Union Parish Police Jury Highway Department, Farmerville Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
F15: Retrofit of Critical Facilities	Retrofit/harden roof and facility for Farmerville Town Hall	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F16: Retrofit of Critical Facilities	Retrofit Farmerville Recreation Center	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F17: Retrofit of Critical Facilities	Harden bay doors at five (5) Farmerville Fire Stations	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F18: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Farmerville Town Hall to protect life and prevent injury of those housed inside	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm	Carried Over
F19: Community Safe Room (New Construction)	Construct multi-purpose community shelter to provide immediate life protection for events with little or no warning	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm	Carried Over

F20: Emergency Generator	Install emergency generator at Farmerville Town Hall	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F21: Emergency Generator	Install emergency generator at Farmerville Fire Station	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F22: Emergency Generator	Procure portable generators for sewer lift stations	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F23: Emergency Generator	Install emergency generators at water wells in Farmerville	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Thunderstorm; Tornado	Carried Over
F24: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Farmerville Elementary to protect life and prevent injury of those housed inside	Project submitted for consideration under Katrina/Rita HMGP allocation	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
F25: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Farmerville High School to protect life and prevent injury of those housed inside	Project submitted for consideration under Katrina/Rita HMGP allocation	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
F26: Community Shelters (New Construction)	Construct multi-purpose community shelter to provide immediate life protection for events with little or no warning	State or federal grants	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
F27: Emergency Generator	Install generator at Farmerville High School	State or federal grants	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
F28: Emergency Generator	Install emergency generator at Farmerville Recreation Center	State or federal grants	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
F29: Protection of Critical Facilities	Create wildfire safety zones around critical facilities by managing and altering landscaping and vegetation	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Wildfire	Carried Over
F30: Protection of Critical Infrastructure	Winterize/weatherize Farmerville Water System infrastructure	Local budget, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Farmerville Mayor's Office	Winter Storm	Carried Over



Village of Junction City					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
J1: Emergency Generator	Install emergency generator at Fire Station	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Junction City Mayor's Office	Thunderstorm; Tornado	Carried Over
J2: Emergency Generator	Install emergency generator for Junction City Water System	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Junction City Mayor's Office	Thunderstorm; Tornado	Carried Over
J3: Emergency Generator	Procure temporary generator for use at Lift Stations in Junction City	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Junction City Mayor's Office	Thunderstorm; Tornado	Carried Over
J4: Retrofit Critical Facilities	Retrofit Junction City Town Hall/Police Department	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Junction City Mayor's Office	Thunderstorm; Tornado	Carried Over
J5: Protection of Critical Infrastructure	Winterize/weatherize Downsville Water System infrastructure	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Junction City Mayor's Office	Winter Storm	Carried Over

Village of Lillie					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
L1: Elevation	Elevate Cook Road	Local budgets, HMGP, FMA, PDM, LADoT	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Lillie Public Works Department	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
L2: Emergency Generator	Install emergency generator for water system	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Lillie Mayor's Office	Thunderstorm; Tornado	Carried Over
L3: Emergency Generator	Install emergency generator for Lillie Town Hall	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Lillie Mayor's Office	Thunderstorm; Tornado	Carried Over
L4: Retrofit	Retrofit Lillie Town Hall	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Lillie Mayor's Office	Thunderstorm; Tornado	Carried Over
L5: Community Safe Room – Retrofit Existing Facility	Retrofit Lillie School to provide immediate protection of life and injury for events with little or no warning, and to provide and meet temporary sheltering needs	Local budgets, grants	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager	Tornado	Carried Over
L6: Protection of Critical Infrastructure	Winterize/weatherize Downsview Water System infrastructure	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Lillie Mayor's Office	Winter Storm	Carried Over
L7: Protection of Infrastructure	Reduce/Eliminate flooding on Highway 15 between Spearsville and Lillie (at crossing of Corney Boyou Tributary)	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Lillie Mayor's Office	Flooding (Flash and Riverine)	Carried Over

Town of Marion					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
M1: New Flood Control Infrastructure	Enlarge culvert on Allen Street	Project submitted for funding consideration under DR-1863 HMGP allocation	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M2: Flood Control Infrastructure	Resize culvert at intersection of Alice Street and Crow Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M3: Flood Control Infrastructure	Resize culvert at intersection of Allen Street and Stewart Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M4: Flood Control Infrastructure	Resize culvert at intersection of Maroney Street and Mike Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M5: Flood Control Infrastructure	Resize culvert at intersection of LA Highway 33 and Thomas Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M6: Flood Control Infrastructure	Resize culvert at intersection of LA Highway 33 and Allen Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M7: Flood Control Infrastructure	Resize culvert at intersection of LA Highway 143 and Cemetery Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M8: Flood Control Infrastructure	Resize culvert and elevate roadways at intersection of Alice Street and Andrews Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M9: Flood Control Infrastructure	Resize culvert and elevate roadways at intersection of Jarmen Street and Thomas Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M10: Structural Mitigation	Elevate/Acquire/Reconstruct flood-prone residential structure – 124 Kennedy Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over
M11: Elevation/Relocation	Elevate or relocate sewer lift stations located on Crow Street and Allen Street	Local budget, HMGP, FMA, PDM	Union Parish Police Jury Highway Department, Marion Public Works Departments	Dam and Levee Failure (Flooding); Flooding (Flash and Riverine)	Carried Over

M12: Emergency Generator	Install emergency generator at Marion Town Hall	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Thunderstorm; Tornado	Carried Over
M13: Emergency Generator	Install emergency generators for Marion Water System	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Thunderstorm	Carried Over
M14: Emergency Generator	Procure portable generators at sewer lift stations in the Town of Marion	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Thunderstorm; Tornado	Carried Over
M15: Retrofit of Critical Facilities	Retrofit and wind harden Marion Town Hall	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Thunderstorm; Tornado	Carried Over
M16: Retrofit of Critical Facilities	Retrofit wind rods on water wells	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Thunderstorm; Tornado	Carried Over
M17: Hardening of Critical Facilities	Harden Marion Fire Station	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Thunderstorm; Tornado	Carried Over
M18: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Marion High School to protect life and prevent injury of those housed inside	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
M19: Emergency Generator	Install generator at Marion High School	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
M20: Emergency Generator	Purchase generators for two water wells in Marion	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
M21: Community Shelters (New Construction)	Construct community shelter to provide immediate life protection for events with little or no warning	HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
M22: Protection of Critical Infrastructure	Winterize/weatherize Marion critical infrastructure	Local budget, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	Winter Storm	Carried Over
M23: Warning System	Marion Warning System	Local budget, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Town of Marion Mayor's Office	All Hazards	Carried Over

Village of Spearsville					
Jurisdiction-Specific Action	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
S1: Emergency Generator	Install emergency generator at Spearsville High School	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	Thunderstorm; Tornado	Carried Over
S2: Harden Critical Facilities	Harden bay doors of fire station	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	Thunderstorm; Tornado	Carried Over
S3: Harden Critical Facilities	Retrofit roof of Spearsville Town Hall	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	Thunderstorm; Tornado	Carried Over
S4: Harden Critical Facilities	Harden Spearsville Senior Citizen Center	Local budgets, HMGP, PDM	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	Thunderstorm; Tornado	Carried Over
S5: Retrofit Existing Structures to Function as Safe Rooms	Retrofit Spearsville High School to protect life and prevent injury of those housed inside	Local budgets, grants	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
S6: Community Safe Room (New Construction)	Construct community shelter to provide immediate life protection for events with little or no warning	State or federal grants	Union Parish Office of Homeland Security and Emergency Preparedness, Facility Manager(s)	Tornado	Carried Over
S7: Emergency Generator	Install emergency generator to power Spearsville Water System	Local budgets, HMGP 5%	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	Winter Storm	Carried Over
S8: Protection of Infrastructure	Reduce/Eliminate flooding on Highway 15 between Spearsville and Lillie (at crossing of Corney Boyou Tributary)	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	Flooding (Flash and Riverine)	Carried Over
S9: Emergency Generator	Spearsville Emergency Backup Generator	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	All Hazards	Carried Over
S10: Warning System	Spearsville Warning System	Local budgets, HMGP	Union Parish Office of Homeland Security and Emergency Preparedness, Village of Spearsville Mayor's Office	All Hazards	Carried Over



## Unincorporated Union New Mitigation Actions

Union Unincorporated - New Mitigation Actions						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
U1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes	New
U2: Drainage Improvement	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during Storms periods.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
U3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Flooding, Tropical Cyclones	New
U4: Safe Room Projects	Construction of a safe room for first responders located in Union Parish. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones, Wildfires	New
U5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Winter Storms, Wildfires, Dam Failure, and Levee Failure hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Wildfires, Winter Storms, Dam Failure, Levee Failure	New

U6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
U7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Lightning	New
U8: Warning Systems	Update/upgrade public warning system components throughout Union Parish as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
U9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
U10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Tropical Cyclones, Flooding	New
U11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Drought	New
U12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Union Parish OHSEP	Dam Failure, Levee Failure	New

## Town of Bernice - New Mitigation Actions

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

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

## Village of Downsville - New Mitigation Actions

Village of Downsville						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
D1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes	New
D2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during Storms periods.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
D3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Flooding, Tropical Cyclones	New
D4: Safe Room Projects	Construction of a safe room for first responders located in Downsville. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones, Wildfires	New
D5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Winter Storms, Wildfires, Dam Failure, and Levee Failure hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Wildfires, Winter Storms, Dam Failure, Levee Failure	New



D6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
D7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Lightning	New
D8: Warning Systems	Update/upgrade public warning system components throughout Downsville as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
D9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
D10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Tropical Cyclones, Flooding	New
D11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Drought	New
D12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Village of Downsville/Union Parish OHSEP	Dam Failure, Levee Failure	New

## Town of Farmerville - New Mitigation Actions

Town of Farmerville						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
F1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes	New
F2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during Storms periods.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
F3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Flooding, Tropical Cyclones	New
F4: Safe Room Projects	Construction of a safe room for first responders located in Farmerville. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones, Wildfires	New
F5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Winter Storms, Wildfires, Dam Failure, and Levee Failure hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Wildfires, Winter Storms, Dam Failure, Levee Failure	New

F6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
F7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Lightning	New
F8: Warning Systems	Update/upgrade public warning system components throughout Farmerville as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
F9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
F10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Tropical Cyclones, Flooding	New
F11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Drought	New
F12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Town of Farmerville/Union Parish OHSEP	Dam Failure, Levee Failure	New

## Village of Junction City - New Mitigation Actions

Village of Junction City						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
JC1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes	New
JC2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during Storms periods.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
JC3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Flooding, Tropical Cyclones	New
JC4: Safe Room Projects	Construction of a safe room for first responders located in Junction City. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones, Wildfires	New
JC5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Winter Storms, Wildfires, Dam Failure, and Levee Failure hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Wildfires, Winter Storms, Dam Failure, Levee Failure	New

JC6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
JC7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Lightning	New
JC8: Warning Systems	Update/upgrade public warning system components throughout Junction City as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
JC9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
JC10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Tropical Cyclones, Flooding	New
JC11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Drought	New
JC12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Village of Junction City/Union Parish OHSEP	Dam Failure, Levee Failure	New



## Village of Lillie - New Mitigation Actions

Village of Lillie						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
L1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	High Wind, Tropical Cyclones, Tornadoes	New
L2: Drainage Improvements	Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during Storms periods.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Flooding, High Wind, Tropical Cyclones	New
L3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Flooding, Tropical Cyclones	New
L4: Safe Room Projects	Construction of a safe room for first responders located in City of Lillie. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Tornadoes, High Wind, Tropical Cyclones, Wildfires	New
L5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Winter Storms, Wildfires, Dam Failure, and Levee Failure hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Flooding, Tropical Cyclones, Tornadoes, Wildfires, Extreme Heat, Thunderstorms (lightning, high wind, hail), Drought, Wildfires, Winter Storms, Dam Failure, Levee Failure	New

L6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
L7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Lightning	New
L8: Warning Systems	Update/upgrade public warning system components throughout Lillie as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
L9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
L10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Tropical Cyclones, Flooding	New
L11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Drought	New
L12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Village of Lillie/Union Parish OHSEP	Dam Failure, Levee Failure	New

## Town of Marion - New Mitigation Actions

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

M6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
M7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Lightning	New
M8: Warning Systems	Update/upgrade public warning system components throughout Marion as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
M9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
M10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Tropical Cyclones, Flooding	New
M11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Drought	New
M12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Town of Marion/Union Parish OHSEP	Dam Failure, Levee Failure	New

## Village of Spearsville - New Mitigation Actions

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



S6: Generators for Continuity of Operations and Government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Tornadoes, Winter Storms, Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Extreme Heat	New
S7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Lightning	New
S8: Warning Systems	Update/upgrade public warning system components throughout Spearsville as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Winter Storms, Wildfires, Tornadoes, Tropical Cyclones, Dam Failure, Levee Failure	New
S9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Tropical Cyclones, Thunderstorms (lightning, high wind, hail), Tornadoes	New
S10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Tropical Cyclones, Flooding	New
S11: Drought Ordinances	Adopt ordinances requiring water saving measures in time of drought	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Drought	New
S12: Dam/Levee Failure Working Group	Create a working group in order to assess the extent and determine the possible effects of a dam and/or levee failure	FEMA HMGP, Local	1-5 years	Village of Spearsville/Union Parish OHSEP	Dam Failure, Levee Failure	New

### Action Prioritization

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

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

The steering committee met internally for mitigation action meetings to review and approve Union Parish and the jurisdiction's mitigation actions. On-going actions, as well as actions which can be undertaken by existing parish or local staff without need for additional funding, were given high priority. The actions with high benefit and low cost, political support, and public support but require additional funding from parish or external sources were given medium priority. The actions that require substantial funding from external sources with relatively longer completion time were given low priority.

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

## 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 Union Parish Hazard Mitigation Plan Update

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

Union Parish includes the unincorporated areas of the parish, as well as seven incorporated municipalities that participated in the plan update process – the Town of Bernice, Village of Downsview, Town of Farmerville, Village of Junction City, Village of Lillie, Town of Marion, and Village of Spearsville. Union 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
12/14/2016	Initial Coordination	Telephone/ Email	No	Discuss with Parish HM coordinator and any Steering Committee members expectations and requirements of the project.
1/11/2017	Kick-Off Meeting	Farmerville, LA	No	Discuss with the plan steering committee expectations and requirements of the project. Assign plan worksheets to jurisdictions.
3/16/2017	Risk Assessment Overview	Farmerville, LA	No	Discuss and review the risk assessment with the steering committee discuss and review expectations for public meeting.
3/16/2017	Public Meeting	Farmerville, 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 Union 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 Union Parish. In addition, we asked about the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: <a href="https://www.surveymonkey.com/r/UnionParish">https://www.surveymonkey.com/r/UnionParish</a>
2 Week Period	Public Plan Review (Digital)		Yes	Parish Website and Union 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 Union Parish OHSEP oversaw the coordination of the 2017 Hazard Mitigation Plan Update Steering Committee during the update process. The Union 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 Committees and key stakeholders to all planned meetings and activities by email invitations and calendar invites. SDMI assisted the Parish Director with meeting notices, website and social media statements for notification to the media and general public for public meetings and public outreach activities.

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

## Neighboring Community, Local and Regional Planning Process Involvement

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



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

- Participation in Hazard Mitigation Team meetings at the local and parish level
- Sharing local data and information
- Local action item development
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan document by each jurisdiction following provisional approval by The State of Louisiana and FEMA

The 2017 Hazard Mitigation Plan Update Steering Committee consisted of representatives from the following parish, municipal, or community stakeholders:

- Union Parish Police Jury
- Union Office of Homeland Security and Emergency Preparedness
- Town of Bernice
- Village of Downsville
- Town of Farmerville
- Village of Junction City
- Village of Lillie
- Town of Marion
- Village of Spearsville

The Parish of Ouachita was invited by the Union Parish OHSEP to participate in all meetings and activities as well in an effort to collaborate with neighboring communities. In addition, the participation of the GOHSEP Region 8 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 2017 update. The completed worksheets can be found in Appendix E – State Required Plan Update Worksheets.

Below is a detailed list of the 2017 Hazard Mitigation Plan Update Steering Committee:

Name	Title	Agency	Email/Phone	Address
Greg Gossler	Director	Union OHSEP	<a href="mailto:upohsep@gmail.com">upohsep@gmail.com</a>	100 E Bayou St., Farmerville, LA 71241
Charles Sawyer	President	Union Parish Police Jury	<a href="mailto:pstrickland@bayou.com">pstrickland@bayou.com</a>	303 E. Water St., Farmerville, LA 71241
Bill Mitcham	Mayor	Town of Bernice	<a href="mailto:mayorbill@att.net">mayorbill@att.net</a>	115 W 4th St., Bernice, LA 71222
Reggie Skains	Mayor	Village of Downsville	318-548-8299	P.O. Box 98 Downsville, LA 71234
M. Stein Baughman, Jr.	Mayor	Town of Farmerville	318-368-8656	407 S Main St., Farmerville, LA 71241
Charles Hogue	Mayor	Village of Junction City	318-986-4711	West State Line Road, LA 71256
Kenneth Franklin	Mayor	Town of Marion	318-292-4485	398 Main St., Marion, LA 71260
Ronald Foster	Mayor	Village of Spearsville	318-778-3886	2511 Highway 3121, Spearsville, LA 71277
Issac Lee	Mayor	Village of Lillie	318-285-9695	113 LA 15, Lillie, LA 71256
Neal Brown	Director	Ouachita OHSEP	<a href="mailto:anbrown@ohsep.net">anbrown@ohsep.net</a>	1000 New Natchitoches Road, West Monroe 71201
Joe Stewart	Regional Coordinator	GOHSEP	<a href="mailto:joe.stewart@la.gov">joe.stewart@la.gov</a>	7667 Independence Blvd, Baton Rouge, LA

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

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

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

### Meeting Documentation and Public Outreach Activities

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

#### Meeting #1: Coordination Discussion

**Date:** December 14, 2016

**Location:** Email

**Purpose:** Discuss with the Hazard Mitigation Lead for the parish (OHSEP Director) the expectations and requirements of the Hazard Mitigation Plan Update process and to establish an initial project timeline.

**Public Initiation:** No

**Invitees Included:** Union Parish OHSEP, SDMI Staff

## Meeting #2: Hazard Mitigation Plan Update Kick-Off

**Date:** January 11, 2017**Location:** Farmerville, LA

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

**Public Initiation:** No**Invitees Included:**

Name	Title	Agency
Greg Gossler	Director	Union OHSEP
Charles Sawyer	President	Union Parish Police Jury
Bill Mitcham	Mayor	Town of Bernice
Reggie Skains	Mayor	Village of Downsville
M. Stein Baughman, Jr.	Mayor	Town of Farmerville
Charles Hogue	Mayor	Village of Junction City
Kenneth Franklin	Mayor	Town of Marion
Ronald Foster	Mayor	Village of Spearsville
Issac Lee	Mayor	Village of Lillie
Neal Brown	Director	Ouachita OHSEP
Joe Stewart	Regional Coordinator	GOHSEP

## Meeting #3: Risk Assessment Overview

**Date:** March 16, 2017**Location:** Farmerville, 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
Greg Gossler	Director	Union OHSEP
Charles Sawyer	President	Union Parish Police Jury
Bill Mitcham	Mayor	Town of Bernice
Reggie Skains	Mayor	Village of Downsville
M. Stein Baughman, Jr.	Mayor	Town of Farmerville
Charles Hogue	Mayor	Village of Junction City
Kenneth Franklin	Mayor	Town of Marion
Ronald Foster	Mayor	Village of Spearsville
Issac Lee	Mayor	Village of Lillie
Neal Brown	Director	Ouachita OHSEP
Joe Stewart	Regional Coordinator	GOHSEP

**Meeting #4: Public Meeting****Date:** March 16, 2017**Location:** Farmerville, 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 Union Parish communities were provided for the meeting attendees to identify specific areas where localized hazards occur.

**Public Initiation:** Yes**Invitees Included:**

Name	Title	Agency
Greg Gossler	Director	Union OHSEP
Charles Sawyer	President	Union Parish Police Jury
Bill Mitcham	Mayor	Town of Bernice
Reggie Skains	Mayor	Village of Downsville
M. Stein Boughman, Jr.	Mayor	Town of Farmerville
Charles Hogue	Mayor	Village of Junction City
Kenneth Franklin	Mayor	Town of Marion
Ronald Foster	Mayor	Village of Spearsville
Issac Lee	Mayor	Village of Lillie
Neal Brown	Director	Ouachita OHSEP
Joe Stewart	Regional Coordinator	GOHSEP

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

**Meeting Public Notice**

UNION PARISH

OFFICE OF HOMELAND SECURITY &amp; EMERGENCY PREPAREDNESS

MEETING NOTICE – March 16, 2017

**Union Parish to hold Public Meetings for Hazard Mitigation Plan Update**

Farmerville, LA – Union Parish Office of Homeland Security & Emergency Preparedness is in the process of updating the Union Parish Hazard Mitigation Plan and are required to hold public meetings on the plan update. The Public meeting will be held on March 16, 2017 in the Union Parish Police Jury Meeting Room located at 303 E. Water Street, Farmerville, LA, from 11:30AM to 12:30PM.

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.

Union Parish is in the beginning stages of updating its hazard mitigation plan. Public meeting will be held on March 16, 2017 for all citizens interested in learning about and participating in discussions concerning the Union Hazard Mitigation Plan.

Residents of Union 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/UnionParish>

For more information, please contact: Union Parish OHSEP

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



#### Outreach Activity #1: Public Opinion Survey

**Date:** Ongoing throughout planning process

**Location:** Web Survey

**Public Initiation:** Yes

No comments were collected through this activity.

#### 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. However, because no members of the public attended, no comments were collected.

#### Public Plan Review Documentation

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

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

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

### Responsible Parties

Union 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

Union 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 Union 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 indicates a substantial change in hazard profile and risk assessment in the parish.

Additionally, the public will be canvassed to solicit public input to continue Union 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.

#### 2017 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 Union Parish Hazard Mitigation Plan Steering Committee and participating jurisdictions to determine additional implementation procedures when appropriate. This may include integrating the requirements of the Union Parish Hazard Mitigation Plan into each jurisdiction's planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the Union Parish Hazard Mitigation Steering Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.). The members of the steering committee will meet with Department Heads to discuss what should be included in the changes that are necessary before the changes are introduced to the city council or police jury meetings. Steering committee members will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Union 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 Town of Bernice, Village of Downsville, Town of Farmerville, Village of Junction City, Village of Lillie, Town of Marion, and Village of Spearsville, Union 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:

**Union Unincorporated**

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

**Town of Bernice**

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

**Village of Downsville**

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

**Town of Farmerville**

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

**Village of Junction City**

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

**Village of Lillie**

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

**Town of Marion**

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

**Village of Spearsville**

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

### Continued Public Participation

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

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

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## 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	Email/Phone	Address
Greg Gossler	Director	Union OHSEP	<a href="mailto:upohsep@gmail.com">upohsep@gmail.com</a>	100 E Bayou St., Farmerville, LA 71241
Charles Sawyer	President	Union Parish Police Jury	<a href="mailto:pstrickland@bayou.com">pstrickland@bayou.com</a>	303 E. Water St., Farmerville, LA 71241
Bill Mitcham	Mayor	Town of Bernice	<a href="mailto:mayorbill@att.net">mayorbill@att.net</a>	115 W 4th St., Bernice, LA 71222
Reggie Skains	Mayor	Village of Downs ville	318-548-8299	P.O. Box 98 Downs ville, LA 71234
M. Stein Baughman, Jr.	Mayor	Town of Farmerville	318-368-8656	407 S Main St., Farmerville, LA 71241
Charles Hogue	Mayor	Village of Junction City	318-986-4711	West State Line Road, LA 71256
Kenneth Franklin	Mayor	Town of Marion	318-292-4485	398 Main St., Marion, LA 71260
Ronald Foster	Mayor	Village of Spearsville	318-778-3886	2511 Highway 3121, Spearsville, LA 71277
Issac Lee	Mayor	Village of Lillie	318-285-9695	113 LA 15, Lillie, LA 71256
Neal Brown	Director	Ouachita OHSEP	<a href="mailto:anbrown@ohsep.net">anbrown@ohsep.net</a>	1000 New Natchitoches Road, West Monroe 71201
Joe Stewart	Regional Coordinator	GOHSEP	<a href="mailto:joe.stewart@la.gov">joe.stewart@la.gov</a>	7667 Independence Blvd, Baton Rouge, LA

## Capability Assessment

Union Unincorporated

## Worksheet 4.1: Capability Assessment Worksheet

Local mitigation capabilities are existing authorities, policies and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

### Planning and Regulatory

Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

<b>Unincorporated Union Parish</b>		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
<b>Building Code, Permitting and Inspections</b>		
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
<b>Land Use Planning and Ordinances</b>		
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	



Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	
<b>Administration and Technical</b>		

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	

## Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	

## Town of Bernice

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

## Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	No	
<b>Education and Outreach</b>		

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



## Village of Downsview

<b>Planning and Regulatory</b>		
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Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

<b>Downsville</b>		
<b>Plans</b>	<b>Yes/No</b>	<b>Comments</b>
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
<b>Building Code, Permitting and Inspections</b>		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
<b>Land Use Planning and Ordinances</b>		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	No	
Acquisition of land for open space and public recreation uses	No	
Other		

## Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

## Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other		

## Town of Farmerville

<b>Planning and Regulatory</b>		
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Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

<b>Farmerville</b>		
<b>Plans</b>	<b>Yes/No</b>	<b>Comments</b>
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
<b>Building Code, Permitting and Inspections</b>		
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	No	
<b>Land Use Planning and Ordinances</b>		
Zoning Ordinance	Yes	
Subdivision Ordinance	yes	
Floodplain Ordinance	yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other		

## Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs		

## Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other		



## Village of Junction City

Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Junction City		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	N/A	
Building Code, Permitting and Inspections		
Building Code	N/A	
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	
Fire Department ISO/PIAL rating	No	
Site plan review requirements	N/A	
Land Use Planning and Ordinances		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	No	
Acquisition of land for open space and public recreation uses	No	
Other	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	No	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff		
Chief Building Official	No	
Floodplain Administrator	No	
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	No	
Other	N/A	
Technical		
Warning Systems / Service (Reverse 911, outdoor warning signals)	No	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	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	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	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	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	N/A	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	N/A	

## Village of Lillie

<b>Planning and Regulatory</b>		
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Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

<b>Lillie</b>		
<b>Plans</b>	<b>Yes/No</b>	<b>Comments</b>
Comprehensive / Master Plan	NO	
Capital Improvements Plan	NO	
Economic Development Plan	NO	
Local Emergency Operations Plan	NO	
Continuity of Operations Plan	NO	
Transportation Plan	NO	
Stormwater Management Plan	NO	
Community Wildfire Protection Plan	NO	
Other plans (redevelopment, recovery, coastal zone management)	NO	
<b>Building Code, Permitting and Inspections</b>		
Building Code	NO	
Building Code Effectiveness Grading Schedule (BCEGS) Score	NO	
Fire Department ISO/PIAL rating	NO	
Site plan review requirements	NO	
<b>Land Use Planning and Ordinances</b>		
Zoning Ordinance	NO	
Subdivision Ordinance	NO	
Floodplain Ordinance	NO	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	NO	
Flood Insurance Rate Maps	NO	
Acquisition of land for open space and public recreation uses	NO	
Other	NO	

## Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	NO	
Authority to levy taxes for specific purposes	NO	
Fees for water, sewer, gas, or electric services	NO	
Impact fees for new development	NO	
Stormwater Utility Fee	NO	
Community Development Block Grant (CDBG)	NO	
Other Funding Programs	NO	

## Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	NO	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	NO	
Natural Disaster or safety related school program	NO	
Storm Ready certification	NO	
Firewise Communities certification	NO	
Public/Private partnership initiatives addressing disaster-related issues	NO	
Other	NO	



## Town of Marion

Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Marion		
Plans	Yes/No	Comments
Comprehensive / Master Plan	no	
Capital Improvements Plan	no	
Economic Development Plan	no	
Local Emergency Operations Plan	no	
Continuity of Operations Plan	no	
Transportation Plan	no	
Stormwater Management Plan	no	
Community Wildfire Protection Plan	no	
Other plans (redevelopment, recovery, coastal zone management)	none	
Building Code, Permitting and Inspections		
Building Code	no	
Building Code Effectiveness Grading Schedule (BCEGS) Score	no	
Fire Department ISO/PIAL rating	4	
Site plan review requirements	none	
Land Use Planning and Ordinances		
Zoning Ordinance	no	
Subdivision Ordinance	no	
Floodplain Ordinance	yes	application pending
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	no	
Flood Insurance Rate Maps	no	
Acquisition of land for open space and public recreation uses	no	
Other	no	

## Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	no	
Authority to levy taxes for specific purposes	yes	property taxes
Fees for water, sewer, gas, or electric services	yes	
Impact fees for new development	no	
Stormwater Utility Fee	no	
Community Development Block Grant (CDBG)	yes	previous/one pending
Other Funding Programs	CWEF & LGAP	

## Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other		

## Village of Spearsville

<b>Planning and Regulatory</b>		
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Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.

<b>Spearsville</b>		
<b>Plans</b>	<b>Yes/No</b>	<b>Comments</b>
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	No	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
<b>Building Code, Permitting and Inspections</b>		
Building Code	No	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	Yes	7
Site plan review requirements	No	
<b>Land Use Planning and Ordinances</b>		
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	No	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	No	
Acquisition of land for open space and public recreation uses	No	
Other	No	

## Administration and Technical

Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

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

## Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	No	
Other Funding Programs	No	

## Education and Outreach

Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program / Organization	Yes/No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	No	
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



## Building Inventory

Critical Facility (If Yes, Mark X)	Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
<b>Union Unincorporated</b>									
X	UNION PARISH COURTHOUSE	Civil Government	100 EAST BAYOU STREET	FARMERVILLE	32.773663	-92.404965	\$189,612.00	1961	Concrete
	UNION PARISH COURTHOUSE ANNEX	Civil Government	303 EAST WATER STREET	FARMERVILLE	32.773145	-92.403039	\$65,442.00	1975	Concrete
	UNION PARISH TAX ASSESSOR	Civil Government	101 NORTH MAIN STREET	FARMERVILLE	32.774255	-92.405528	\$52,125.00	1996	Concrete
	UNION PARISH HEALTH UNIT	Public Health	1002 MARION HIGHWAY	FARMERVILLE	32.786336	-92.391157	\$23,747.00	1950	Concrete
X	UNION PARISH DETENTION CENTER	Law Enforcement	707 RODEO CIRCLE	FARMERVILLE	32.738981	-92.412465	\$687,365.00	1991	Concrete
	UNION PARISH LIBRARY	Library	202 WEST JACKSON	FARMERVILLE	32.774877	-92.406473	\$38,101.00		Concrete
	UNION PARISH HIGHWAY DEPARTMENT	Civil Government	605 BETTY STREET	FARMERVILLE	32.77159	-92.412089	\$32,505.00	1978	Concrete
	UNION PARISH LANDFILL	Civil Government	356 LANDFILL ROAD	FARMERVILLE	32.816108	-92.391039	\$2,491.00	1984	Concrete
<b>Bernice</b>									
	Bernice High School	Education	7710 Fellowship Road	Bernice	32.81498223	-92.66078642			
	Pafford EMS	Emergency Medical Services	201 Cherry Street	Bernice	32.82313924	-92.65771038			
X	Bernice Fire Department	Fire Search and Rescue	4786 U.S. 167	Bernice	32.82029221	-92.65649767			
X	Bernice Police Department	Law Enforcement	424 E 4th St	Bernice	32.82094799	-92.65606641			
X	Bernice Town Hall	Civil Government	115 West 4th Street #403	Bernice	32.82101439	-92.65709789			
X	Reeves Memorial Medical Center - Hospital	Hospitals or Medical Centers	409 1st St.	Bernice	32.82397972	-92.65653731			
	Reeves Memorial Medical Center	Hospitals or Medical Centers	409 1st St.	Bernice	32.82305409	-92.65704528			
	Bernice Nursing and Rehab	Nursing Home	101 Reeves St.	Bernice	32.805893	-92.659341			

Downsville									
	Downsville High School	Education	4787 Louisiana 151	Downsville	32.62469617	-92.41284057	1.5 Mil	1978	Reinforced Masonry
	Ward 5 Volunteer Fire Dept Walnut Lane Station	Fire Search and Rescue	Nearby: Walnut Lane	Downsville	32.60436259	-92.36644915	150K	1995	Steel
	Ward 5 Vol Fire Dept Rogers Station	Fire Search and Rescue	Nearby: 11712 Louisiana 15	Downsville	32.68545449	-92.38626085	150K	1998	Steel
	Wilhite Vol Fire Dept Ward 5 Point	Fire Search and Rescue	Nearby: Littleton Loop	Downsville	32.6604321	-92.27788513	150K	1995	Steel
X	Downsville Charter School	Education	4787 Louisiana 151	Downsville	32.372857	-92.244546	850,000	1966	Reinforced Masonry
Farmerville									
X	Farmerville High School	Education	300 Anthony Street	Farmerville	32.77851033	-92.4072473		1958	Concrete
X	Union Parish High School	Education	1206 Marion Hwy	Farmerville	32.473242	-92.231929		2017	Concrete
X	Farmerville Junior High School	Education	606 Bernice Street	Farmerville	32.77988904	-92.40819964	1,250,000	1958	Reinforced Masonry
X	Farmerville Elementary School	Education	7195 Louisiana 33	Farmerville	32.81218709	-92.36108684	2,225,000	1965	Reinforced Masonry
X	D'Arbonne Woods Charter School	Education	9560 Louisiana 33	Farmerville	32.443315	-92.255123		2017	Reinforced Masonry
	Pafford EMS	Emergency Medical Services	Nearby: 525-799 Bernice Highway	Farmerville	32.7809665	-92.40739175	77,500	1970	Wood
	Farmerville Fire Station 5	Fire Search and Rescue	5424 Louisiana 15	Farmerville	32.86108603	-92.47072753	175,000	2008	Steel
	Union Parish Fire Station	Fire Search and Rescue	302 Martin Luther King Junior Drive	Farmerville	32.78902312	-92.54447126	225,000	1965	Reinforced Masonry
	Ward 5 Fire Dept Sardis Station	Fire Search and Rescue	Nearby: Sardis Church Road	Farmerville	32.72731537	-92.46656527	125,000	1975	Steel
	Rocky Branch / Crossroads Fire District	Fire Search and Rescue	10256 Louisiana 143	Farmerville	32.68244686	-92.20334388	175,000	1970	Steel
X	Farmerville Central Fire Station	Fire Search and Rescue	Nearby: 301 Martin Luther King Junior Drive	Farmerville	32.77254634	-92.40413547	225,000	1965	Reinforced Masonry
X	Farmerville Police Department	Law Enforcement	301 East St	Farmerville	32.77254421	-92.40413379	200,000	1965	Reinforced Masonry
X	Union Parish Detention Center	Prisons and Correctional Facilities	707 Rodeo Circle	Farmerville	32.76915883	-92.41242108	687,365	1986	Metal
X	Union Parish School Board	Civil Government	Union Parish School Board	Farmerville	32.79380088	-92.38815407	1,500,000	2017	Reinforced Masonry
X	Farmerville Town Hall	Civil Government	Nearby: 304 South Main Street	Farmerville	32.77167593	-92.40512773	300,000	1970	Reinforced Masonry

X	Union Parish Courthouse	Civil Government	100 East Bayou Street #105	Farmerville	32.77373032	-92.40503887	189,612.00	1958	Reinforced Masonry
	Union Parish Extension Office	Civil Government	210 East Water Street	Farmerville	32.77314612	-92.40413561	1,850,000	1958	Reinforced Masonry
	Farmerville Water Department	Civil Government	407 South Main Street	Farmerville	32.77127012	-92.40517139	250,000	1970	Reinforced Masonry
	Union Parish Landfill	Civil Government	356 Landfill Road	Farmerville	32.81615016	-92.39109281	2,491	1992	Steel
	Union Parish Community Action Association	Civil Government	202 East Water Street	Farmerville	32.77311264	-92.40430748	350,000	1975	Steel
X	Union Parish Courthouse Annex	Civil Government	Nearby: 301 East Jackson Street	Farmerville	32.77408711	-92.40301912	185,000	1975	Steel
	Fresenius Medical Care	Hospitals or Medical Centers	108 West Hill Street	Farmerville	32.76850434	-92.39060863	125,000	1975	Reinforced Masonry
	Union General Rural Health Clinic	Hospitals or Medical Centers	1025 Marion Highway	Farmerville	32.78747596	-92.39125139	350,000	1970	Reinforced Masonry
X	Union General Hospital	Hospitals or Medical Centers	901 James Avenue	Farmerville	32.78769233	-92.39270165	3,500,000	1970	Reinforced Masonry
	Union Parish Airport	Airports and Airfields	152 Airport Drive	Farmerville	32.72214085	-92.3368897	175000	1965	Steel
	Union Parish Highway Department	Civil Government	605 Betty Street	Farmerville	32.77159	-92.41209	32,505	1978	Concrete
<b>Junction City</b>									
x	Town Hall	Governmental Body	West State Line Rd	Junction City	33.014201	-92,725,529	50,000	1970	Unreinforced Masonry
<b>Lillie</b>									
X	U.S. POST OFFICE	U.S. POSTAL SERVICE	HWY 15	LILLIE	32°55'13"N	92°39'42"W	175,000	2010	Reinforced Masonry
<b>Marion</b>									
X	Marion Fire Department	Fire Search and Rescue	111 Gayle Street	Marion	32.90042589	-92.24022758			
X	Marion Town Hall	Civil Government	398 Main Street	Marion	32.90126	-92.24273292			
<b>Spearsville</b>									
X	Spearsville Town Hall	Civil Government	2511 Hwy. 3121	Spearsville	32.9368858	-92.60369647	\$75,000		

## Vulnerable Populations

## Vulnerable Populations Worksheet

### Union Parish

Name	Street	City	Zip Code	Latitude	Longitude
<b>All Hospitals (Private or Public)</b>					
Fresenius Medical Care	108 West Hill Street	Farmerville	71241	32.76850434	-92.39060863
Union General Rural Health Clinic	1025 Marion Highway	Farmerville	71241	32.78747596	-92.39125139
Reeves Memorial Medical Center - Hospital	409 1st St.	Bernice	71222	32.82397972	-92.65653731
Reeves Memorial Medical Center	409 1st St.	Bernice	71222	32.82305409	-92.65704528
Union General Hospital	901 James Avenue	Farmerville	71241	32.78769233	-92.39270165
Healthsouth Specialty Hospital of Louisiana	Nearby: 813-899 North Main Street	Farmerville	71241	32.78458092	-92.40874811
<b>Nursing Homes (Private or Public)</b>					
Bernice Nursing and Rehabilitation Center	101 Reeves St.	Bernice	71222	32.80614782	-92.65966901
Farmerville Nursing & Rehabilitation Center	813 North Main Street	Farmerville	71241	32.78459008	-92.40916343
Arbor Lake	1155 Sterlington Hwy.	Farmerville	71241	32.460773	-92.225536
Arbor Rose	243 Sistrunk Rd.	Farmerville	71241	32.471365	-92.231164
<b>Mobile Home Parks</b>					
West Street Trailer Park #2			71241	32.77443821	-92.41166747
Lakeside Trailer Park	571 North Spillway Road	Farmerville	71241	32.73900826	-92.34659341
Peaceful Acres	Peaceful Acres	Farmerville	71241	32.79638569	-92.40544308
West Street Trailer Park	311 S West St	Farmerville	71241	32.77556001	-92.41575309
Lester's on the Lake RV Park	9606 Louisiana 2	Farmerville	71241	32.78702323	-92.45990752
Defee's Trailer Park	646 Louisiana 2	Spencer	71280	32.70346461	-92.10556957
D'Arbonne Point RV Park	147 Old Hwy 15	Farmerville	71241	32.444693	-92.252422
Lake D'Arbonne State Park	3628 Parish Rd 4410	Farmerville	71241	32.463774	-92.291478

## National Flood Insurance Program (NFIP)

## ELEMENT F: STATE REQUIREMENT

### National Flood Insurance Program (NFIP)

#### Union Parish

	Union Parish	Bernice	Downsville	Farmerville	Junction City	Lillie	Marion	Spearsville	
Insurance Summary									Comments
How many NFIP policies are in the community? What is the total premium and coverage?	307; \$224,131.00; \$45,676,100.00	0; \$0; \$0	0; \$0; \$0	12 ; \$8,302.00 ; \$2,632,100.00	None	NONE	N/A	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?	300 CLAIMS; \$8,131,703.00 TOTAL PAID CLAIMS; 68 SUBSTANTIAL DAMAGE	0; \$0; 0	0; \$0; 0	26 COMMUNITY CLAIMS; \$415,740.00 TOTAL PAID CLAIMS	None	N/A	N/A	N/A	
How many structures are exposed to flood risk with in the community?	TWO HUNDRED EIGHTY THREE	N/A	N/A	Unknown	None	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	N/A	N/A	N/A	
Staff Resources									
Is the Community FPA or NFIP Coordinator certified?	NO	N/A	No	NO	No	N/A	N/A	N/A	
Is flood plain management an auxiliary function?	YES	N/A	No	YES	No	N/A	N/A	N/A	
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	WHEN A PERMIT IS APPLIED FOR, THE FP MANAGER VERIFIES THAT PROPERTY IS IN A FLOOD ZONE. IF YES, THEN A ELEVATION CERTIFICATE IS REQUIRED. BUILDING INSPECTOR WILL INSPECT PROPERTY TO MAKE SURE ELEVATION IS HIGH ENOUGH.	N/A	N/A	WHEN A PERMIT IS APPLIED FOR, THE FP MANAGER VERIFIES THAT PROPERTY IS IN A FLOOD ZONE. IF YES, THEN A ELEVATION CERTIFICATE IS REQUIRED. BUILDING INSPECTOR WILL INSPECT PROPERTY TO MAKE SURE ELEVATION IS HIGH ENOUGH.	N/A	N/A	N/A	N/A	

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