

# 2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

UNINCORPORATED MOREHOUSE  
PARISH, BASTROP, BONITA,  
COLLINSTON, MER ROUGE, OAK  
RIDGE





# MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

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**Morehouse Parish**



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**ACKNOWLEDGMENTS**

This 2023 Morehouse Parish Hazard Mitigation Plan Update was coordinated by the Morehouse Parish Hazard Mitigation Plan Update Planning Committee, in collaboration with community stakeholders and the general public. The participating jurisdictions are made up of the following communities:

- Unincorporated Morehouse Parish
  - City of Bastrop
  - Village of Bonita
  - Village of Collinston
  - Village of Mer Rouge
  - Village of Oak Ridge

Special thanks is directed to all of those who assisted in contributing their expertise and feedback on this document, especially the Morehouse Parish Office of Homeland Security and Emergency Management. These combined efforts have made this project possible. The Morehouse Parish Planning 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 Morehouse Parish Hazard Mitigation Plan Update (HMPU) process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make Morehouse Parish and its jurisdictions less vulnerable and more disaster resilient. It also includes mitigation project scoping to further identify scopes of work, funding sources, and implementation timing requirements of proposed selected mitigation projects. Information in the plan will be used to help guide and coordinate mitigation and local policy decisions affecting future land use.

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

- Morehouse Parish
- City of Bastrop
- Village of Bonita
- Village of Collinston
- Village of Mer Rouge
- Village of Oak Ridge

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/Rita, Gustav/Ike, and Laura/Delta environment in south Louisiana.

This Hazard Mitigation Plan is a comprehensive plan for disaster resiliency in Morehouse 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.

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 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.

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 (CRS), a program that reduces flood insurance premiums in participating communities. This program is further described in Section Three: Capability Assessment.

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 CRS credit, and provides Morehouse Parish and its communities with a blueprint for reducing the impacts of these natural hazards on people and property.

## Geography, Population and Economy

### Geography

Morehouse Parish (*Figure 1-1*) lies mostly in the Mississippi River delta land in the northeastern part of Louisiana and is bound by the state of Arkansas to the north, the Boeuf River on the east and south, and the Ouachita River on the west. It is surrounded by Arkansas' Ashley County to the north, Union Parish to the west, Ouachita and Richland Parishes to the south, and West Carroll Parish to the east. Bayou Bartholomew divides the parish diagonally from northeast to southwest and Bayou Bonne Idee flows southward into the Boeuf River through the eastern part of Morehouse Parish. Many smaller streams (including Bayou Galion) flow throughout the eight hundred and nine square miles of forested hill country, wooded swamps and alluvial land that make up Morehouse Parish.



*Figure 1-1: Location of Morehouse Parish in the State of Louisiana*

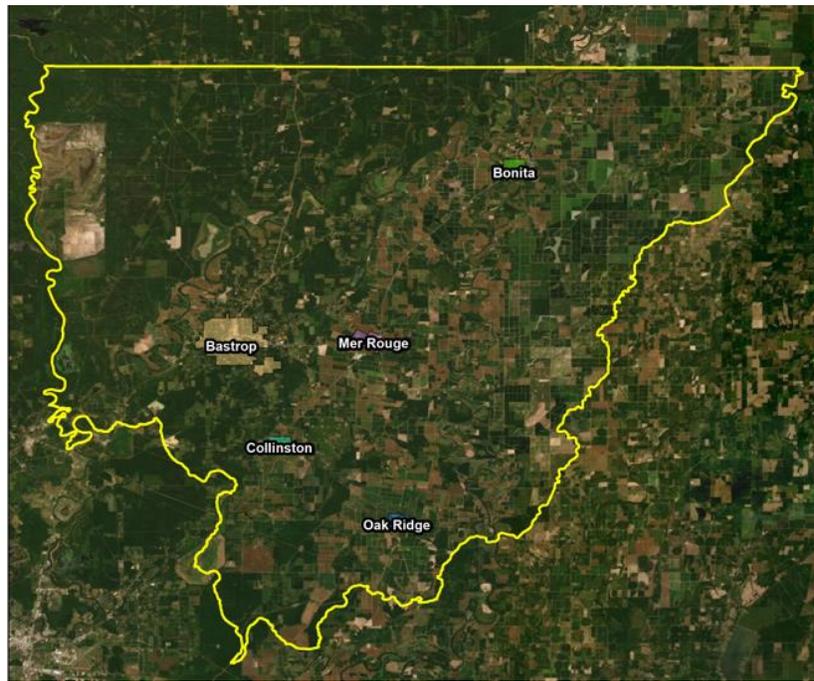


Figure 1-2: Incorporated Jurisdictions within Morehouse Parish

Morehouse Parish has a humid, subtropical climate. The average annual temperature for the state as a whole is 68°F. January is typically the coldest month for Louisiana, averaging approximately 54°F, while July is typically the warmest at an average of 83°F. Winter months are usually mild with cold spells of short duration. For Morehouse Parish in particular, the summer months are usually quite warm, with an average daily maximum temperature in July and August of 92°F. Winters are typically mild. Snowfall averages less than one inch per year. Average annual rainfall for the area is 56 inches. Morehouse Parish is susceptible to the normal weather dangers, such as thunderstorms and flooding. Even though Morehouse is about 220 miles North of the Gulf of Mexico, the states’ proximity to the gulf makes the parish susceptible to tropical cyclones. Hurricane season lasts from June 1st to November 30th, with most hurricanes forming in August, September, and October.

Morehouse Parish is located in Louisiana Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP) Region 8 (Figure 1-3).

As noted above, Morehouse Parish is located in the north-eastern region of Louisiana.



Figure 1-3: Louisiana Homeland Security Regions

Population

The population of Morehouse Parish is estimated at 25,629 (2020 estimate) with a population percent change from April 1, 2010 – April 1, 2020 of -9.17%.

*Table 1-1: Morehouse Parish Population  
(Source: US Census)*

	2010 Census	2014 Estimate	2020 Census	Percent Change 2010 - 2020
<b>Total Population</b>	27,979	26,760	25,629	-9.17%
<b>Population Density (Pop/Sq. Mi.)</b>	35.2		32.2	-9.32
<b>Total Households</b>	12,423	12,535	9,732	-27.65%
<b>Persons Per Household</b>			2.54	-----

Economy

A large portion of Morehouse Parish’s economy is driven by agricultural farmers throughout the parish. Agriculture related businesses are currently predominant in the area, with cotton, corn, soybeans, sweet potatoes, rice, and sorghum. Timber is also a renewable resource in the parish. Its hardworking labor force, excellent transportation network, abundant raw materials, and land for commercial and industrial development make Morehouse Parish an ideal prospect for business investment. Industry data for business patterns in Morehouse Parish can be found in the table below:

*Table 1-2: Morehouse Parish Business Patterns  
(Source: US Census, CBP)*

Business Description	Number of Establishments	Number of Employees	Annual Payroll (\$1,000)
<b>Retail Trade</b>	71	825	22,095
<b>Manufacturing</b>	15	482	19,623
<b>Health Care and Social Assistance</b>	71	1,959	55,354
<b>Transportation and Warehousing</b>	12	85	6,088
<b>Construction</b>	26	446	12,781
<b>Administration/Support and Waste Management/Remediation Services</b>	11	40	1,013
<b>Real Estate and Rental and Leasing</b>	24	58	1,184
<b>Wholesale Trade</b>	21	277	13,718
<b>Other Services (except Public Administration)</b>	58	260	4,776
<b>Accommodation and Food Services</b>	25	467	5,812
<b>Financial and Insurance</b>	48	285	16,842
<b>Professional, Scientific, and Technical Services</b>	16	76	3,160
<b>Agriculture, Forestry, Fishing and Hunting</b>	7	41	3,138
<b>Utilities</b>	9	68	3,610
<b>Arts, Entertainment, and Recreation</b>	5	20	421
<b>Information</b>	6	43	2,719

## Hazard Mitigation

To fully understand hazard mitigation efforts in Morehouse 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 in advance of 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 1-4* 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 1-4* 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, post-disaster revision is a vital component of 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



*Figure 1-4: The Four Phases of Emergency Management and their Relation to Future Hazard Mitigation (Source: Louisiana State Hazard Mitigation Plan 2014)*

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. More recently, the historically impactful 2020 hurricane season reinforced the need for proper planning and mitigation strategies.

The catastrophic tropical events of 2005 and 2020, coupled with the unprecedented flooding events of 2016 have 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 the Louisiana Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP) encourages the parishes and the local communities 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 2023 Morehouse Parish Hazard Mitigation Plan (HMP) maintains much of the information from the 2016 plan version, but it now incorporates the order and methodologies of the 2019 Louisiana State Hazard Mitigation Plan.

The sections in the 2016 Morehouse Parish HMP were 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

This plan update 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 Morehouse Parish Hazard Mitigation Planning Committee recognized the benefits from the successful analysis and mitigation planning executed in previous plan updates, as well as improvements to be made in the 2023 update. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

## 2023 Plan Update

This 2023 plan update proceeds with the previous goals of the Morehouse Parish Hazard Mitigation Plan. The current goals are as follows:

1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities.
2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.
3. Improve data collection, use, and sharing to reduce the impact of hazards.
4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities.

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information's (NCEI) Storm Events Database was used in the analysis, which provides historical hazard data from 1950 to 2023. The planning committee was also instrumental in providing detailed data where appropriate to more accurately reflect hazard impacts on the parish and jurisdictions. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of much repetition between sections from the previous plan updates.

The 2023 plan update is organized in the same format as the 2016 update, with one minor change to this 2023 update as outlined below:

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

*Table 1-3: 2023 Plan Update Crosswalk*

Plan Update Crosswalk	
2016 Update	2023 Update
Section 1: Introduction	Section 1: Introduction
Section 2: Hazard Identification and Parish-Wide Risk Assessment	Section 2: Hazard Identification and Parish-Wide Risk Assessment
Section 3: Capability Assessment	Section 3: Capability Assessment
Section 4: Mitigation Strategy	Section 4: Mitigation Strategy
Appendix A: Planning Process	Appendix A: Planning Process
Appendix B: Plan Maintenance	Appendix B: Plan Maintenance
Appendix C: Essential Facilities	Appendix C: Critical Facilities
Appendix D: Plan Adoptions	Appendix D: Plan Adoptions
Appendix E: State Required Worksheets	Appendix E: State Required Worksheets

Despite changes in this plan update, the plan remains consistent in its emphasis on the few types of hazards that pose the most risk to loss of life, injury, and property in Morehouse Parish and its municipalities. The extent of this risk is dictated primarily by its geographic location. Most significantly, Morehouse 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 Morehouse 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 Morehouse Parish Hazard Mitigation Plan published in 2016, as well as the hazards that were identified in the state’s 2019 Hazard Mitigation Plan that were 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 Previous Plan	Considered Medium or High Risk in the State’s HM Plan	Profiled in the 2023 Update
Dam Failure	X		+
Drought	X		X
Extreme Heat	X		X
Flooding	X	X	X
Levee Failure	X		+
Thunderstorms (Hail, Lightning, & Wind)	X	X	X
Tornadoes	X	X	X
Tropical Cyclones	X	X	X
Wildfires	X		X
Winter Weather	X		X

+ Data Deficiency

### Prevalent Hazards to the Community

While many of the hazards identified in *Table 2-1* occur in the parish, their occurrence was not merited for further study by the planning committee. The determination was made to focus attention and resources on the most prevalent hazards, which include the hazards previously profiled. The following hazards have been selected to be included in this risk assessment:

- a) Dam Failure
- b) Drought
- c) Extreme Heat
- d) Flooding
- e) Levee Failure
- f) Thunderstorms (Hail, Lightning, Wind)
- g) Tornadoes
- h) Tropical Cyclones
- i) Wildfires
- j) Winter Weather

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

- Flooding from rivers and waterways, rains to r m s , 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)
  - e) Coastal
- High wind damage most commonly resulting from hurricanes, thunderstorms, and tornadoes
- Property damage resulting from all profiled natural hazards

The potential destructive power of tropical cyclones was determined to be the most prevalent hazard to the parish. Seventeen of the twenty-five disaster declarations Morehouse Parish have received resulted from tropical cyclones (12) or flooding (5), which validates these as the most significant hazards. Therefore, the issue of hurricanes will 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 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 Morehouse Parish is included in the hurricane risk assessment.

Morehouse Parish is also susceptible to tornadoes. Tornadoes can spawn from tropical cyclones or severe weather systems that pass-through Morehouse 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

On the next page, [Table 2-2](#) summarizes federal disaster declarations for Morehouse Parish since 1965. Information includes names, dates, and types of disaster.

Table 2-2: Morehouse Parish Major Disaster Declarations.

Disaster Number	Year	Declaration
3031	2/22/1977	Drought and Freezing
675	1/11/1983	Severe Storms and Flooding
829	5/20/1989	Severe Storms and Flooding
902	4/23/1991	Severe Storms and Flooding
904	5/3/1991	Severe Storms, Tornadoes, and Flooding
1264	1/21/1999	Severe Ice Storm
3172	2/1/2003	Loss of Space Shuttle Columbia
1603	8/29/2005	Tropical Cyclone – Hurricane Katrina
1607	9/24/2005	Tropical Cyclone – Hurricane Rita
1668	11/2/2006	Severe Storms and Flooding
1786	9/2/2008	Tropical Cyclone – Hurricane Gustav
4080	8/29/2012	Tropical Cyclone – Hurricane Isaac
4263	3/12/2016	Severe Storms and Flooding
4439	6/3/2019	Severe Storms and Tornadoes
4484	3/24/2020	COVID-19 Pandemic
3527	6/7/2020	Tropical Cyclone – Tropical Storm Cristobal
3538	8/23/2020	Tropical Cyclone – Tropical Storms Laura and Marco
4559	8/28/2020	Tropical Cyclone – Hurricane Laura
3543	9/14/2020	Tropical Cyclone – Hurricane Sally
4570	10/16/2020	Tropical Cyclone – Hurricane Delta
3549	10/27/2020	Tropical Cyclone – Tropical Storm Zeta
3556	2/18/2021	Severe Winter Storm
4590	3/9/2021	Severe Winter Storms
4611	8/29/2021	Tropical Cyclone – Hurricane Ida
3574	9/13/2021	Tropical Cyclone – Tropical Storm Nicholas

### Probability of Future Hazard Events

The probability of a hazard event occurring in Morehouse Parish is estimated in the table on the following page. The percent chance of an event happening during any given year was calculated by posting past events and dividing by the time period. Unless otherwise indicated, the time period used to access probability followed the method used in the State of Louisiana’s most current Hazard Mitigation Plan. The primary source for historical data used throughout the plan is the National Oceanic and Atmospheric Administration’s (NOAA) National Centers for Environmental Information’s (NCEI) Storm Events Database, which provides historical hazard data from 1950 to 2023. In staying consistent with the state plan, the Storm Events Database was evaluated for the last thirty-three years (1990 – 2023) to determine future probability of a hazard occurring. While the 31-year record used by the State was adopted for the purpose of determining the overall probability, to assist with determining estimated losses, unless otherwise stated, the full 71-year record was used when Hazus was not 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.

The following table shows the annual probability for each hazard occurring across the parish:

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

Hazard	Probability					
	Morehouse Parish (Unincorporated)	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
Dam Failure	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Drought	19%	19%	19%	19%	19%	19%
Extreme Heat	3%	3%	3%	3%	3%	3%
Flooding	81%	65%	48%	42%	52%	52%
Levee Failure	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Thunderstorms - Hail	100%	100%	100%	100%	100%	100%
Thunderstorms - Lightning	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Thunderstorms – High Winds	100%	100%	100%	100%	100%	100%
Tornadoes	77%	77%	77%	77%	77%	77%
Tropical Cyclones	37%	37%	37%	37%	37%	37%
Wildfires	< 1%	< 1%	< 1%	< 1%	< 1%	< 1%
Winter Weather	13%	13%	13%	13%	13%	13%

As shown in the table above, hailstorms and high winds have the highest chance of occurrence in the parish (100%). These are followed by flooding for the unincorporated area of the parish (81%), tornadoes (77%), flooding for the incorporated area of Bastrop (65%), flooding for the incorporated areas of Mer Rouge and Oak Ridge (52%), flooding for the incorporated area of Bonita (48%), flooding for the incorporated area of Collinston (42%), tropical cyclones (37%), drought (19%), and winter storms (13%). Lightning, wildfires, winter storms, dam failure, and levee failure have an annual chance of occurrence of less than 1%.

### 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 \$18,495,457,000 in structures throughout the parish. The table below provides the total estimated value for each type of structure by occupancy.

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

Occupancy	Morehouse Parish	Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
Agricultural	\$40,660,000	\$30,296,000	\$1,852,000	\$942,000	\$504,000	\$1,852,000	\$5,214,000
Commercial	\$502,558,000	\$145,027,000	\$320,945,000	\$6,458,000	\$4,838,000	\$22,948,000	\$2,342,000
Government	\$44,675,000	\$6,034,000	\$29,726,000	\$1,038,000	\$720,000	\$1,479,000	\$5,678,000
Industrial	\$115,738,000	\$44,042,000	\$70,882,000	\$270,000	\$124,000	\$0	\$420,000
Religion	\$174,614,000	\$93,650,000	\$71,388,000	\$2,666,000	\$0	\$2,454,000	\$4,456,000
Residential	\$2,881,812,000	\$1,582,714,000	\$1,155,957,000	\$28,912,000	\$25,963,000	\$72,373,000	\$15,893,000
Education	\$40,738,000	\$12,522,000	\$22,074,000	\$2,674,000	\$2,586,000	\$470,000	\$412,000
<b>Total</b>	<b>\$3,800,795,000</b>	<b>\$1,914,285,000</b>	<b>\$1,672,824,000</b>	<b>\$42,960,000</b>	<b>\$34,735,000</b>	<b>\$101,576,000</b>	<b>\$34,415,000</b>

Critical Facilities of the Parish

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

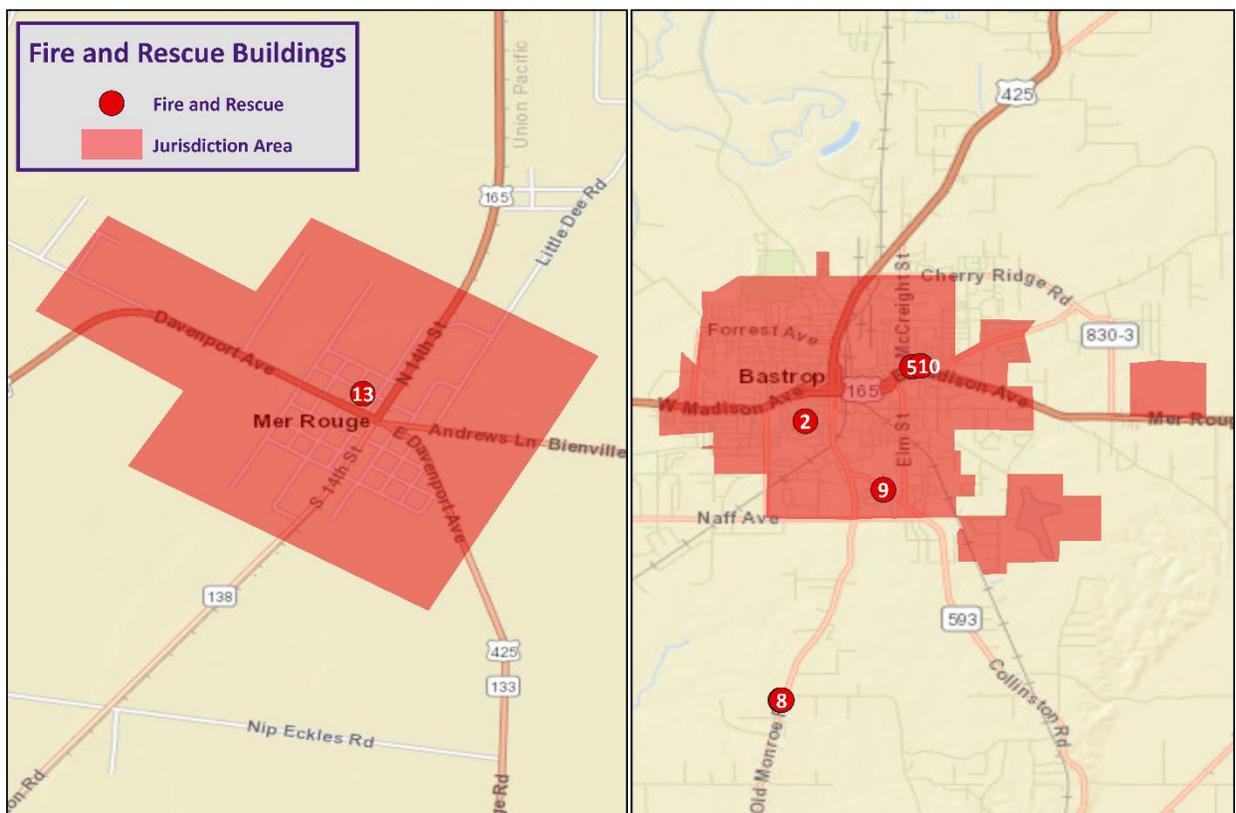
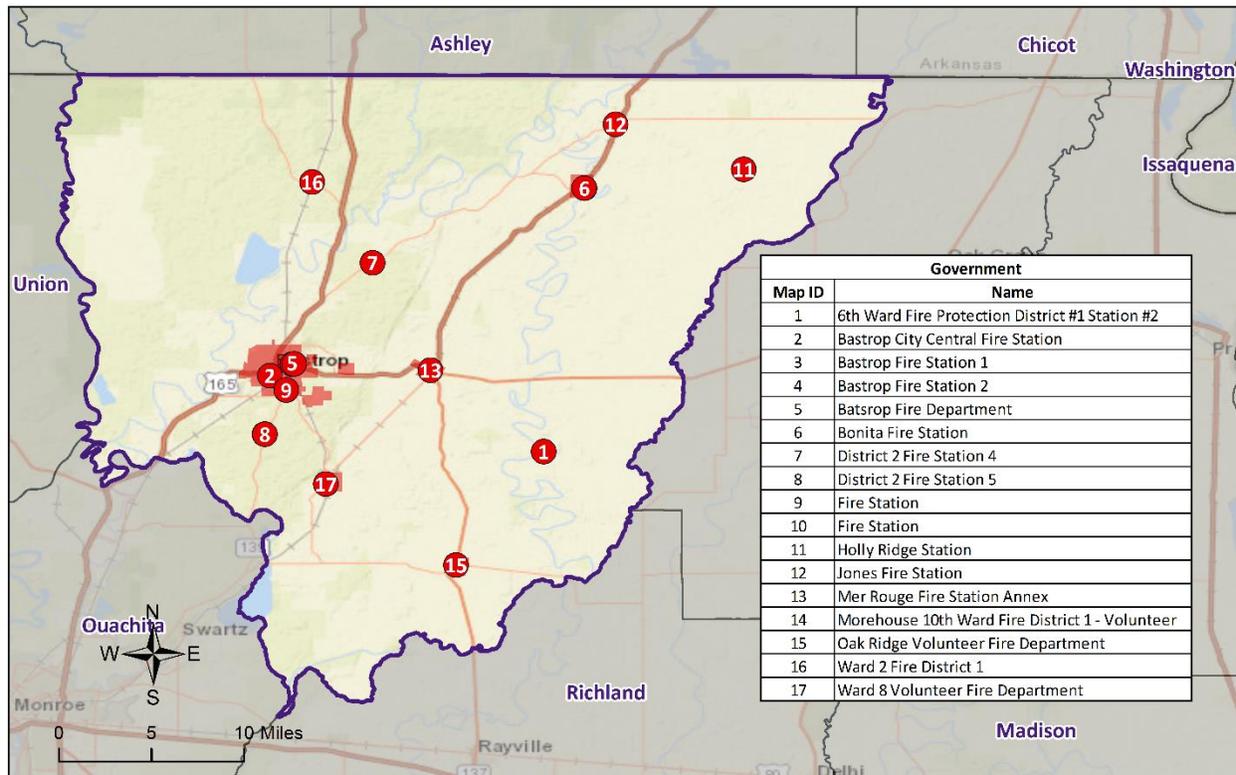


Figure 2-1: Fire and Rescue Facilities in Morehouse Parish.

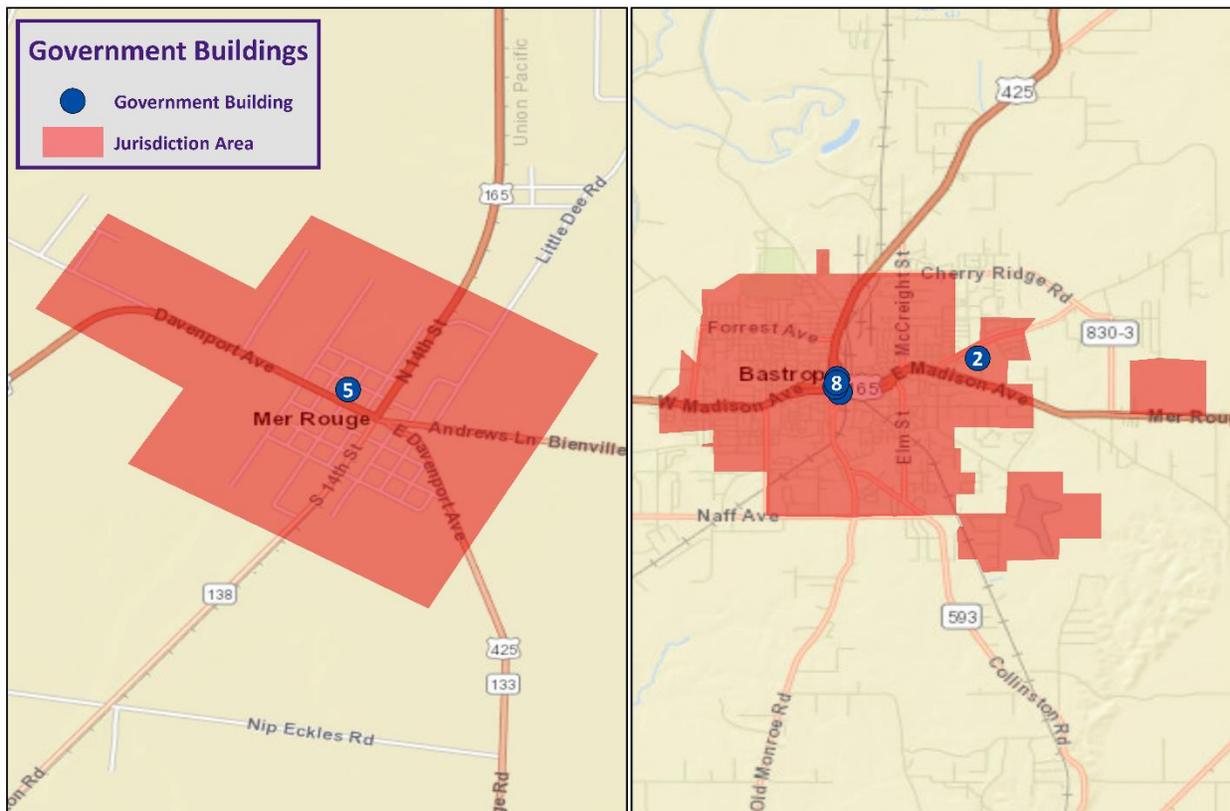
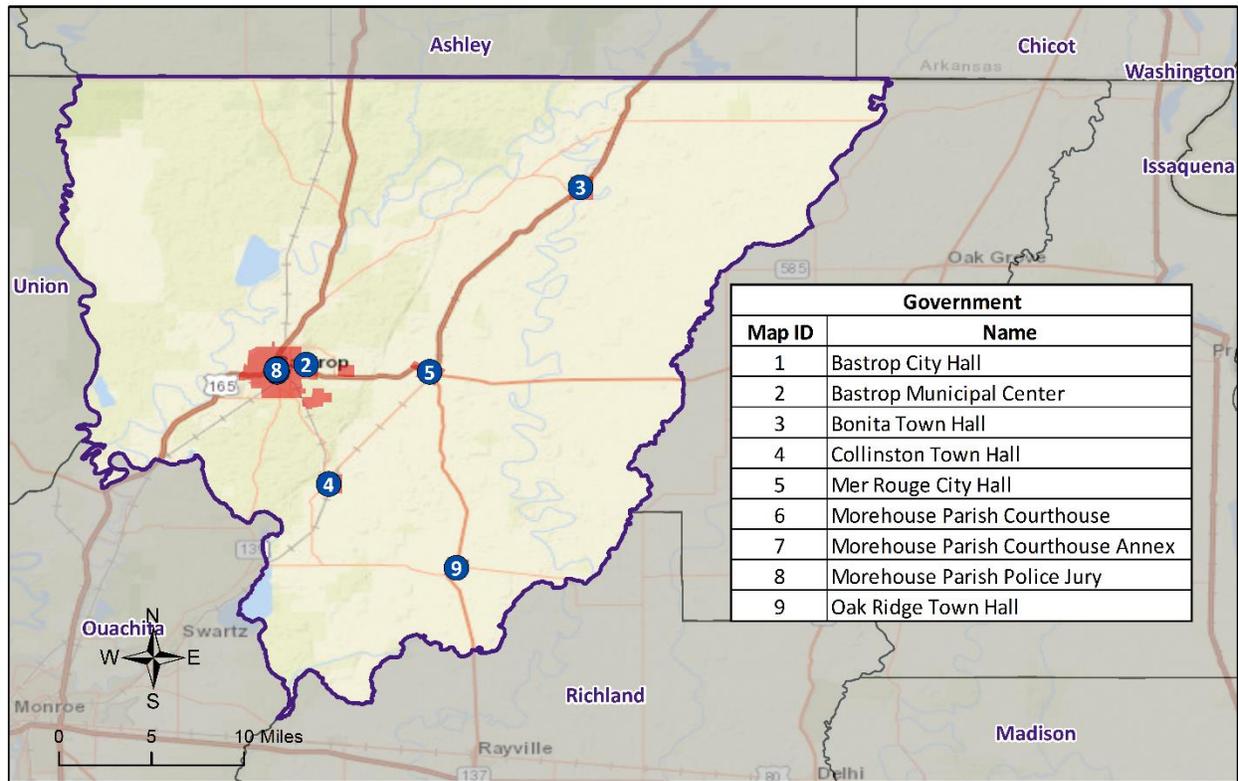


Figure 2-2: Government Buildings in Morehouse Parish.

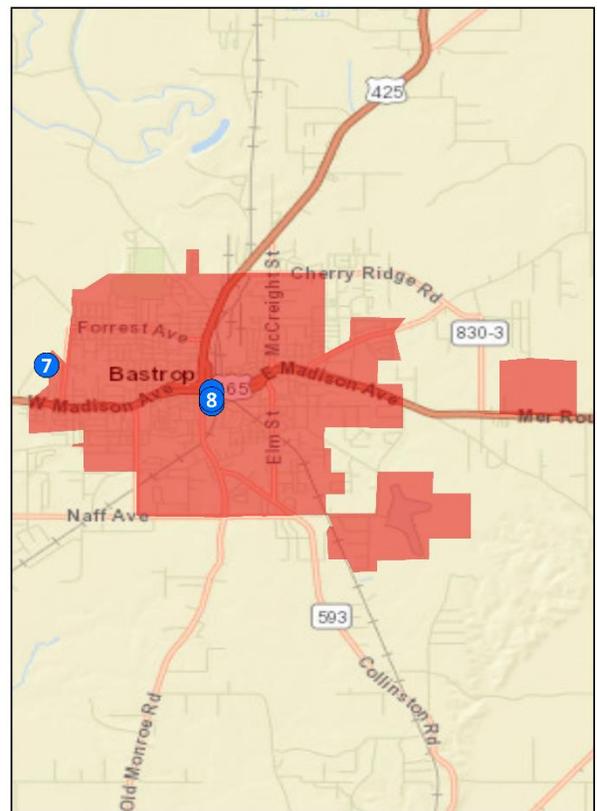
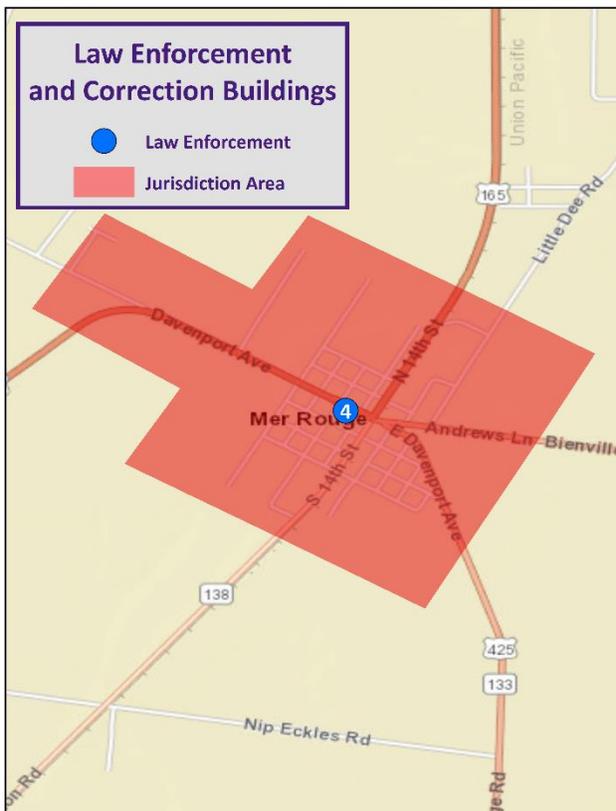
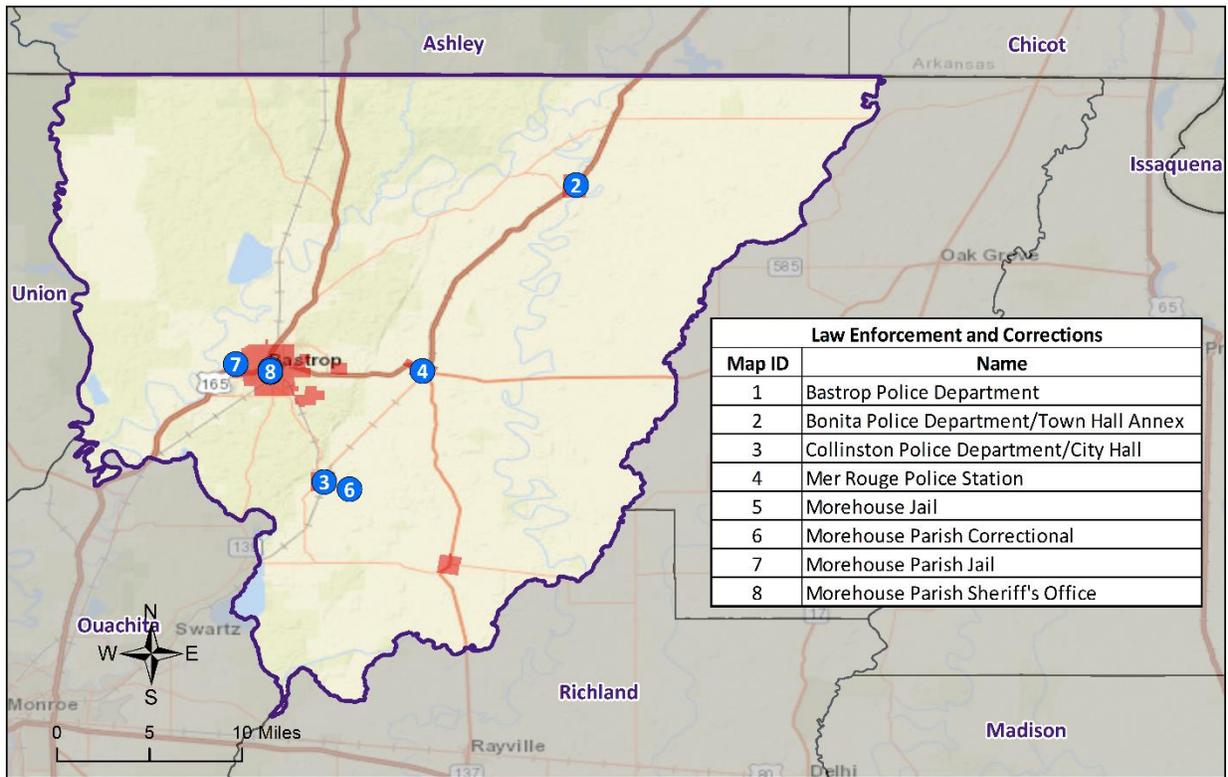


Figure 2-3: Law Enforcement in Morehouse Parish.

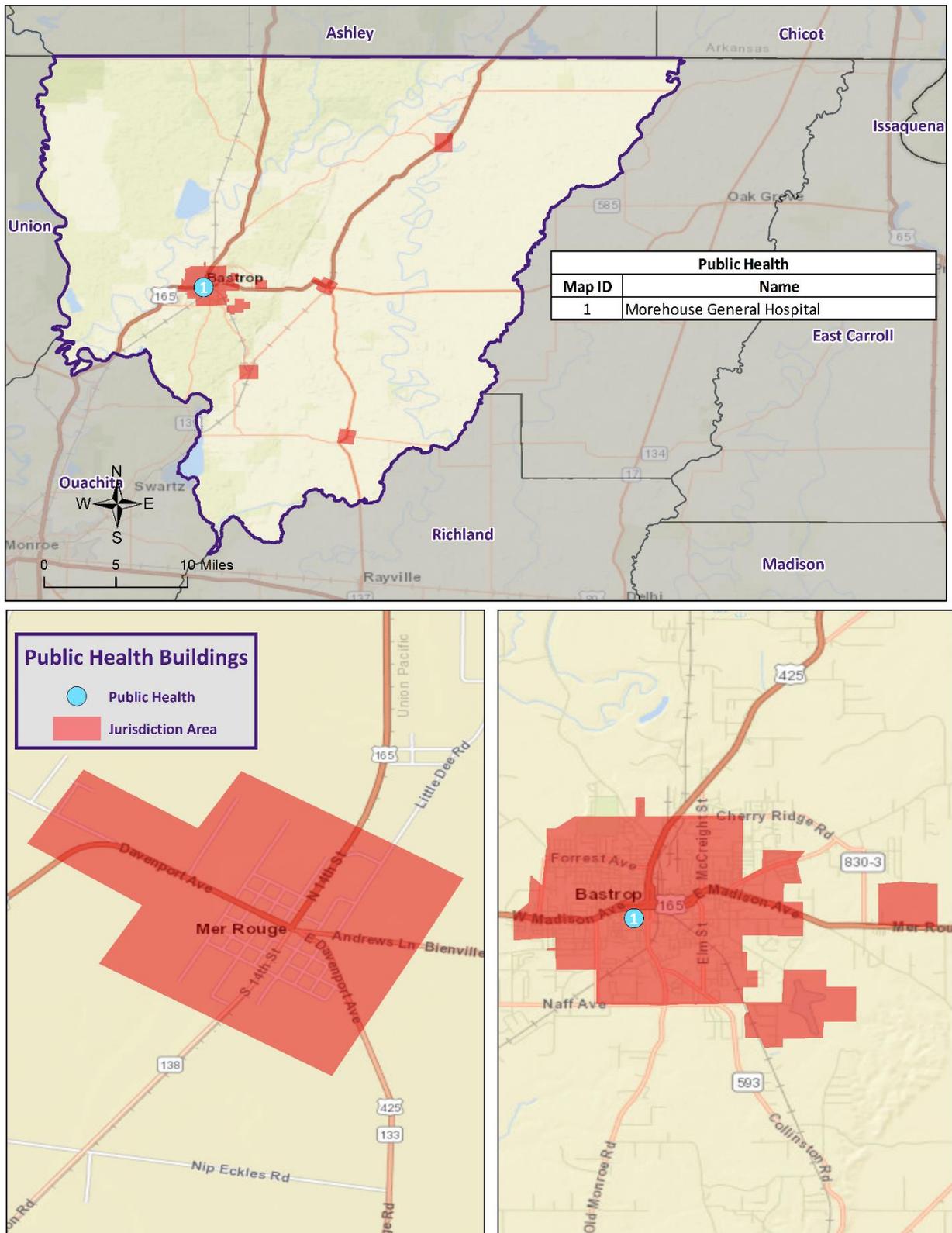


Figure 2-4: Public Health Facilities in Morehouse Parish.

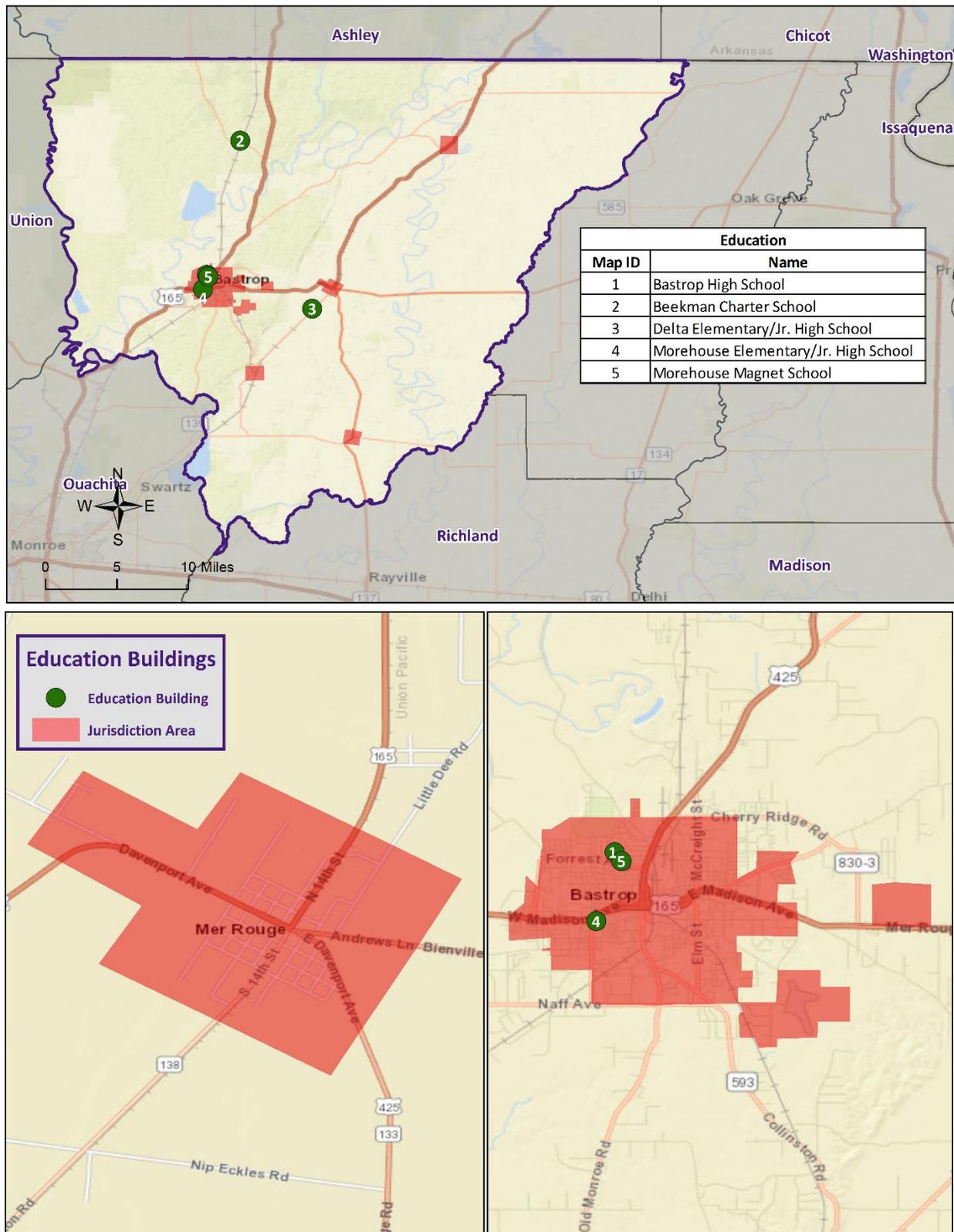


Figure 2-5: Educational Facilities in Morehouse Parish.

## Assessing Vulnerability Overview

The purpose of assessing vulnerability is to quantify and/or qualify exposure and determine how various threats and hazards impact life, property, the environment, and critical operations in Morehouse Parish. Vulnerability can be defined as the manifestation of the inherent states of the system (e.g., physical, technical, organizational, cultural) that can be exploited to adversely affect (cause harm or damage to) that system. For example, identifying areas in the parish that suffer disproportional damages from flooding compared with other areas, or overall exposure of an entire town to flooding. Identifying and understanding vulnerability to each threat and hazard provides a strong foundation for developing and pursuing mitigation actions.

The Vulnerability Assessment section for each hazard builds upon the information provided in the Risk Assessment by assessing the potential impact and amount of damage that each hazard has on the parish and each jurisdiction location. To complete the assessment, best available data were collected from a variety of sources, including local, state, and federal agencies, and multiple analyses were performed qualitatively and quantitatively. The estimates provided in the Vulnerability Assessment should be used to understand relative risk from each hazard and the potential losses that may be incurred; however, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning specific hazards and their effects on the built environment, as well as incomplete datasets from approximations and simplifications that are necessary to provide a meaningful and complete analysis. Further, most datasets used in this assessment contain relatively short periods of records, which increases the uncertainty of any statistically based analysis.

## Quantitative Methodology

The quantitative methodology consists of utilizing a detailed GIS-based approach informed through the development of comprehensive hazard and infrastructure databases. This data-centric approach forms the foundation for our quantitative vulnerability assessment. GIS technology allowed for the identification and analysis of potentially at-risk community assets such as people and infrastructure. This analysis was completed for hazards that can be spatially defined in a meaningful manner (i.e., hazards with an official and scientifically determined geographic extent) and for which GIS data were readily available.

## Qualitative Methodology

The qualitative assessment relies less on technology, but more on historical and anecdotal data regarding expected hazard impacts. The qualitative assessment completed for Morehouse Parish is based on the Priority Risk Index (PRI). The purpose of the PRI is to prioritize all potential hazards, and then group them into three categories of high, moderate, or low risk to identify and prioritize mitigation opportunities. The PRI is a good practice to use when prioritizing hazards because it provides a standardized numerical value for hazards to be compared. PRI scores were calculated using five categories:

- Probability
- Impact
- Spatial Extent
- Warning Time
- Duration

Each degree of risk is assigned a value (1-4) and a weighting factor. To calculate the Risk Factor for a given hazard, the assigned risk value for each category is multiplied by the weighted factor, and the sum

of all six categories is totaled together to determine the final Risk Factor. The highest possible Risk Factor is 4.0.

$$\text{Risk Factor} = [(\text{Probability} * 0.25) + (\text{Impact} * 0.25) + (\text{Spatial Extent} * 0.20) + (\text{Warning Time} * 0.15) + (\text{Duration} * 0.15)]$$

**Priority Risk Index and Hazard Risk**

Hazard risk is determined by calculating the Risk Factor for each hazard impacting Morehouse Parish. A summary of the PRI is found in the following table. The conclusions drawn from the qualitative and quantitative assessments are fitted into three categories based on High, Moderate, or Low designations. Hazards identified as high risk have risk factors of 2.5 or greater. Risk Factors ranging from 2.0 to 2.4 are deemed moderate risk hazards. Hazards with Risk Factors less than 2.0 are considered low risk.

*Table 2-5: Summary of the Priority Risk Index.*

PRI Category	Degree of Risk			Assigned Weighting Factor
	Level	Criteria	Index Value	
Probability	Unlikely	Less than 1% annual probability	1	25%
	Possible	Between 1 and 10% annual probability	2	
	Likely	Between 10 and 100% probability	3	
	Highly Likely	100% annual probability	4	
Impact	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	25%
	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than a week.	3	
	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	15%
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	15%
	Less than 24 hours	Self-explanatory	2	
	Less than one week	Self-explanatory	3	
	More than one week	Self-explanatory	4	

Table 2-6: Associated Risk Factor with PRI Value Range.

Risk Factor	PRI Range
High Risk	2.5 to 4.0
Moderate Risk	2.0 to 2.4
Low Risk	0 to 1.9

Table 2-7: Risk Assessment for Morehouse Parish.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Drought	3	2	4	2	3	2.8
Extreme Heat	2	1	4	1	4	2.3
Flooding	3	4	3	4	3	3.4
Thunderstorms - Hail	4	2	3	3	1	2.7
Thunderstorms - Lightning	1	2	2	3	1	1.75
Thunderstorms - Wind	4	2	3	3	1	2.7
Tornadoes	3	3	2	4	3	2.95
Tropical Cyclones	3	4	4	1	4	3.3
Wildfires	1	3	4	1	2	2.25
Winter Weather	3	2	2	4	2	2.55
Dam Failure	1	2	1	4	2	1.85
Levee Failure	1	2	1	4	2	1.85

### Future Development Trends

Morehouse Parish experienced a decline in population and housing between the years of 2000 and 2020, decreasing in population from 30,961 with 12,711 housing units in the year 2000 to a population of 25,629 with 11,863 housing units in the year 2020. Bonita experienced the largest population decline within the parish falling from a populace of 283 in 2010 to 170 in 2020 (39.9% overall decline). This is followed by the incorporated area of Mer Rouge with a 21.7% overall decline, the incorporated area of Bastrop with a 14.6% overall decline, the incorporated area of Oak Ridge with a 13.9% overall decline, the incorporated area of Collinston with a 4.2% overall decline, and the unincorporated area of the parish at 2.4% overall decline.

Bonita experienced the largest growth of housing units from 2010 to 2020 falling from 130 in 2010 to 99 in 2020. This is followed by Oak Ridge with a 17.5% overall decline, Collinston with a 12.3% overall decline, Bastrop with a 7.7% overall decline, Mer Rouge with a 4.3% overall decline, and the unincorporated area of the parish with a 1.6% overall decline. 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 2020:

Table 2-8: Population Growth Rate for Morehouse Parish.

Total Population	Morehouse Parish	Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
1-Apr-00	30,961	16,455	13,008	340	323	685	150
1-Apr-10	27,925	15,242	11,343	283	286	627	144
1-Apr-20	25,629	14,879	9,691	170	274	491	124
Population Growth between 2000 – 2010	-9.8%	-7.4%	-12.8%	-16.8%	-11.5%	-8.5%	-4.0%
Average Annual Growth Rate between 2000 – 2010	-1.0%	-0.7%	-1.3%	-1.7%	-1.1%	-0.8%	-0.4%
Population Growth between 2010 – 2020	-8.2%	-2.4%	-14.6%	-39.9%	-4.2%	-21.7%	-13.9%
Average Annual Growth Rate between 2010 – 2020	-0.82%	-0.24%	-1.46%	-3.99%	-0.42%	-2.17%	-1.39%

Table 2-11: Housing Growth Rate for Morehouse Parish.

Total Population	Morehouse Parish	Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
1-Apr-00	12,711	6,762	5,292	143	149	293	12,711
1-Apr-10	12,423	6,955	4,857	130	146	255	12,423
1-Apr-20	11,863	6,842	4,484	99	128	244	11,863
Housing Growth between 2000 – 2010	-2.3%	2.9%	-8.2%	-9.1%	-2.0%	-13.0%	-2.3%
Average Annual Growth Rate between 2000 – 2010	-0.2%	0.3%	-0.8%	-0.9%	-0.2%	-1.3%	-0.2%
Housing Growth between 2010 – 2020	-4.5%	-1.6%	-7.7%	-23.8%	-12.3%	-4.3%	-4.5%
Average Annual Growth Rate between 2010 – 2020	-0.5%	-0.2%	-0.8%	-2.4%	-1.2%	-0.4%	-0.5%

### Future Hazard Impacts

Hazard impacts were estimated for five years and ten years in the future (2025 and 2030). 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 grow within Morehouse Parish from the present until 2030. 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%.

*Table 2-12: Estimated Future Impacts, 2020 - 2030.*

*(Source: Hazus, US Census Bureau)*

Hazard / Impact	Total in Parish (2020)	Hazard Area (2020)	Hazard Area (2025)	Hazard Area (2030)
<b>Flood Damage</b>				
<b>Structures</b>	11,982	1,415	1,487	1,547
<b>Value of Structures</b>	\$3,877,958,740	\$457,868,163	\$506,272,265	\$548,654,680
<b># of People</b>	25,655	3,029	3,044	3,056
<b>Tropical Cyclone Damage</b>				
<b>Structures</b>	11,982	11,982	12,593	13,104
<b>Value of Structures</b>	\$3,877,958,740	\$3,877,958,740	\$4,287,921,972	\$4,646,883,939
<b># of People</b>	25,655	25,655	25,783	25,886

Both population and housing numbers have had a relatively small decline throughout the parish since the last update to the Morehouse Parish Hazard Mitigation Plan. With that in mind, Morehouse Parish is mindful in offsetting any new development around the parish with appropriate mitigative actions. Initiatives such as active floodplain management have regulated the development of flood prone areas to continue supporting and encouraging safer communities within Morehouse Parish. The small amount of development that has occurred since 2016 has not in any knowing way altered the parish’s vulnerability to natural hazards.

### Land Use

The Morehouse Parish Land Use table is provided on the following page. Residential, commercial, and industrial areas account for only 5% of the parish’s land use. Agricultural land at 289,116 acres is the largest category accounting for 56% of land in the parish. The parish also consists of forested land (21%), wetlands (15%), and water areas (3%).

Table 2-9: Morehouse Parish Land Use.  
 (Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	289,116	56%
Wetlands	78,606	15%
Forest Land (Not including forested wetlands)	109,557	21%
Urban/Development	24,900	5%
Water	13,534	3%

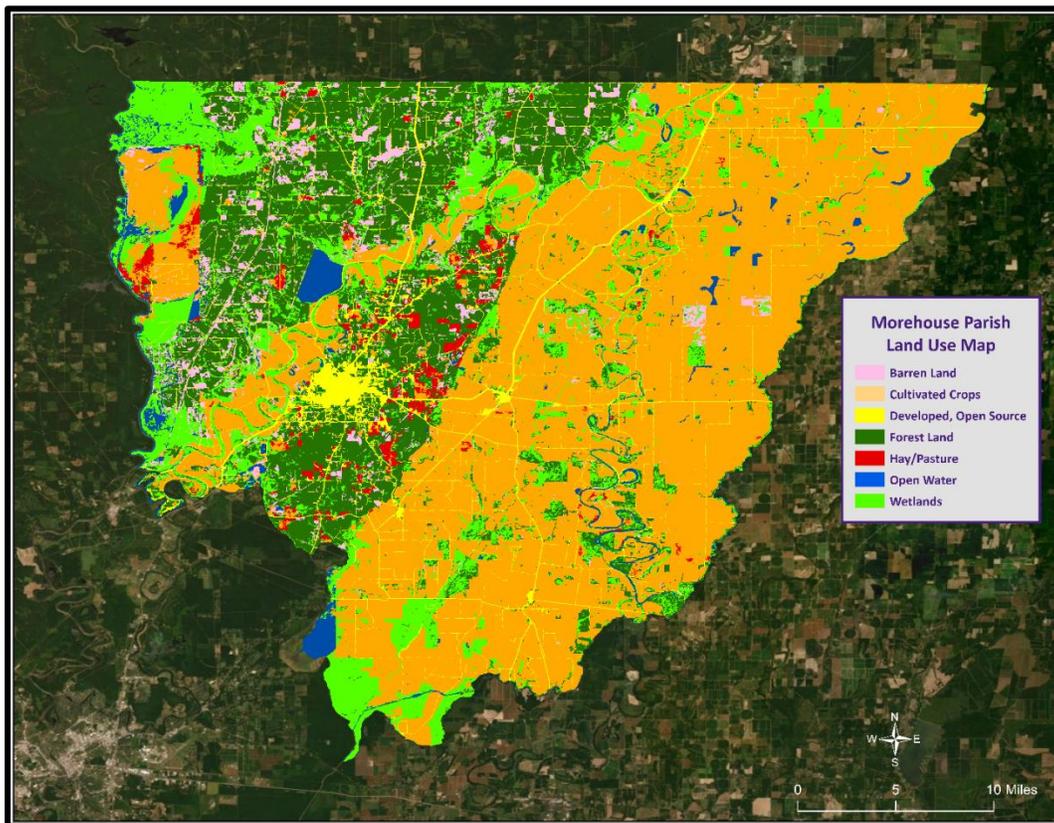


Figure 2-6: Morehouse Parish Land Use Map.  
 (Source: USGS Land Use Map)

## Hazard Identification

### Dam Failure

Dams are water storage, control, or diversion barriers that impound water upstream and 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 a 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 earlier 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 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 (NDPS) produces hazard rankings (high, significant, and low) and definitions of dam structures, based on potential impact. These rankings can be defined as the following:

- **High:** Dams assigned the high hazard potential classification are those where failure or mis operation will probably cause loss of human life.
- **Significant:** Dams assigned the significant hazard potential classification are those dams where failure or mis operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominately rural or agricultural areas, but could be located in areas with population and significant infrastructure.
- **Low:** Dams assigned the low hazard potential classification are those where failure or mis operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

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.

In Louisiana, there are 513 dams included in the Army Corps of Engineers National Inventory of Dams. Of these, 41 are considered high hazard, 63 are significant hazard, and 409 are low hazard potential dams.

#### Location

According to the National Inventory of Dams, Morehouse Parish has two significant hazard dams located in the unincorporated area of Morehouse Parish. Dam hazards pose no threat to the incorporated areas of Bastrop, Bonita, Collinston, Mer Rouge, and Oak Ridge. The dams located in Morehouse Parish are shown in the following figure:

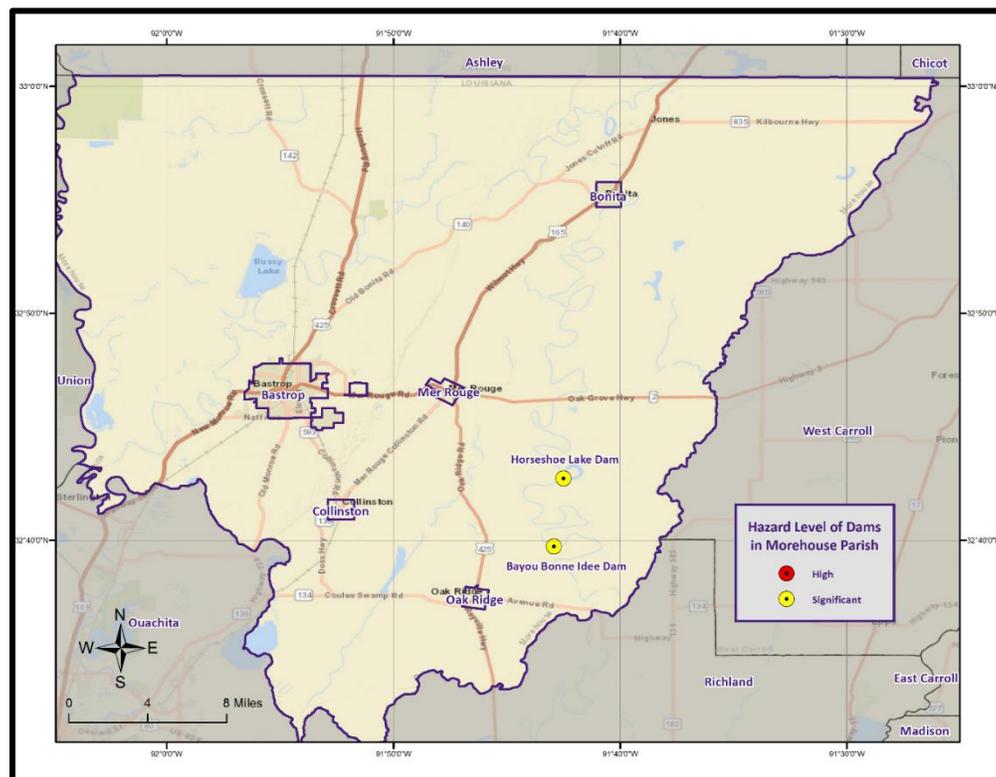


Figure 2-7: National Inventory of Dam Locations in Morehouse Parish.

#### Previous Occurrences / Extents

The National Performance of Dams Program (NPDP), a database of dam incidents maintained by Stanford University, lists one dam incident in Louisiana, which occurred in Kisatchie Lake Dam in Grant Parish in 1991. However, there have been no dam failures within the boundaries of Morehouse Parish and its jurisdictions. The parish claims a data deficiency on the extent of dam failure for the two significant hazard dams in Morehouse Parish. This data deficiency includes potential inundation areas and subsequent impacts related to the overtopping, collapse, or breaching of the Horseshoe Lake and Bayou Bonne Idee dams. As these inundation zones haven't yet been identified, Morehouse Parish will continue to develop an extent and additional relevant data associated with this hazard.

*Frequency / Probability*

It is nearly impossible to predict and model dam failure and its impacts on Morehouse Parish. Due to the unpredictability of dam failures, it is calculated that the probability of a dam failure is less than 1% annually for the unincorporated areas of Morehouse Parish and its jurisdictions.

*Estimated Potential Losses*

Determining the annualized loss as a result of a dam failure is difficult in Morehouse Parish due to availability of data on past dam failure events. The National Inventory of Dams was utilized to determine the dams within Morehouse Parish, the risk level, and storage capacity of the reservoir. The NLD is a congressional authorized database that documents dams in the United States and its territories and is maintained by the U.S. Army Corps of Engineers (USACE). The following table provides an extensive list of the dams in Morehouse Parish with the risk associated with each system.

*Table 2-14: Dams and Risk Associated with each in Morehouse Parish.  
(Source: National Inventory of Dams)*

System	Rating	Height (ft)	Storage (Acre-Feet)	Dam Type	Last Inspection Date
<b>Bayou Bonne Idee Dam</b>	Significant	25	7,000	Earth	8/31/2018
<b>Horseshoe Lake Dam</b>	Significant	12	970	Earth	5/7/2019

*Vulnerability*

See [Appendix C](#) for parish and municipality building exposure to dam failures.



## 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. And 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 2-15* displays the range and Palmer classifications of the PDSI index while *Figure 2-8* displays the current drought monitor for the state of Louisiana and its parishes.

Table 2-15: 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 extreme drought conditions throughout the parish.

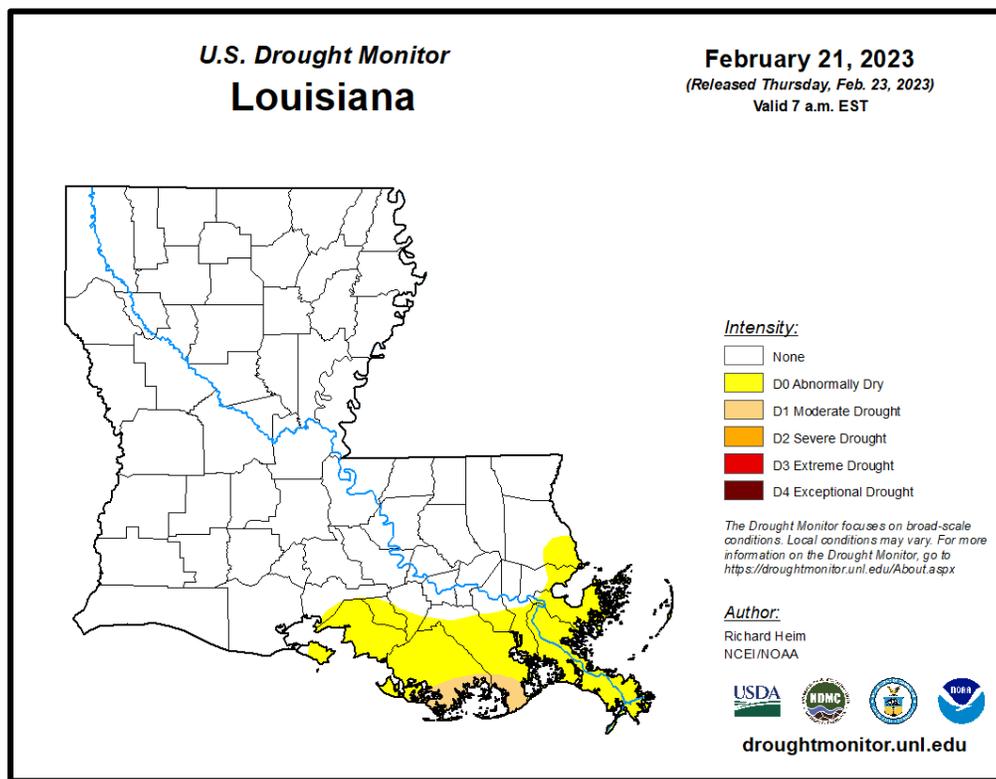


Figure 2-8: United States Drought Monitor for the State of Louisiana and its Parishes. (Source: The National Drought Mitigation Center)

*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 Morehouse Parish is on the agricultural community. The worst-case drought scenario for Morehouse Parish would be a severe drought (D3).

*Previous Occurrences / Extent*

Historically, there have been six drought incidents in Morehouse Parish. Drought events have ranged from Mild to Extreme per the National Climatic Data Center. Since the last update in 2016, there have been two drought events within the boundaries of Morehouse Parish.

*Table 2-16: Historical Droughts in Morehouse Parish since the 2016 Update.*

Date	Impacts	Crop Damage	Magnitude
<b>November 2017</b>	Lack of rainfall across the region has led to a severe drought across portions of Louisiana. This includes severe drought (D2) level in Morehouse Parish.	\$10,000	D2
<b>December 2021</b>	The U.S. Drought Monitor indicated Severe Drought (D2) conditions across Morehouse Parish during the month of December. Rainfall across the parish was generally less than 50 percent of normal, and temperatures averaged around 10 degrees above normal through the month. The combination of warm and dry weather resulted in depleted soil moisture conditions and reduced flows on local bayous and streams. Impacts to agriculture were minimal during the month, but winter cover crops and pasture grasses were somewhat short and uneven due to mostly showery rain during the month. Some cattle were not gaining as much weight due to the warmer and drier weather. Some farm ponds were drying up.	\$0	D2

*Frequency / Probability*

Based on four drought events since 1990, the annual chance of occurrence of a drought event occurring within a given year is calculated at 19% for Morehouse Parish.



*Estimated Potential Loses*

According to the NCEI Storm Events Database, there have been four drought events which have impacted Morehouse Parish which resulted in \$3,990,000 in damage to crops in the parish. When examining the drought hazard, the main impact will primarily be on the crops. The following table presents an analysis of agricultural exposure which are susceptible to droughts by type for Morehouse Parish.

*Table 2-17: Agricultural Exposure by Crop Type for Droughts in Morehouse Parish.  
(Source: LSU AG Center 2020 Parish Totals)*

Agricultural Exposure by Type for Drought			
Pecans	Rice	Sweet Potatoes	Wheat
\$1,935,933	\$41,233,219	\$6,984,394	\$4,933,239

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

*Vulnerability*

See [Appendix C](#) for parish and municipality buildings that are susceptible to drought.

### Excessive 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. On the next page, the HI is presented in [Figure 2-9](#) and [Table 2-18](#) 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, and that strong winds of hot, dry air can be extremely hazardous.

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 considering age and physical condition. Other circumstances that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Seniors and children are most at risk from adverse heat effects. Extreme heat can also damage roads, bridges, pipelines, utilities, and railroads. High temperatures can be partially responsible for deflection of rails and related railroad accidents.

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

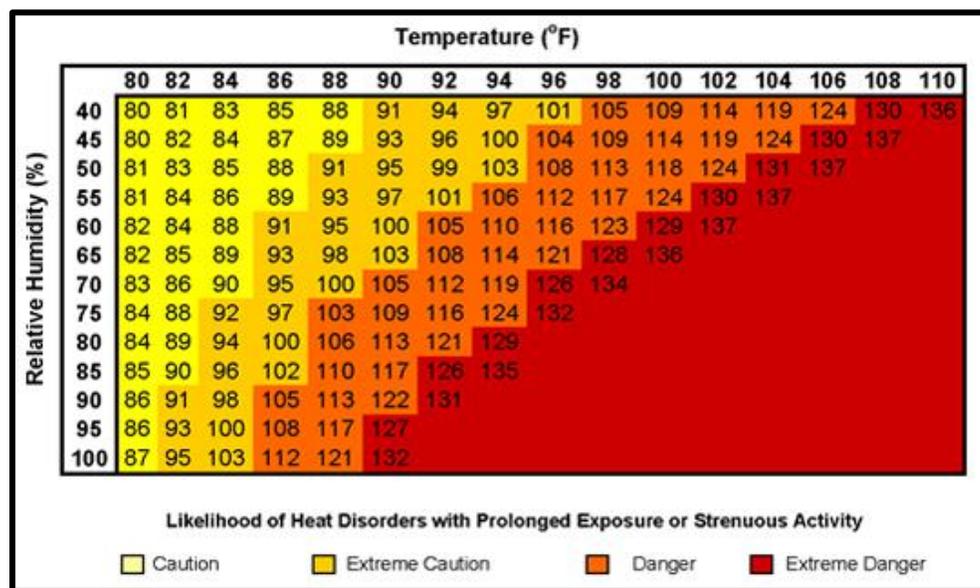


Figure 2-9: Heat Index Advisor based on Air Temperature (°F) and Relative Humidity. (Source: National Weather Service)

Table 2-18: 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, it has the same probability of occurring in Morehouse Parish as all of the adjacent parishes. The entire planning area of Morehouse Parish is equally at risk for extreme heat. Based on historical data, the worst-case scenario for Morehouse Parish involving extreme heat would be a high-risk level on the HI scale with temperatures ranging from 103°F to 115°F.

Previous Occurrences / Extent

Per the NCEI Storm Events Database, there has been one incident of an extreme heat events in Morehouse Parish since 1990. Since the 2016 Morehouse Parish HMP update, there have been no events.

Frequency / Probability

Based on historical data, the annual chance of occurrence of an extreme heat event occurring within a given year is calculated at 3% for Morehouse Parish.

*Estimated Potential Losses*

Since 1990, there has been one significant extreme heat event that has resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those events have totaled approximately \$1,000. To estimate the potential losses of an extreme heat event on an annual basis, the total damages recorded for these events was divided by the total number of years of available data in the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential loss of \$32 and \$167 per event. The following table provides an estimate of potential property losses for Morehouse Parish:

*Table 2-19: Estimated Annual Losses Morehouse Parish and its Jurisdictions Resulting from Extreme Heat.*

Extreme Heat Estimated Annual Potential Losses					
Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
\$19	\$12	< \$1	< \$1	\$1	< \$1

There have been no reported injuries or fatalities as a result of extreme heat events in Morehouse Parish.

*Vulnerability*

See [Appendix C](#) for parish and municipality buildings that are susceptible to extreme heat.

## 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.

Historically, in Morehouse Parish, all types of flooding events have historically been observed except for coastal flooding. 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, but they can also be different along any given river. A 100-year event upstream is different from one downstream due to the change 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 change over time. 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 2-10](#).

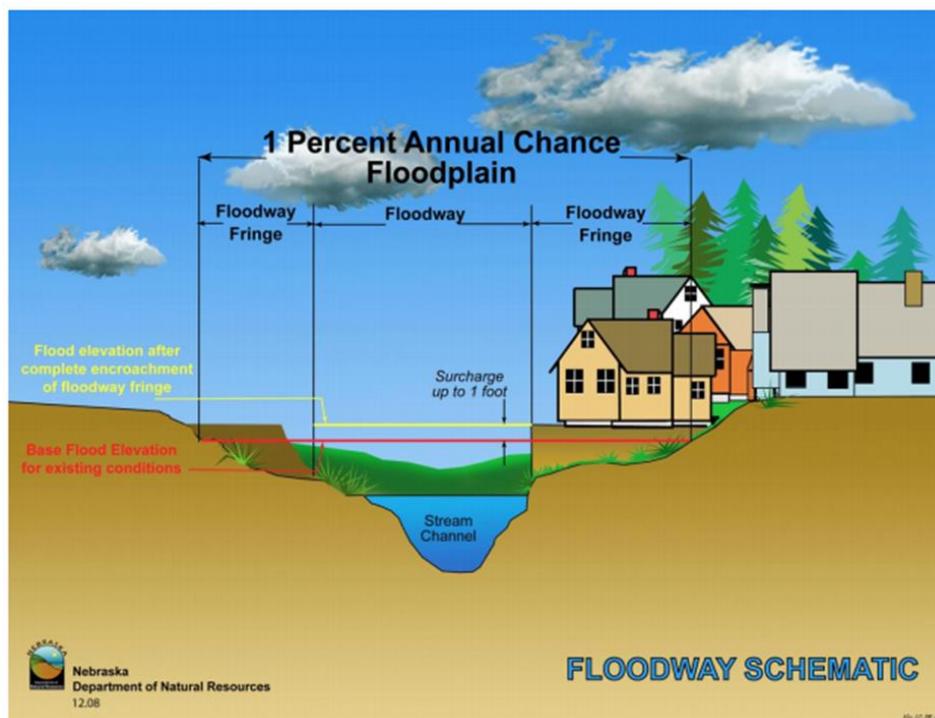


Figure 2-10: Schematic of 100-year Floodplain. The Special Flood Hazard Area (SFHA) extends to the end of the floodway fringe.

(Source: Nebraska Department of Natural Resources)

A SFHA is the land area covered by the floodwaters of the base flood (red line in *Figure 2-10*), 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 usually are not salvageable. Electrical appliances and gasoline engines will flood, making them worthless until they are professionally dried and cleaned.

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

#### *Repetitive Loss Properties*

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

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

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

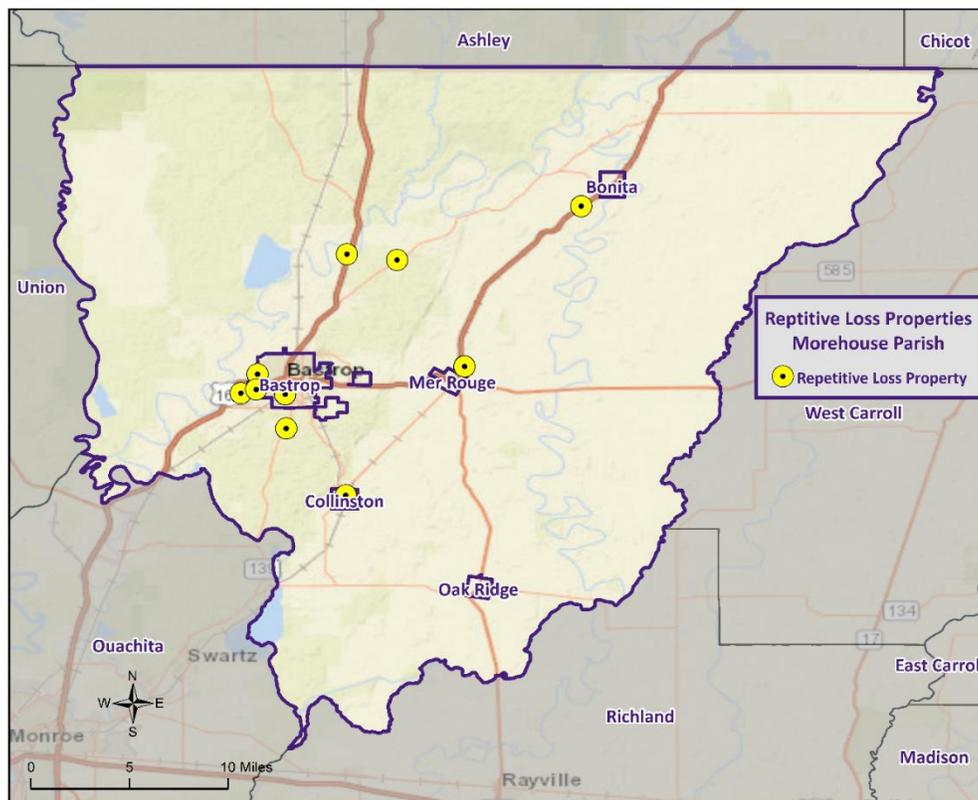
- a. It is covered under a contract for flood insurance made available under the NFIP; and
- b. It has incurred flood related damage –
  - 1) For which four or more separate claims payments have been made under flood insurance coverage with the amount of each claim exceeding \$5,000 and with the cumulative 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 Morehouse Parish are provided in the table below:

*Table 2-20: Repetitive Loss Structures for Morehouse Parish.*

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
<b>Morehouse Parish (Unincorporated)</b>	15	13	2	0	43	\$1,228,259	\$28,564
<b>Bastrop</b>	11	10	1	0	29	\$700,372	\$24,151
<b>Bonita</b>	0	0	0	0	0	\$0	\$0
<b>Collinston</b>	0	0	0	0	0	\$0	\$0
<b>Mer Rouge</b>	0	0	0	0	0	\$0	\$0
<b>Oak Ridge</b>	0	0	0	0	0	\$0	\$0
<b>TOTAL</b>	<b>26</b>	<b>23</b>	<b>3</b>	<b>0</b>	<b>72</b>	<b>\$1,928,631</b>	<b>\$26,787</b>

All 26 repetitive loss structures were geocoded in order to provide an overview of where the repetitive loss structures are located throughout the parish. *Figure 2-11* shows the approximate location of the structures, while *Figure 2-12* shows where the highest concentration of repetitive loss structures is located. Through the repetitive loss map, it is clear the primary concentrated area of repetitive loss structures is focused in and around the incorporated area of Bastrop.



*Figure 2-11: Repetitive Loss Properties in Morehouse Parish.*

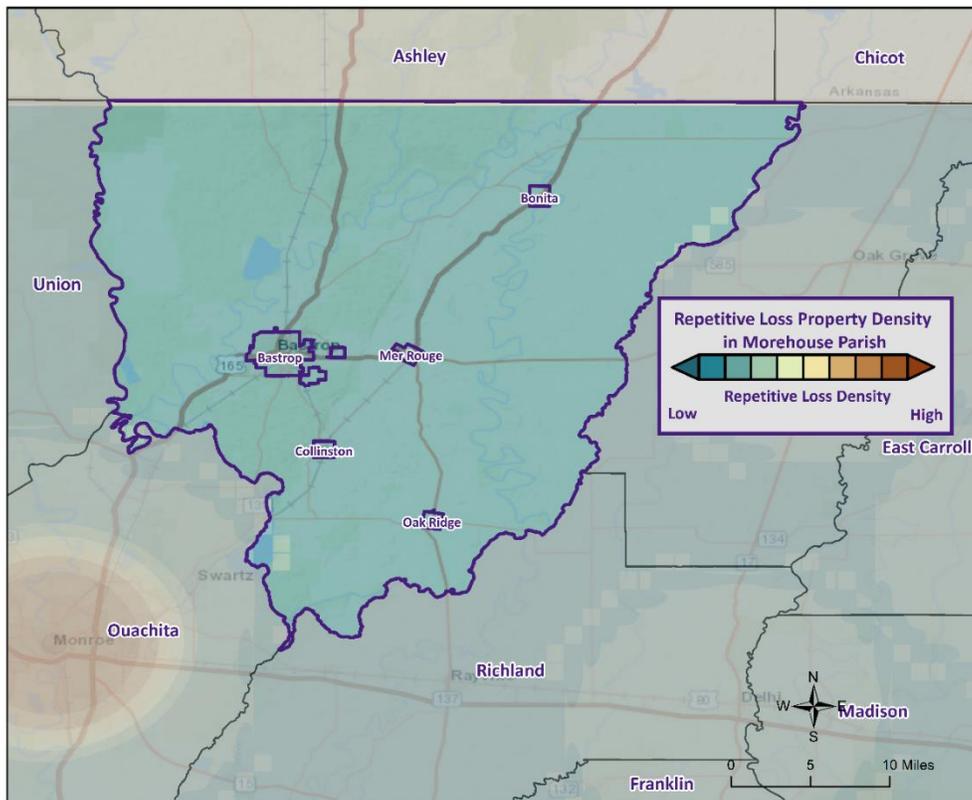


Figure 2-12: Repetitive Loss Property Densities in Morehouse Parish.

*National Flood Insurance Program*

Flood insurance statistics indicate that Morehouse Parish has 199 flood insurance policies with the NFIP, with total annual premiums of \$128,425. Morehouse Parish and the jurisdictions of Bastrop, Bonita, Collinston, Mer Rouge, and Oak Ridge are all participants in the NFIP. Morehouse Parish and all of its 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 Morehouse Parish and its jurisdictions is provided in the tables to follow.

Table 2-21: Summary of NFIP Policies for Morehouse Parish.

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid	No. of Insurance Claims Filed Since 1978	Total Loss Payments
<b>Morehouse Parish</b>	154	\$34,344,000	\$106,325	167	\$5,295,221
<b>Bastrop</b>	26	\$3,833,400	\$13,632	46	\$829,597
<b>Bonita</b>	2	\$284,000	\$652	2	\$70,000
<b>Collinston</b>	0	\$0	\$0	0	\$0
<b>Mer Rouge</b>	11	\$3,360,000	\$5,034	3	\$16,115
<b>Oak Ridge</b>	6	\$2,510,000	\$2,782	0	\$0
<b>Total</b>	<b>199</b>	<b>\$44,331,400</b>	<b>\$128,425</b>	<b>218</b>	<b>\$6,210,933</b>

Table 2-22: Summary of Community Flood Maps for Morehouse Parish.

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
220367A	Morehouse Parish	6/8/1978	10/15/1985	7/16/2016	10/15/1985	No
220127A	Bastrop	3/15/1974	12/16/1980	7/16/2016	12/16/1980	No
220316A	Bonita	8/22/1975	4/1/2007	7/16/16 (M)	4/1/2007	No
220399A	Collinston		7/6/2016	7/6/2016	7/6/2016	No
220128A	Mer Rouge	5/17/1974	6/27/1978	7/6/16 (M)	6/27/1978	No
220303A	Oak Ridge	11/12/1976	7/6/2016	7/6/2016	3/27/1997	No

According to the Community Rating System (CRS) list of eligible communities dated October 1, 2022, the unincorporated area of Morehouse Parish and the jurisdictions Bastrop, Bonita, Collinston, Mer Rouge, and Oak Ridge do not participate in the CRS program.

*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 floods have often put themselves in perilous situations by entering flood waters that they believe to be safe, or by ignoring travel advisories.

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

*Flooding in Morehouse 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 Morehouse Parish experiences.

**Flash Floods:** Flash floods are characterized by a rapid rise in water level, high velocity, and large amounts of debris. They are 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, by definition, is river-based. Most of the riverine flooding problems occur when rivers crest at flood stage levels, causing extensive flooding in low-lying areas.

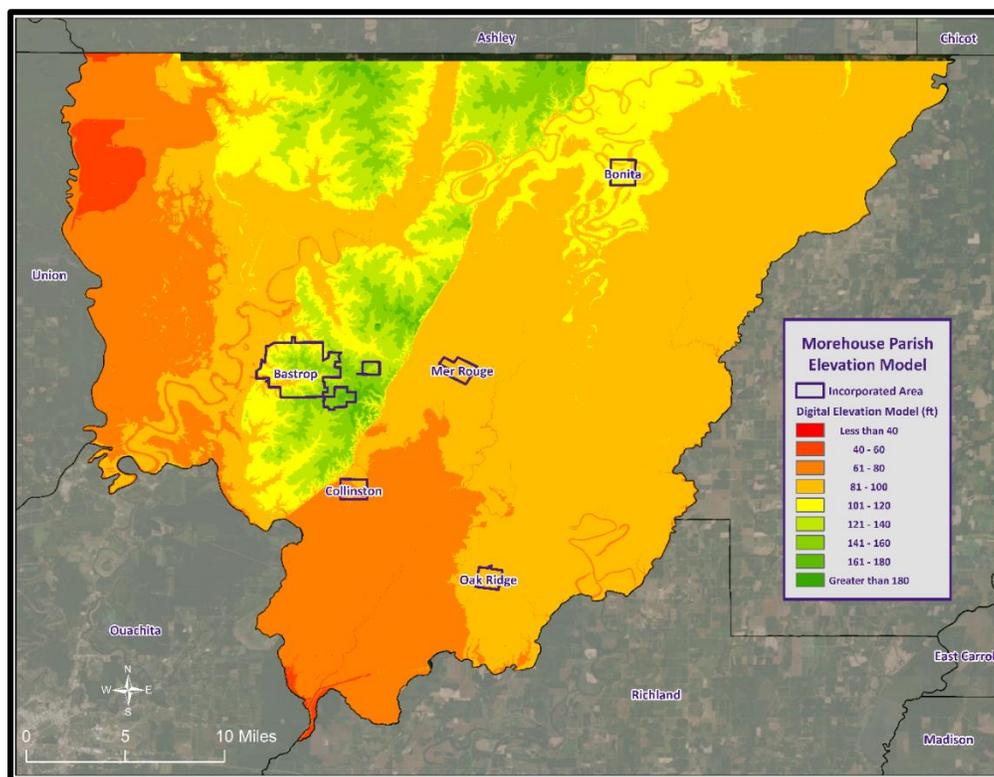


Figure 2-13: Elevation throughout Morehouse Parish.

The digital elevation model (DEM) for Morehouse 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 40 feet (NAVD88) to over 180 feet (NAVD88). The highest elevations in the parish are approximately 190 feet (NAVD88), located in the central and northern portions of the parish. The incorporated areas range in elevation from 85 to 167 feet (NAVD88), with Collinston averaging 85 feet (NAVD88), Oak Ridge averaging 89 feet (NAVD88), Mer Rouge averaging 95 feet (NAVD88), Bonita averaging 105 (NAVD88), and Bastrop averaging 167 feet (NAVD88).

#### Location

Morehouse Parish has experienced significant flooding in its history and can expect more in the future. The majority of Morehouse Parish is located in the Tensas River basin. The encompassed area includes the alluvial lands lying between Bastrop Ridge and the Boeuf River to the east. Included in this area is the city of Bastrop and the villages of Bonita, Collinston, Mer Rouge, and Oak Ridge. Drainage is provided principally by Camp Bayou, Cypress Bayou, and Bayou Bonne Idee, all of which flow into the Boeuf River. Bayou Galion and its tributaries that flow into the diversion canal between Bayou Lafourche and Little Bayou Boeuf also drain part of the area. The northwestern corner of Morehouse Parish, the area west and northwest of Bastrop is located within the Ouachita River Basin. This area drains directly into the Ouachita River through small streams such as Halfway Bayou, Shiloh Creek, and Bayou de Butte. A significant

drainage channel for this area is Bayou Bartholomew and its tributaries. In severe flooding conditions Bayou Bartholomew flows around the ends of detached levees, causing flooding in the adjacent lands.

Based on previous flood events, the worst-case scenarios are based on several different types of flooding events. Storm water excesses and riverine flooding primarily affect the low-lying areas of the parish, and flood depths of up to six feet can be expected in the unincorporated areas of the parish and in the incorporated areas of Bastrop and Bonita. The incorporated areas of Collinston, Mer Rouge, and Oak Ridge can expect flood depths up to two feet.

The following figures are flood zone maps displaying 100- and 500-year flood zones in Morehouse Parish and its communities.

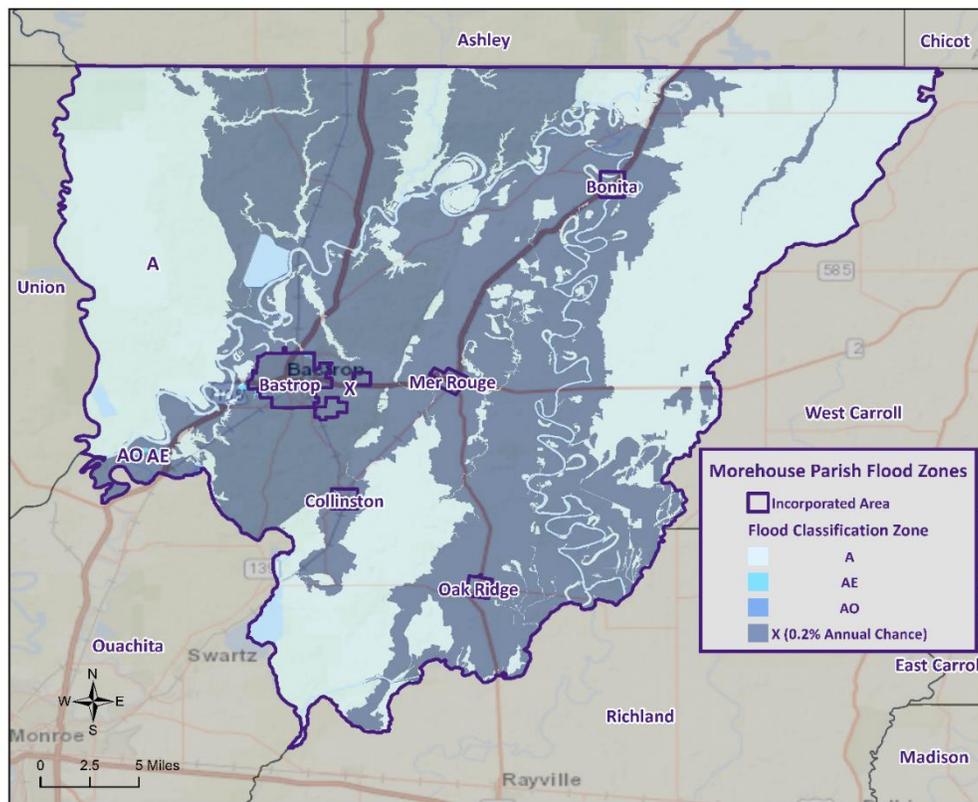


Figure 2-14: Morehouse Parish Areas within the Flood Zones.

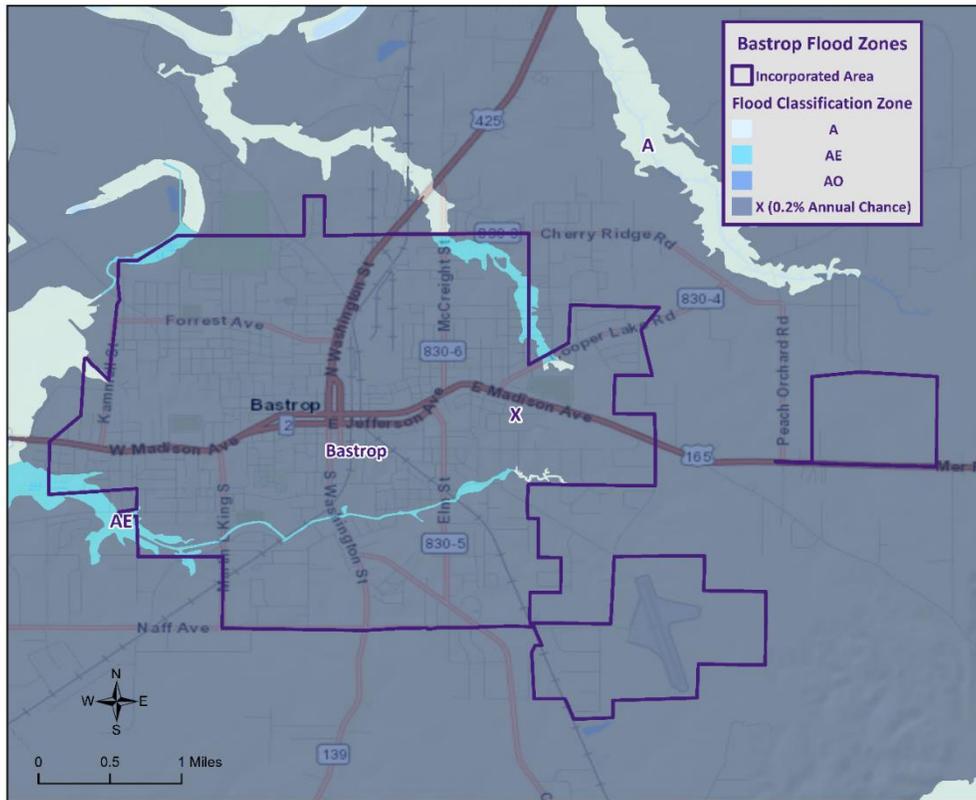


Figure 2-15: Bastrop Areas within the Flood Zones.



Figure 2-16: Bonita Areas within the Flood Zones.

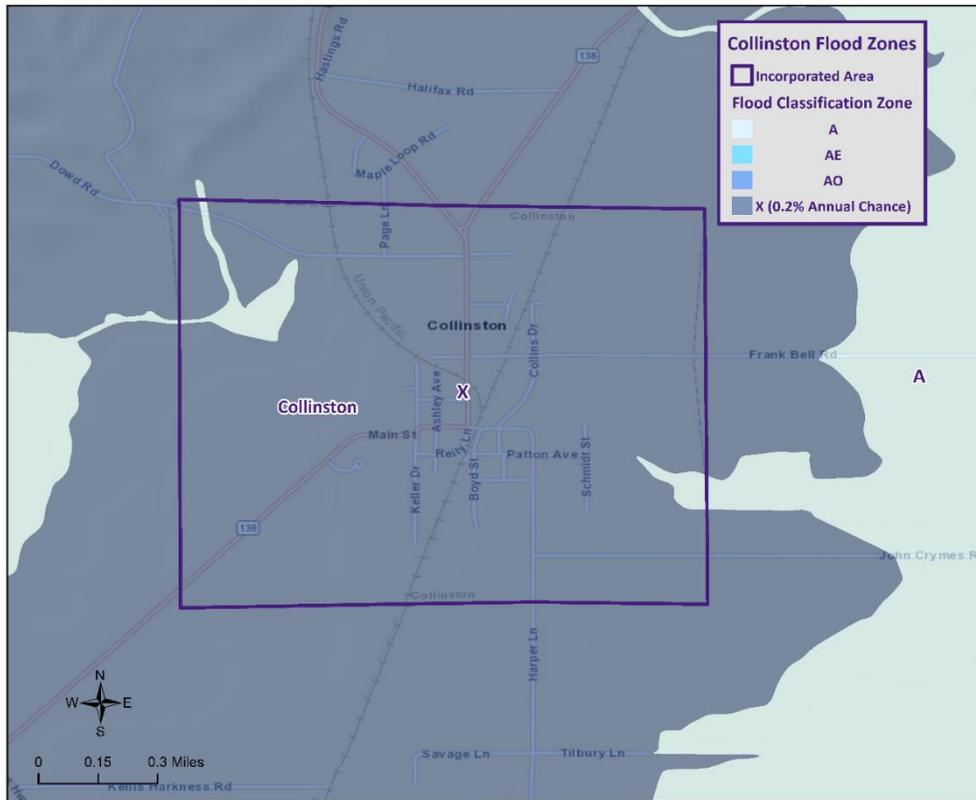


Figure 2-17: Collinston Areas within the Flood Zones.



Figure 2-18: Mer Rouge Areas within the Flood Zones.



Date	Extents	Type of Flooding	Estimated Damages	Location
May 9, 2019	Numerous roads were flooded across northern Morehouse Parish.	Flash Flood	\$30,000	LAARK
July 8, 2020	Portions of East Pecan Avenue and East Madison Avenue were flooded.	Flash Flood	\$2,000	BASTROP

*Frequency / Probability*

The NCEI Storm Events Database identified 46 flooding events within the Morehouse Parish planning area since 1990. The table below shows the probability and return frequency for each jurisdiction.

*Table 2-24: Annual Flood Probabilities for Morehouse Parish.*

Jurisdiction	Annual Probability	Return Frequency
<b>Morehouse Parish (Unincorporated)</b>	81%	1 event every 1 to 2 years
<b>Bastrop</b>	65%	1 event every 1 to 2 years
<b>Bonita</b>	48%	1 event every 2 to 3 years
<b>Collinston</b>	42%	1 event every 2 to 3 years
<b>Mer Rouge</b>	52%	1 event every 1 to 2 years
<b>Oak Ridge</b>	52%	1 event every 1 to 2 years

Based on historical record, the overall flooding probability for the entire Morehouse Parish Planning area is 100% with 46 events occurring over a 31-year period.

*Estimated Potential Losses*

Using the Hazus Flood Model, the 100-year flood scenario, along with the Parish DFIRM, was analyzed to determine losses from this worst-case scenario. *Table 2-25* shows the total economic losses that would result from this occurrence.

*Table 2-25: Estimated Losses in Morehouse Parish from a 100-year Flood Event.  
(Source: Hazus)*

Jurisdiction	Estimated Total Losses from 100-Year Flood Event
<b>Morehouse Parish (Unincorporated)</b>	\$11,743,000
<b>Bastrop</b>	\$340,000
<b>Bonita</b>	\$41,000
<b>Collinston</b>	\$0
<b>Mer Rouge</b>	\$0
<b>Oak Ridge</b>	\$0
<b>Total</b>	<b>\$12,124,000</b>

The Hazus Flood model also provides a breakdown for seven primary sectors (Hazus occupancy) throughout the parish. The losses for Morehouse Parish by sector are listed in the following table:

*Table 2-26: Estimated 100-year Flood Losses for Morehouse Parish by Sector.  
(Source: Hazus)*

Morehouse Parish (Unincorporated)	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$106,000
Commercial	\$1,214,000
Government	\$0
Industrial	\$377,000
Religious / Non-Profit	\$24,000
Residential	\$9,969,000
Schools	\$53,000
<b>Total</b>	<b>\$11,743,000</b>

*Table 2-27: Estimated 100-year Flood Losses for Bastrop by Sector.  
(Source: Hazus)*

Bastrop	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$0
Commercial	\$98,000
Government	\$0
Industrial	\$0
Religious / Non-Profit	\$0
Residential	\$242,000
Schools	\$0
<b>Total</b>	<b>\$340,000</b>

*Threat to People*

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

*Table 2-28: Vulnerable Populations Susceptible to a 100-year Flood Event.  
(Source: Hazus)*

Number of People Exposed to Flood Hazards			
Location	# in Community	# in Hazard Area	% in Hazard Area
Morehouse Parish (Unincorporated)	14,879	2,889	19.4%
Bastrop	9,691	96	1.0%
Bonita	170	41	24.1%
Collinston	274	0	0.0%
Mer Rouge	491	0	0.0%
Oak Ridge	124	0	0.0%
<b>Total</b>	<b>25,629</b>	<b>3,026</b>	<b>11.8%</b>

The Hazus flood model was also extrapolated to provide an overview of vulnerable populations throughout the jurisdictions in the following table:

*Table 2-29: Vulnerable Populations Susceptible to a 100-year Flood Event in Morehouse Parish.  
(Source: Hazus)*

Morehouse Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,889	19.4%
Persons Under 5 Years	194	6.7%
Persons Under 18 Years	696	24.1%
Persons 65 Years and Over	546	18.9%
White	1,384	47.9%
Minority	1,505	52.1%

*Table 2-30: Vulnerable Populations Susceptible to a 100-year Flood Event in Bastrop.  
(Source: Hazus)*

Bastrop		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	96	1.0%
Persons Under 5 Years	7	7.4%
Persons Under 18 Years	29	29.8%
Persons 65 Years and Over	13	13.2%
White	19	20.1%
Minority	77	79.9%

*Table 2-31: Vulnerable Populations Susceptible to a 100-year Flood Event in Bonita.  
(Source: Hazus)*

Bonita		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	41	24.1%
Persons Under 5 Years	1	3.2%
Persons Under 18 Years	6	14.2%
Persons 65 Years and Over	8	20.0%
White	13	32.4%
Minority	28	67.6%

*Vulnerability*

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



### 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 Benton, 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.

The Mississippi River levee system is constantly monitored during high water events by federal, state, and parish officials. Any potential failure of the Mississippi River levee would be observed long before a failure took place. Once observed, it would be mitigated to prevent any failure in the levee. As a slowly developing hazard, there is significant lead time to warn and evacuate the population in the event of a potential failure. The more likely scenario involving a potential levee failure would be an overtopping event for a major precipitation event taking place during a tropical cyclone, similar to Tropical Storm Allison in 2001. An event of this nature is less likely to produce an early warning and most likely to subject more people to flooding.

### Location

Levees play a vital role in protecting Morehouse Parish from flooding, particularly floods caused by tropical cyclones. Several areas in the western and central portion of the parish are protected by levees. There are currently four levee alignments that exist within the parish:

- AR-LA MS River
- Busy Lake System
- Little Bayou Segment
- Ouachita River LA

These levees are tested anytime a high water event such as a tropical cyclone or heavy rain storm occurs. The levees located in Morehouse Parish is shown in the following figure:

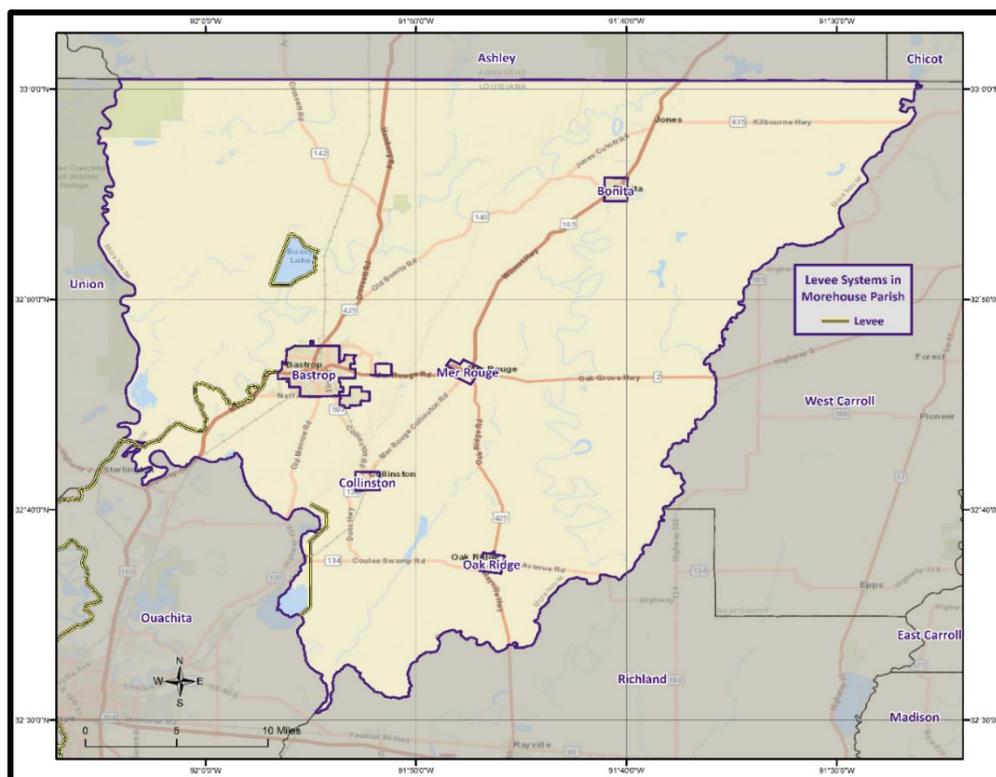


Figure 2-20: Levee Systems in Morehouse Parish.

### Previous Occurrences / Extents

The NCEI Storm Events Database does not record anthropogenic disasters such as levee failures; therefore, it was necessary to rely on local knowledge and media reports. Since the 2016 HMP Update, there has been no flooding event due to levee failure in Morehouse Parish. The extent of the flooding is unknown; therefore, a data deficiency is declared at this time. This data deficiency includes potential inundation areas and subsequent impacts related to the overtopping, collapse, or breaching of the levee systems in Morehouse Parish. As these inundation zones haven't yet been identified, Morehouse Parish will continue to develop an extent and additional relevant data associated with this hazard.

### Frequency / Probability

It is nearly impossible to predict and model levee failure and its impacts on Morehouse Parish. Due to the unpredictability of levee failures, it is calculated that the probability of a levee failure is less than 1%

annually for the unincorporated areas Morehouse Parish and the incorporated area of Bastrop. The incorporated areas of Bonita, Collinston, Mer Rouge, and Oak Ridge are not susceptible to levee failures.

#### *Estimated Potential Losses*

Determining the annualized loss as a result of levee failure is difficult in Morehouse Parish due to availability of data on past levee failure events. The National Levee Database (NLD) was utilized to determine the levee systems within Morehouse Parish, the risk level, and populace/infrastructure at risk. The NLD is a congressional authorized database that documents levees in the United States and is maintained by the U.S. Army Corps of Engineers (USACE). The following table provides an extensive list of the levee systems in Morehouse Parish with the risk associated with each system.

*Table 2-32: Levee Systems and Risk Associated with each System in Morehouse Parish and Surrounding Parishes.*

*(Source: National Levee Database)*

System	Length (Miles)	People at Risk	Structures at Risk	Property Value at Risk	Overall Risk
<b>AR-LA MS River</b>	359.64	227,280	110,450	\$20.9 billion	High
<b>Bussy Lake System</b>	7.87	0	0	\$0	Not Screened
<b>Little Bayou System</b>	7.01	77	25	\$5.71 million	Not Screened
<b>Ouachita River LA</b>	98.83	47,912	15,179	\$5.2 billion	Moderate

#### *Vulnerability*

See [Appendix C](#) for parish and municipality building exposure to levee failures.

## 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 and therefore 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, multicell, 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 multicell 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, and warming 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) have the ability to issue advisory messages based on forecasts and observations. The following are the advisory messages that may be issued 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 counties (parishes).

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

- Hail of 1 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 develops in the upper atmosphere initially as ice crystals that are bounced about by high-velocity updraft winds. The ice crystals grow through deposition of water vapor onto their surface, fall partially to a level in the cloud where the temperature exceeds the freezing point, melt partially, get caught in another updraft whereupon re-freezing and deposition grows another concentric layer of ice, and fall after developing enough weight, sometimes after several trips up and down the cloud. The size of hailstones varies depending on the severity and size of the thunderstorm. Higher surface temperatures generally mean stronger updrafts, which allows more massive hailstones to be supported by updrafts, leaving them suspended longer. This longer time means larger hailstone sizes. The following tables display the TORRO Hailstorm Intensity Scale along with a spectrum of hailstone diameters and their everyday equivalents.

Table 2-33: TORRO Hailstorm Intensity Scale.

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

Table 2-34: Spectrum of Hailstone Diameters and their Everyday Description.

(Source: National Weather Service)

Spectrum of Hailstone Diameters	
Hail Diameter Size	Description
1/4"	Pea
1/2"	Plain M&M
3/4"	Penny
7/8"	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 homes and other structures, automobiles, and crops. While the damage to individual structures or vehicles is often minor, the cumulative cost to communities, especially across large metropolitan areas, can be quite significant. Hailstorms can also be devastating to crops. Thus, the severity of hailstorms depends on the size of the hailstones, the length of time the storm lasts, and where it occurs.

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

**High Winds**

In general, high winds can occur in a number of different ways, within and without thunderstorms. The Federal Emergency Management Agency (FEMA) distinguishes these as shown in *Table 2-35*.

*Table 2-35: High Winds Categorized by Source, Frequency, and Duration.  
(Source: Making Critical Facilities Safe from High Wind, FEMA)*

High Winds Categories			
High Wind Type	Description	Relative Frequency in Louisiana	Relative Maximum Duration in Louisiana
<b>Straight-line Winds</b>	Wind blowing in straight line; usually associated with intense low-pressure area	High	Few-minutes – 1 day
<b>Downslope Winds</b>	Wind blowing down the slope of a mountain; associated with temperature and pressure gradients	N/A	N/A
<b>Thunderstorm Winds</b>	Wind blowing due to thunderstorms, and thus associated with temperature and pressure gradients	High (especially in the spring and summer)	~Few minutes – several hours
<b>Downbursts</b>	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
<b>Northeaster (nor'easter) Winds</b>	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
<b>Hurricane Winds</b>	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
<b>Tornado Winds</b>	Violently rotating column of air from base of a thunderstorm to the ground with rapidly decreasing winds at greater distances from center; associated with extreme temperature gradient	Low-to-Medium	Few minutes – few hours

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

Table 2-36 presents the Beaufort Wind Scale, first developed in 1805 by Sir Francis Beaufort, which aids in determining relative force and wind speed based on the appearance of wind effects.

Table 2-36: Beaufort Wind Scale.  
(Source: NOAA's SPC)

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

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 2-37: Lightning Activity Level (LAL) Grids.*

LAL	Cloud and Storm Development	Lightning Strikes/15 Min
1	No thunderstorms.	-
2	Cumulus clouds are common but only a few reaches 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*

Hailstorms are a meteorological phenomenon that can occur anywhere. Therefore, the entire planning area for Morehouse Parish and its jurisdictions are equally at risk for hailstorms. The worst-case scenario for hailstorms is hail up to a 2.75” diameter.

*Previous Occurrences / Extents*

Historically, there have been 113 hail incidents in Morehouse Parish. Hailstorm diameters have ranged from 0.75 inches to 2.75 inches per the National Climatic Data Center since 1990. The most frequently recorded hail sizes have been 1-inch in diameter. On the following page is a brief synopsis of significant hailstorm events that have occurred in Morehouse Parish since the 2016 Morehouse Parish HMP update.



Table 2-38: Previous Occurrences for Hailstorm Events since the 2016 Hazard Mitigation Plan Update.  
 (Source: NCEI Storm Events Database)

Date	Hail Size (inches)	Property Damage	Crop Damage
April 2, 2017	1	\$0	\$0
March 5, 2018	1	\$0	\$0
April 7, 2019	1	\$0	\$0
April 13, 2019	1	\$0	\$0
April 12, 2020	1	\$0	\$0
November 27, 2020	0.75	\$0	\$0
April 9, 2021	1.75	\$15,000	\$0

Frequency

Hailstorms occur frequently within Morehouse Parish with an annual chance of occurrence calculated at 100% based on the records for the past 31 years (1990 - 2021). Figure 2-21 displays the density of hailstorm events in Morehouse Parish, while Figure 2-22 provides an overview of hailstorm size based on location.

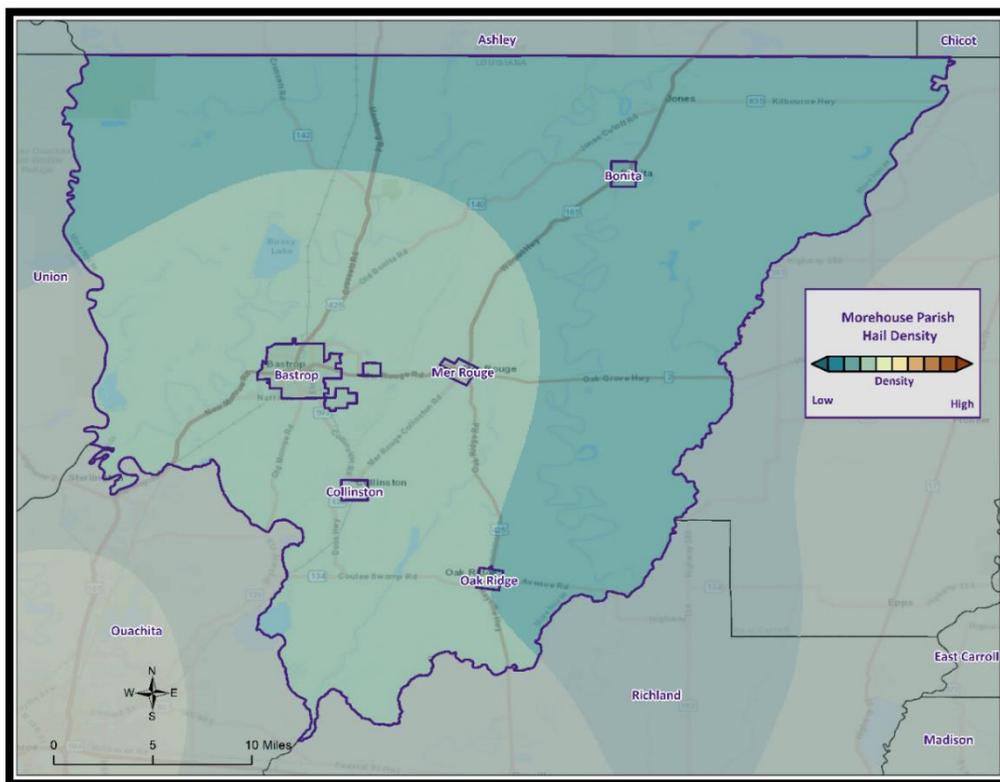


Figure 2-21: Density of Hailstorms by Diameter from 1950-2019.

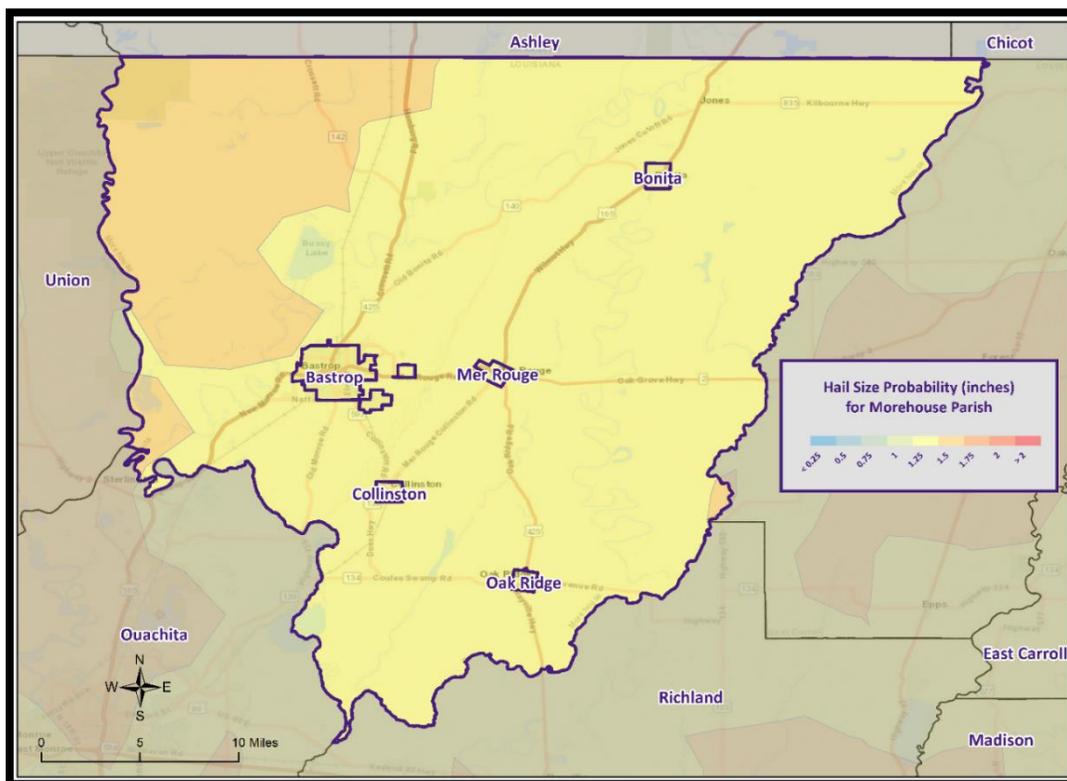


Figure 2-22: Hail Size Probability in Inches for Morehouse Parish.

Estimated Potential Losses

Since 1990, there have been 113 significant hail events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately \$987,000. To estimate the potential losses of a hailstorm event on an annual basis, the total damages recorded for hailstorm events was divided by the total number of years of available hail data in the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential loss of \$31,839 and \$8,735 per event. The following table provides an estimate of potential property losses for Morehouse Parish:

Table 2-39: Estimated Annual Losses Morehouse Parish and its Jurisdictions Resulting from Hailstorms.

Estimated Annual Losses for Hailstorms					
Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
\$18,484	\$12,039	\$211	\$340	\$610	\$154

There have been no reported injuries or fatalities as a result of a hail events over the 31-year record.

Vulnerability

See [Appendix C](#) for parish and municipality buildings that are susceptible to hailstorms.

High Winds

Location

Because high winds are a meteorological phenomenon that can occur anywhere, the entire planning area for Morehouse Parish is equally at risk from high winds. The worst-case scenario for thunderstorm high wind is wind speeds of approximately 100 mph.

Previous Occurrences / Extents

Historically, there have been 190 thunderstorm high wind events in Morehouse Parish. The high wind events have ranged in windspeeds from 50 mph to 100 mph per the National Climatic Data Center since 1990. Below is a brief synopsis of the events which have impacted Morehouse Parish Planning area since the 2016 Morehouse Parish HMP update.

*Table 2-40: Previous Occurrences for Thunderstorm High Wind Events since the 2016 Hazard Mitigation Plan Update.*

*(Source: NCEI Storm Events Database)*

Date	Wind Speed (mph)	Property Damage	Crop Damage
January 21, 2017	58	\$5,000	\$0
March 25, 2017	58	\$3,000	\$0
March 25, 2017	62	\$45,000	\$0
April 2, 2017	60	\$30,000	\$0
July 1, 2017	58	\$6,000	\$0
April 3, 2018	62	\$30,000	\$0
April 3, 2018	62	\$45,000	\$0
April 14, 2018	63	\$9,000	\$0
June 13, 2018	63	\$15,000	\$0
June 22, 2018	63	\$15,000	\$0
August 20, 2018	60	\$2,000	\$0
August 20, 2018	58	\$8,000	\$0
August 20, 2018	58	\$2,000	\$0
October 31, 2018	58	\$2,000	\$0
October 31, 2018	58	\$2,000	\$0
April 13, 2019	63	\$40,000	\$0
April 13, 2019	60	\$15,000	\$0
April 25, 2019	58	\$5,000	\$0
June 20, 2019	60	\$8,000	\$0
June 24, 2019	58	\$3,000	\$0
December 16, 2019	58	\$2,000	\$0
December 16, 2019	58	\$2,000	\$0
January 11, 2020	58	\$3,000	\$0
January 11, 2020	58	\$10,000	\$0
April 12, 2020	58	\$5,000	\$0
April 12, 2020	58	\$10,000	\$0

<b>April 12, 2020</b>	58	\$12,000	\$0
<b>June 5, 2020</b>	58	\$3,000	\$0
<b>April 9, 2021</b>	58	\$2,000	\$0
<b>April 9, 2021</b>	62	\$8,000	\$0
<b>May 4, 2021</b>	58	\$10,000	\$0
<b>May 4, 2021</b>	58	\$5,000	\$0
<b>May 4, 2021</b>	63	\$15,000	\$0
<b>May 4, 2021</b>	58	\$5,000	\$0
<b>May 9, 2021</b>	58	\$2,000	\$0
<b>May 9, 2021</b>	58	\$2,000	\$0

Frequency

High winds are a fairly common occurrence within Morehouse Parish and its jurisdictions with an annual chance of occurrence calculated at 100% based on the records for the past 31 years (1990 - 2021). *Figure 2-23* displays the thunderstorm wind speed probability for Morehouse Parish and its jurisdictions.

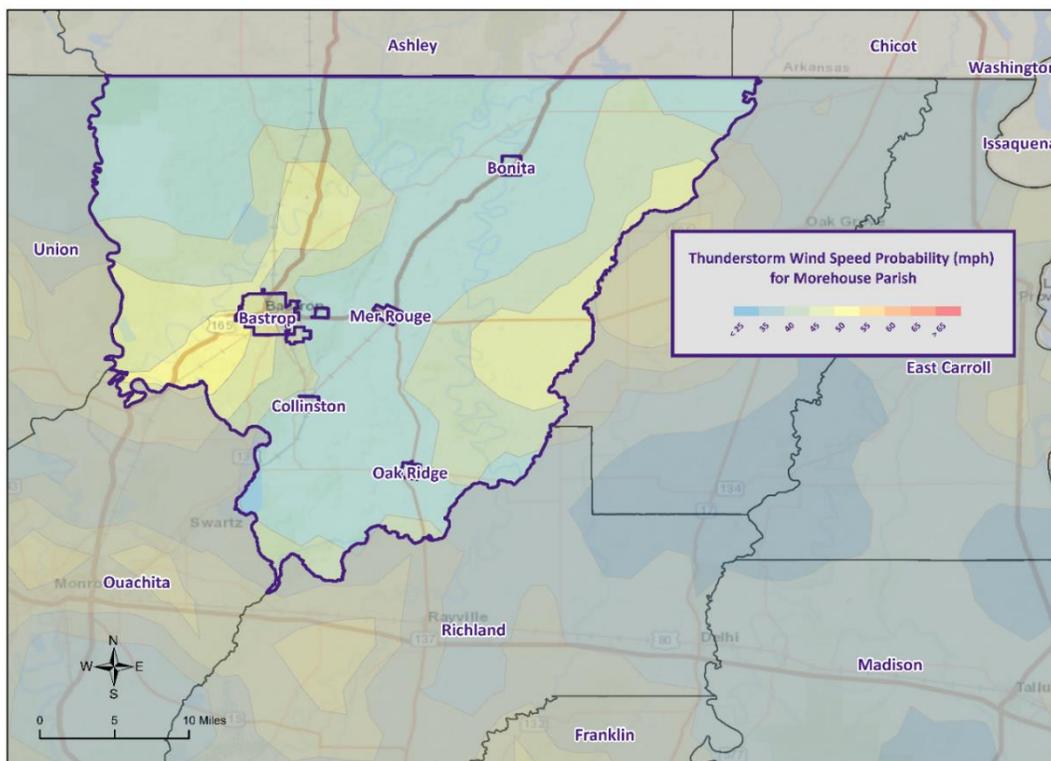


Figure 2-23: Thunderstorm High Wind Speed Probability in Miles Per Hour for Morehouse Parish.

[Estimated Potential Losses](#)

Since 1990, there has been 190 significant wind events that have resulted in property damages according to NCEI Storm Events Database. The total property damage associated with this storm totaled approximately \$5,081,000. 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 the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential loss of \$163,903 and \$26,742 per event. The following table provides an estimate of potential property losses for Morehouse Parish:

*Table 2-41: Estimated Annual Property Losses in Morehouse Parish resulting from Wind Damage.*

Estimated Potential Annual Losses from High Winds					
Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
\$95,155	\$61,976	\$1,087	\$1,752	\$3,140	\$793

There have been no fatalities and seven injuries as a result of a thunderstorm high wind event over the 31-year record.

[Vulnerability](#)

See [Appendix C: Critical Facilities](#) for parish and municipality buildings that are susceptible to thunderstorm high winds.

[Lightning](#)

[Location](#)

Like hail and high winds, lightning is a meteorological phenomenon that can occur anywhere within the Morehouse Parish planning area. The worst-case scenario for lightning events is a lightning activity level of 4 which is approximately 16 to 25 lightning strikes every 15 minutes.

[Previous Occurrences / Extent](#)

Historically, there have been no significant lightning events in Morehouse Parish and its jurisdictions between the years 1990 and 2021.

[Frequency](#)

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in Morehouse Parish is high. However, lightning that meets the definition that is used by the NCEI Storm Events Database that results in damages to property and injury or death to people is a less likely event. Morehouse Parish experienced nine significant lightning events between the years 1990 and 2021 resulting in a less than 1% annual chance of occurrence.

[Estimated Potential Losses](#)

Since 1990, there have been no significant lightning events that have resulted in damage, loss of life, or injuries per the NCEI Storm Events Database.

[Vulnerability](#)

See [Appendix C](#) for parish and municipality building exposure to lightning hazards.

**Tornadoes**

Tornadoes (also called twisters and 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, which usually occurs in a counterclockwise direction in the northern hemisphere. The updraft of air in tornadoes always rotates because of wind shear (differing speeds of moving air at various heights), and it can rotate in either a clockwise or counterclockwise direction; clockwise rotations (in the northern hemisphere) will sustain the system, at least until other forces cause it to die seconds to minutes later.

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. *Table 2-42* 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 2-42: 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 2-43: Fujita and Enhanced Fujita Tornado Damage Scale.*

Scale	Typical Damage
<b>F0/EF0</b>	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
<b>F1/EF1</b>	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
<b>F2/EF2</b>	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; light-object missiles generated; cars lifted off ground.
<b>F3/EF3</b>	Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
<b>F4/EF4</b>	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
<b>F5/EF5</b>	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 with definitions of each:

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

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

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

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

#### *Location*

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

#### *Previous Occurrences / Extent*

The NCEI Storm Events Database reports a total of 24 tornadoes or waterspouts occurring within the boundaries of Morehouse Parish since 1990 ranging in extent from F0 to F2 under the Fujita Scale and EF0 to EF2 on the Enhanced Fujita Scale. Morehouse Parish can expect future tornadoes up to an EF3 under the Enhanced Fujita Scale as a worst-case scenario.

The most destructive tornado to impact Morehouse Parish was an EF2 tornado which occurred on April 25, 2019. The EF2 tornado began at the marshy backwaters southeast of the Upper Ouachita National Wildlife Refuge and moved throughout the parish snapping hardwood and softwood. Since the 2016 HMP Update, 10 tornadoes have occurred within the boundaries of Morehouse Parish. Below is a list and brief description of the impact for each event.

Table 2-44: Historical Tornadoes in Morehouse Parish with Locations since the 2016 Update.

Date	Impacts	Property Damage	Location	Magnitude
<p><b>January 21, 2017</b></p>	<p>8.87 mile path with a width of 300 yards. This tornado touched down along Highway 165 where a few power poles were snapped and some trees were snapped just east of the highway. The tornado continued northeast along Highway 165, bending power poles on a tree line before crossing Son Olive Road. Mt. Olive Missionary Baptist Church sustained roof damage, as did a home just west of there. Some of the roof was blown off the church, with tin visible in the field just northeast of the road. A TV antenna was bent at a home just west of there. The tornado continued northeast before crossing Bailey Store Road, where tree damage occurred. It then took more of an east-northeast path before crossing Honeysuckle Lane and Bonne Idee Road. Here the tornado caused roof damage to a home and uprooted and snapped multiple trees, with tin and debris scattered along in the field just to the east. The tornado then crossed Highway 599 where an antenna was collapsed, many large hardwood trees were snapped and uprooted and all were blown to the northeast. A shed building roof was also collapsed at this location.</p>	<p>\$145,000</p>	<p>STAMPLEY</p>	<p>EF1</p>
<p><b>April 30, 2017</b></p>	<p>5.71 mile path with a width of 50 yards. There is some uncertainty where this tornado first touched down and dissipated due to a number of farm fields and limited damage. Based on radar information and surrounding evidence, it was determined that it started in a field. The greatest damage occurred near the intersection of School House Lane and Sidney White Rd. A well-structured home had significant roof damage, and a playhouse and shed were completely destroyed. On the University of Louisiana-Monroe radar, a tornadic debris signature was visible near this home. A number of uprooted trees were sporadically down around the edge of the circulation and were probably caused by straight line winds. On Hwy 425, north of Oak Ridge, a few power poles had to be replaced.</p>	<p>\$100,000</p>	<p>GUM RIDGE</p>	<p>EF1</p>

Date	Impacts	Property Damage	Location	Magnitude
	<p>This is where it was determined that the tornado dissipated. The maximum wind speeds with this tornado were 95 mph.</p>			
<p><b>April 13, 2018</b></p>	<p>1.57 mile path with a width of 200 yards. This tornado began in open fields just west of the Boeuf River and tracked northward across LA Highway 2, where it removed portions of the metal roof of an unoccupied building. The tornado continued northward along the Boeuf River on the Morehouse and West Carroll Parish line just west of Benton Rd before ending shortly thereafter. Multiple trees were uprooted and trees and large tree branches were snapped along the path. Maximum estimated wind speed was 95 mph.</p>	<p>\$50,000</p>	<p>MER ROUGE BACON ARPT</p>	<p>EF1</p>
<p><b>April 14, 2018</b></p>	<p>3.18 mile path with a width of 200 yards. his tornado began along Atwell Lane just north of LA Highway 2, blowing down a fence and blowing a small shed across the road. Large tree branches were also downed in this area. The tornado continued eastward parallel and just north of Highway 2, crossing Johnson School Road and Rush Harrison Road at Bayou Bonne Idee. On Johnson School Road, a mobile home sustained roof and skirting damage and a small shed was destroyed. On Rush Harrison Road, the front of a farm outbuilding was pushed in and there was substantial loss of roof panels. Larger trees were snapped and uprooted in this area as well. Additional trees were snapped or uprooted between Rush Harrison Road and Highway 2, then the tornado crossed Merton Bowe Road. Here, a couple of homes sustained roof damage and a shed was damaged. The tornado lifted over open fields north of Highway 2. Maximum estimated wind speed was 95 mph.</p>	<p>\$120,000</p>	<p>MER ROUGE BACON ARPT</p>	<p>EF1</p>
<p><b>April 25, 2019</b></p>	<p>4.67 mile path with a width of 2,000 yards. his tornado began at the marshy backwaters southeast of the Upper Ouachita National Wildlife Refuge. It shifted northeast to the intersection of Martin Trail and North Lake Road where it snapped several large softwood tree limbs and uprooted several softwood</p>	<p>\$600,000</p>	<p>DUTY</p>	<p>EF2</p>

Date	Impacts	Property Damage	Location	Magnitude
	trees. It continued northeast to the intersection of Indian Mound Road and Tram Road where it continued to snap softwood trees and begun to uprooted hardwood trees.			
<b>June 24, 2019</b>	1.24 mile path with a width of 75 yards. Snapped trees occurred as it crossed Parish Road 5501. This also coincided with a tornado debris signature on radar. Maximum wind speeds were 85 mph.	\$10,000	BRODENAX	EF0
<b>April 12, 2020</b>	3.03 mile path with a width of 200 yards. This tornado started in a wooded area just south of Frank Bell Road and snapped and uprooted multiple trees along field edges and as it crossed Highway 425. As the tornado crossed Frank Bell Road, a home sustained roof damage and a shed was destroyed with debris thrown across the field. Maximum winds were 100mph.	\$20,000	COLLINSTON	EF1
<b>April 12, 2020</b>	0.92 mile path with a width of 200 yards. This tornado began in far southeastern Morehouse Parish near the intersection of Trails End Rd and Bingham Ranch Rd, crossing the Boeuf River into far northern Richland Parish, where it crossed LA Highway 585. It then crossed Wiles Rd into western West Carroll Parish again crossing LA Highway 585, Henry Jones Rd, and then LA Highway 585 for a third time. The tornado crossed Smith Rd, Clay Rd, and Clear Lake Rd before ending along Copes Rd. Along the path, a few homes sustained minor roof damage, a couple mobile homes received minor damage, a motor home was overturned, a couple sheds were damaged, and several trees were snapped or uprooted. The tornado was strongest as it crossed LA Highway 585 near the intersection of Self Rd where five utility poles were snapped, several trees were snapped or uprooted, and a home was damaged by a fallen tree. The maximum estimated winds were 90mph in Morehouse Parish.	\$3,000	OAK RIDGE	EF1
<b>April 7, 2021</b>	8.16 mile path with a width of 75 yards. An EF1 tornado developed on the evening of April 7, near Cave Off Road near Bayou Bartholomew in Morehouse Parish, LA. The	\$250,000	PT PLEASANT	EF1

Date	Impacts	Property Damage	Location	Magnitude
	<p>tornado damaged a large barn along Newman Road. Sheet metal was peeled off and thrown toward the north. The tornado tracked northeast across Bonner Ferry Road where several large trees were uprooted and branches snapped. Continuing northeast, the tornado moved across Greenwood Road where it became the most intense. Several homes here were damaged, primarily by numerous large falling trees.</p>			
<p><b>April 7, 2021</b></p>	<p>2.69 mile path with a width of 200 yards. An EF-1 tornado developed on the evening of April 7th near Holly Ridge Road in northeast Morehouse Parish. The tornado damaged a tin awning, removing several sheets and tossing them into a field nearby. The tornado continued northeast where it strengthened to its maximum intensity and damaged a mixed stand of predominantly older pecan and a few oak trees. The majority of trees in this area were snapped or pushed over. Continuing northeast, the tornado downed a few power poles and trees as well as damaged a few structures near Zaunbrecher Road. One home lost most of a wall of an attached garage and had some roofing damage while another outbuilding had its door blown in. The tornado continued northeast a brief distance further before dissipating in a nearby field. The max estimated wind speed was around 100 mph.</p>	<p>\$150,000</p>	<p>JONES</p>	<p>EF1</p>

*Frequency / Probability*

Tornadoes occur frequently within Morehouse Parish and its jurisdictions with an annual chance of occurrence calculated at 77% based on the records for the past 31 years (1990 - 2021).



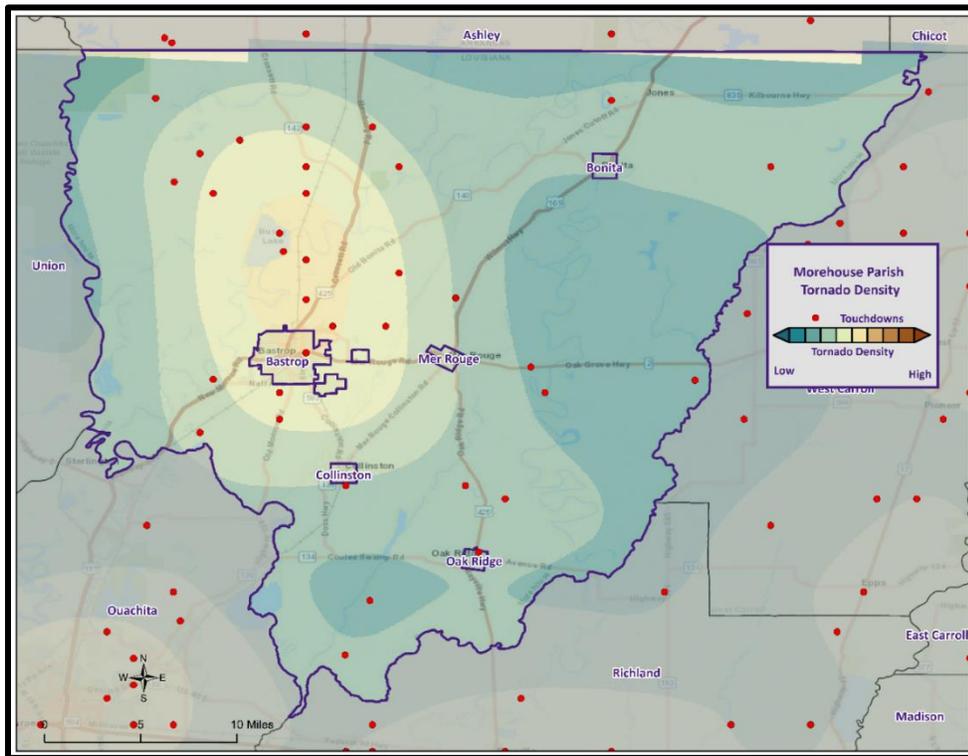


Figure 2-24 displays the density of tornado touchdowns in Morehouse Parish and neighboring parishes.

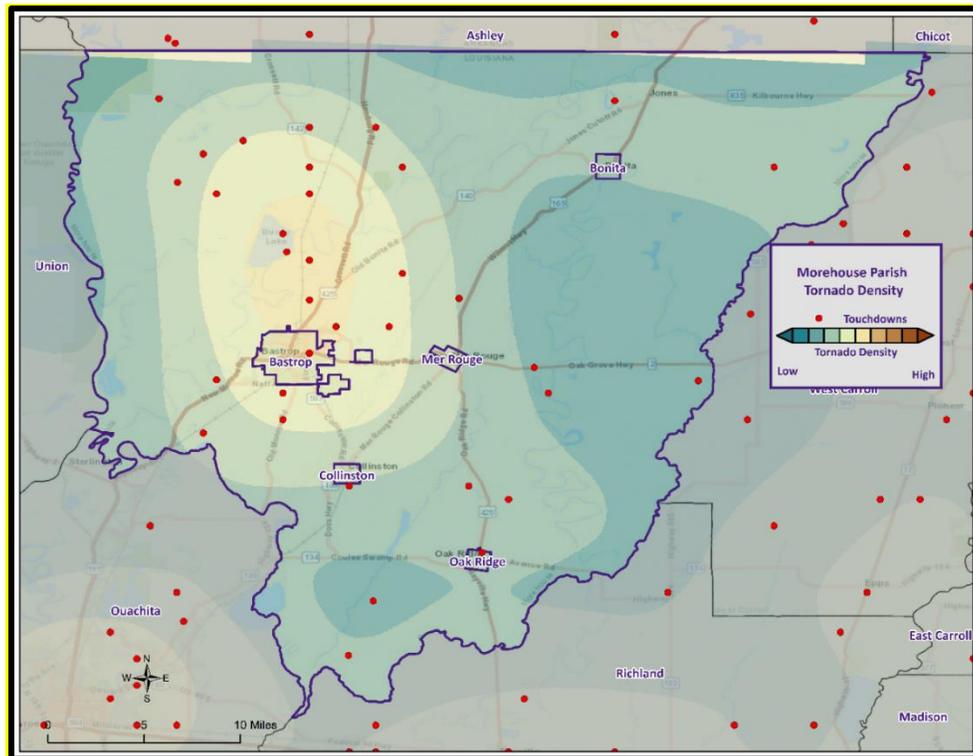


Figure 2-24: Location and Density of Tornadoes to Touchdown in Morehouse Parish. (Source: NOAA/SPC Severe Weather Database)

*Estimated Potential Loses*

According to the NCEI Storm Events Database, there have been 24 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is approximately \$1,488,000 with an average cost of \$62,000 per tornado event. When annualizing the total cost over the 31-year

record, total annual losses based on tornadoes are estimated to be \$48,000. The following table provides an annual estimate of potential losses for Morehouse Parish.

*Table 2-45 Estimated Annual Losses for Tornadoes in Morehouse Parish.*

Estimated Potential Annual Losses from Tornadoes					
Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
\$27,867	\$18,150	\$318	\$513	\$920	\$232

*Table 2-46* presents an analysis of building exposure that are susceptible to tornadoes by general occupancy type for Morehouse Parish along with the percentage of building stock that are mobile homes.

*Table 2-46: Building Exposure by General Occupancy Type for Tornadoes in Morehouse Parish.  
(Source: Hazus)*

Building Exposure by General Occupancy Type for Tornadoes (\$1,000)							
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education	Mobile Homes (%)
2,881,812	502,558	115,738	40,660	174,614	44,675	40,738	18.6%

The Parish has suffered through a total of 24 events in which tornadoes or waterspouts have accounted for one injury and no fatalities during this 31-year period.

In accessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 18.6% of all housing in Morehouse Parish consists of manufactured housing. The location and density of manufactured houses can be seen in *Figure 2-25*.

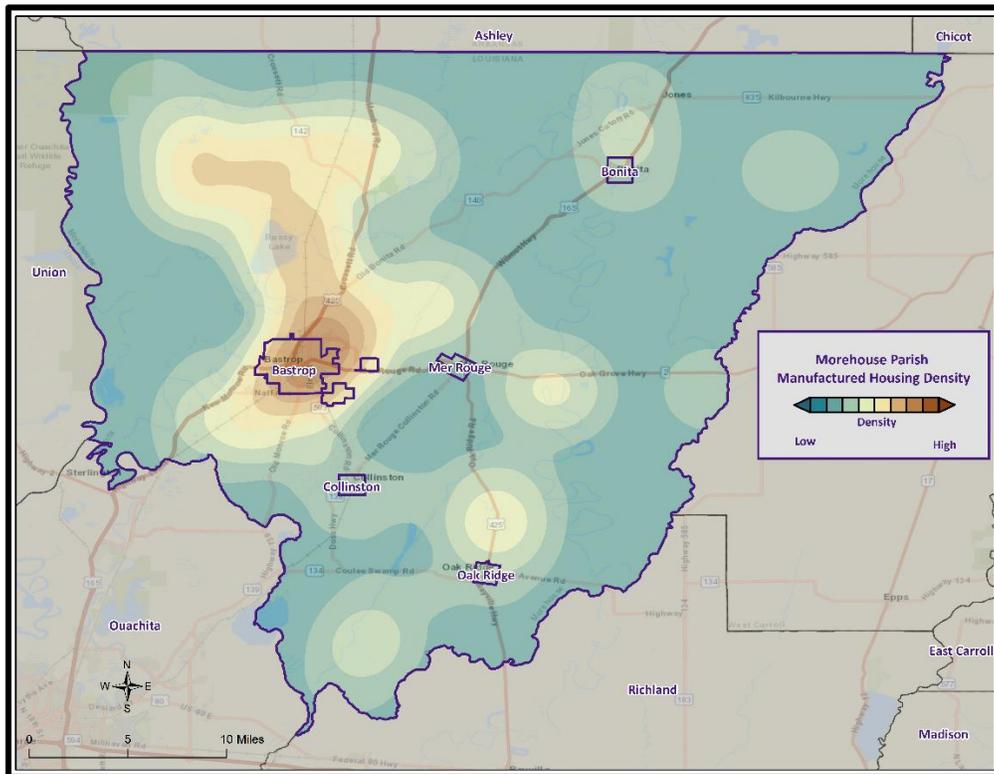


Figure 2-25: Location and Approximate Number of Units in Manufactured Housing Locations throughout Morehouse Parish.

*Vulnerability*

See [Appendix C](#) for parish and municipality building exposure to tornadoes.

### Tropical Cyclones

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

Table 2-47: 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 freshwater intrusions from storm surge send animals, such as snakes, into areas occupied by humans.

#### *Location*

Hurricanes are the single biggest threat to all of South Louisiana. With any single tropical cyclone event having the potential to devastate multiple parishes at once, tropical cyclones are a significant threat to the entire Morehouse Parish planning area. The worst-case scenario for a tropical cyclone event in Morehouse Parish is a Category 1 Hurricane.

#### *Previous Occurrences / Extents*

Morehouse Parish has experienced seven major tropical cyclone events since 2002. The table on the following page provides a list of tropical cyclones which have impacted Morehouse Parish since 2002.

*Table 2-48: Historical Tropical Cyclone Events in Morehouse Parish from 2002 – 2021.*

Date	Name	Storm Type at Time of Impact
2002	Lili	Hurricane
2005	Katrina	Hurricane
2005	Rita	Hurricane
2008	Gustav	Tropical Storm
2012	Isaac	Tropical Storm
2020	Laura	Tropical Storm
2020	Delta	Tropical Depression

Since the last Morehouse Parish HMP update in 2016, there have been two tropical cyclone events which have impacted the parish. Below is a brief description of the events and the impact they had on Morehouse Parish.

#### Tropical Storm Laura (2020)

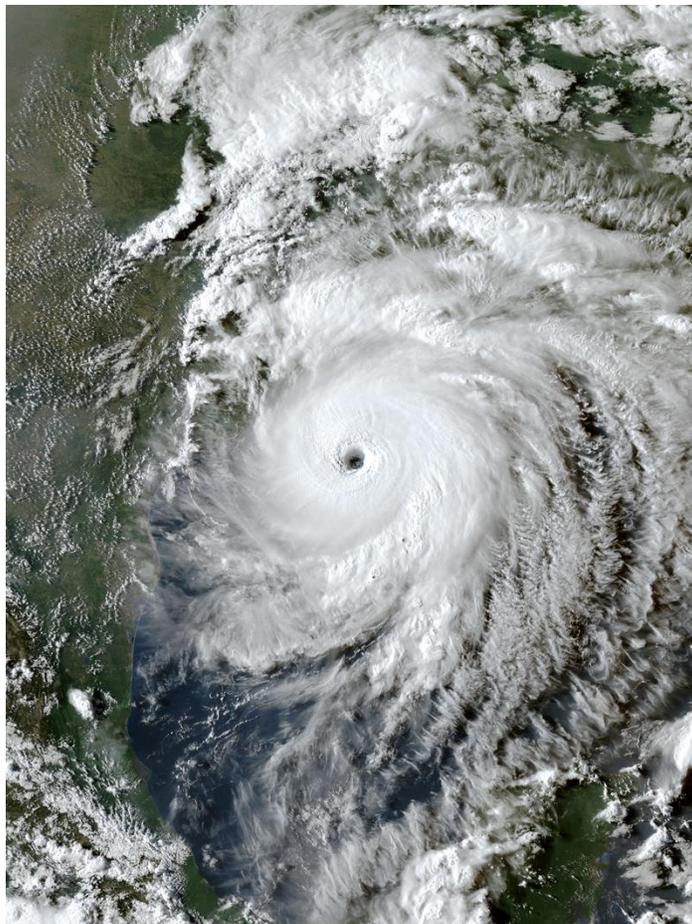
Laura began as a large tropical wave that emerged off the west coast of Africa on August 16<sup>th</sup>. The wave traversed the tropical Atlantic for the next several days with little additional organization. On August 19<sup>th</sup>, the system became better organized, closed off a low-level circulation, and subsequently the National Hurricane Center began issuing advisories on Tropical Depression Thirteen late that evening.

On the morning of August 21<sup>st</sup>, Tropical Depression Thirteen strengthened into Tropical Storm Laura, which was the earliest twelfth named Atlantic storm, beating the previous record of Hurricane Luis of 1995 by eight days. As Laura moved westward, little additional strengthening took place as the center moved over the northern Lesser Antilles later that evening, and south of Puerto Rico on August 22<sup>nd</sup>. Early on August 23<sup>rd</sup>, Tropical Storm Laura made landfall across Hispaniola, traversed the entire island, and made landfall across Eastern Cuba later that evening. Tropical Storm Laura continued west northwestward, traveling just south of the island with a second landfall across Western Cuba late on August 24<sup>th</sup>.

On August 25<sup>th</sup>, Laura entered the Gulf of Mexico and became a Category 1 hurricane at 10 AM CDT. Laura began to explosively intensify on August 26<sup>th</sup>, reaching category 2 by 1 AM CDT, category 3 by 7 AM CDT, and category 4 by 1 PM CDT. Laura reached a peak intensity of 150 mph (130 knots) and a minimum central pressure of 937 millibars (27.67 inches of mercury) by 8 PM CDT.

With little change in strength, Laura made landfall at Cameron, Louisiana around 1 AM CDT August 27<sup>th</sup>, with sustained winds of 150 mph (130 knots) and a minimum central pressure of 938 millibars (27.70 inches of mercury). Laura was the strongest hurricane to strike Southwest Louisiana since records began in 1851. Laura slowly weakened after landfall but maintained major hurricane status throughout its passage across Cameron, Calcasieu, and southern Beauregard Parishes, and category 2 status across northern Beauregard and Vernon parishes as daybreak approached on August 27<sup>th</sup>. Laura finally weakened below hurricane strength by Noon as it was crossing I-20 in North Louisiana. With this being the strongest hurricane to affect Southwest Louisiana, wind damage to buildings and trees was major to catastrophic across Cameron and Calcasieu parishes, with considerable damage across Beauregard and Vernon parishes where the core of the hurricane passed.

The National Weather Service in Lake Charles, Louisiana recorded a station record highest peak wind gust of 116 knots (133 mph) at 1:42 AM CDT before the Automated Surface Observing System (ASOS) wind equipment failed. However, the ASOS barometer sensor that was safely within the NWS building (which received very little damage) recorded a station record minimum sea level pressure of 956 millibars (28.23 inches of mercury) at 2:20 AM CDT when the eye of Hurricane Laura passed nearly overhead.



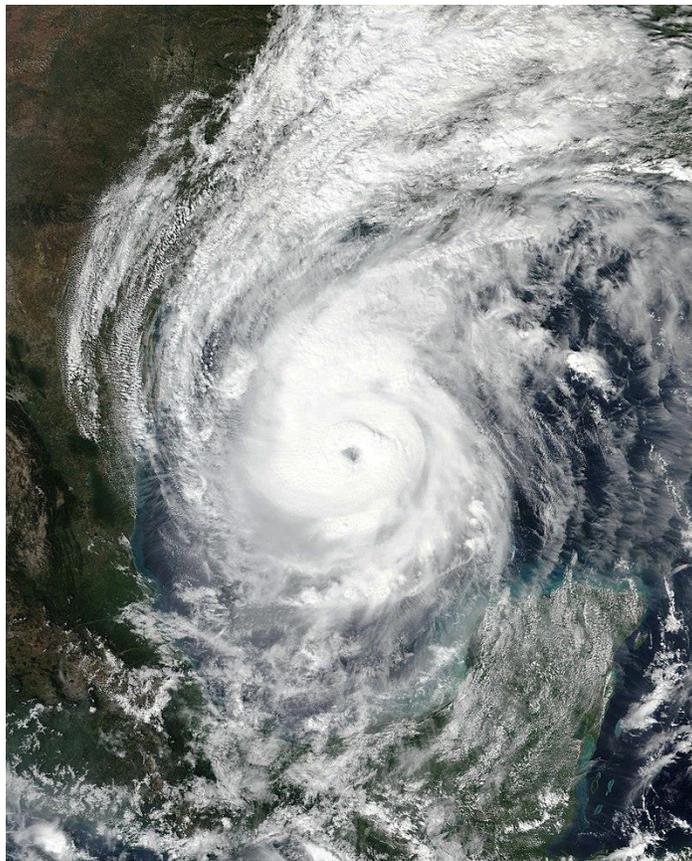
*Figure 2-26: Hurricane Laura in the Gulf Coast Area.  
(Source: NOAA)*

A total of 33 fatalities occurred throughout the state with four of them coming from falling trees. They included a 14-year-old girl in Vernon Parish, a 68-year-old man in Acadia Parish, a 51-year-old man in Jackson Parish, and a 64-year-old man in Allen Parish. Carbon monoxide poisoning from generators being inside homes, which is strongly discouraged, led to the deaths of twelve people in Calcasieu Parish and two people in Allen Parish. Another man died of drowning while aboard a sinking boat during the storm. Finally, one person died in Calcasieu Parish in a house fire, four people died in Calcasieu Parish, Natchitoches Parish, and Morehouse Parish during the cleanup process, and eight others died in Beauregard Parish, Grant Parish, Morehouse Parish, and Vernon Parish due to heat-related illnesses following the loss of electricity.

In Morehouse Parish, a tree was blown down across Peach Orchard Road and Cherry Ridge Road near Bastrop. Numerous trees and power lines were blown down across the parish. At least five trees were blown down on homes and additional trees were blown down on cars. There were widespread power outages throughout the parish.

### Tropical Storm Delta (2020)

Hurricane Delta was the record-tying fourth named storm of 2020 to strike Louisiana, as well as the record-breaking tenth named storm to strike the United States in that year. The twenty-sixth tropical cyclone, twenty-fifth named storm, ninth hurricane, and third major hurricane of the record breaking 2020 Atlantic hurricane season, Delta formed from a tropical wave which was first monitored by the National Hurricane Center on October 1. As it tracked across the western Caribbean, it rapidly intensified into a Category 4 hurricane. In fact, intensifying from tropical depression to Category strength in 40 hours is the fastest rate of intensification of any storm on record in the Atlantic Basin and accomplished by Delta. Delta quickly weakened to a category 1 hurricane after making its first landfall on the Yucatan Peninsula. It gradually recurved north towards the Louisiana coastline, fluctuating in intensity between category 2 and 3.



*Figure 2-27: Hurricane Delta in the Gulf Coast Area.  
(Source: NOAA)*

Hurricane Delta made landfall around 5 pm as a category 2 storm east of Cameron, Louisiana or about 15 miles east of where category 4 Hurricane Laura made landfall just a couple of months earlier of the same year. Local impacts included 50 to 70 mph wind gusts across the area, storm surge of 2 to 3 feet above ground, and widespread tree and structural damage. There were six injuries due to Hurricane Delta. In addition, outer bands of Delta produced a significant amount of rainfall on the north side of Baton Rouge Metro. Upwards of five to 10 inches of rain fell, causing street flooding in Baton Rouge and moderate river flooding in the region. Delta caused approximately \$100 million worth of damage across southeast Louisiana.

In Morehouse Parish, tropical depression force winds resulted in widespread trees and power lines blown down across the parish. A peak wind gust of 38 mph was measured at Morehouse Memorial Airport.

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

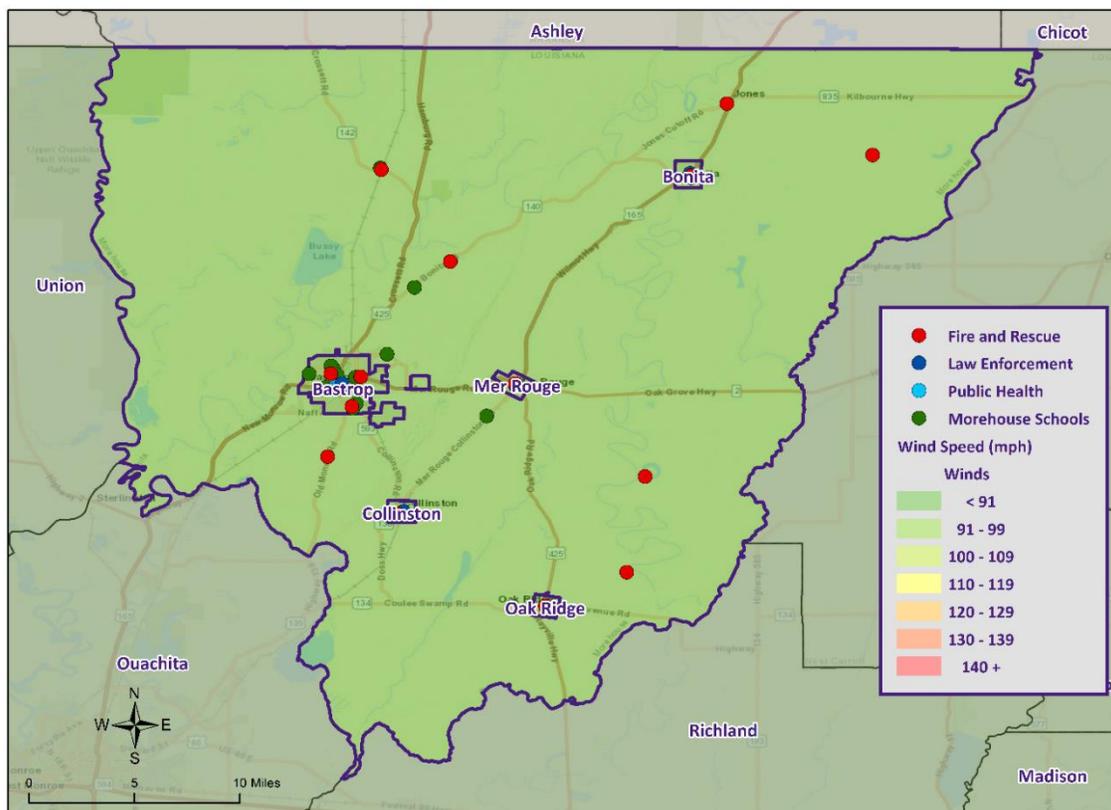


Figure 2-28: Winds Zones for Morehouse Parish in Relation to Critical Facilities

*Frequency / Probability*

Tropical cyclones are large natural hazard events that regularly impact Morehouse Parish. The annual chance of occurrence for a tropical cyclone is estimated at 37% for Morehouse Parish with four events occurring within 19 years (2002 to 2021). 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. Based on geographical location alone Morehouse Parish and its jurisdictions are highly vulnerable to tropical cyclones. This area has experienced several tropical cyclone events in the past and can expect more in the future.

*Estimated Potential Losses*

Using Hazus 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 2-49: Total Estimated Losses for a 100-Year Hurricane Event  
(Source: Hazus)*

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
<b>Morehouse Parish (Unincorporated)</b>	\$927,198
<b>Bastrop</b>	\$603,903
<b>Bonita</b>	\$10,594
<b>Collinston</b>	\$17,075
<b>Mer Rouge</b>	\$30,597
<b>Oak Ridge</b>	\$7,727
<b>Total</b>	<b>\$1,597,094</b>

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

*Table 2-50: Ratio of Total Losses to Total Estimated Value of Assets for Morehouse Parish  
(Source: Hazus)*

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event	Total Estimated Value of Assets	Ratio of Estimated Losses to Total Value
<b>Morehouse Parish (Unincorporated)</b>	\$927,198	\$1,914,285,000	< 0.1%
<b>Bastrop</b>	\$603,903	\$1,672,824,000	< 0.1%
<b>Bonita</b>	\$10,594	\$42,960,000	< 0.1%
<b>Collinston</b>	\$17,075	\$34,735,000	< 0.1%
<b>Mer Rouge</b>	\$30,597	\$101,576,000	< 0.1%
<b>Oak Ridge</b>	\$7,727	\$34,415,000	< 0.1%

Based on the Hazus Hurricane Model, estimated total losses for Morehouse Parish and its jurisdictions was less than 0.1% of the total estimated value of all assets.

The Hazus Hurricane Model also provides a breakdown for seven primary sectors (Hanus occupancy) throughout the parish. The losses for Morehouse Parish by sector are listed in the table below.

*Table 2-51: Estimated Losses in Unincorporated Morehouse Parish for a 100-Year Hurricane Event  
(Source: Hazus)*

Morehouse Parish (Unincorporated)	Estimated Total Losses from 100-Year Hurricane Event
<b>Agricultural</b>	\$620
<b>Commercial</b>	\$9,320
<b>Government</b>	\$898
<b>Industrial</b>	\$2,395
<b>Religious / Non-Profit</b>	\$3,413
<b>Residential</b>	\$909,671
<b>Schools</b>	\$880
<b>Total</b>	<b>\$927,198</b>

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

Bastrop	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$404
Commercial	\$6,070
Government	\$585
Industrial	\$1,560
Religious / Non-Profit	\$2,223
Residential	\$592,488
Schools	\$573
<b>Total</b>	<b>\$603,903</b>

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

Bonita	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$7
Commercial	\$106
Government	\$10
Industrial	\$27
Religious / Non-Profit	\$39
Residential	\$10,393
Schools	\$10
<b>Total</b>	<b>\$10,594</b>

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

Collinston	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$11
Commercial	\$172
Government	\$17
Industrial	\$44
Religious / Non-Profit	\$63
Residential	\$16,752
Schools	\$16
<b>Total</b>	<b>\$17,075</b>



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

Mer Rouge	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$20
Commercial	\$308
Government	\$30
Industrial	\$79
Religious / Non-Profit	\$113
Residential	\$30,019
Schools	\$29
<b>Total</b>	<b>\$30,597</b>

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

Oak Ridge	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$5
Commercial	\$78
Government	\$7
Industrial	\$20
Religious / Non-Profit	\$28
Residential	\$7,581
Schools	\$7
<b>Total</b>	<b>\$7,727</b>

*Threat to People*

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

*Table 2-57: Number of People Susceptible to a 100-Year Hurricane Event in Morehouse Parish  
(Source: Hazus)*

Number of People Exposed to Hurricane Hazards			
Location	# in Community	# in Hazard Area	% in Hazard Area
Morehouse Parish (Unincorporated)	14,879	14,879	100%
Bastrop	9,691	9,691	100%
Bonita	170	170	100%
Collinston	274	274	100%
Mer Rouge	491	491	100%
Oak Ridge	124	124	100%
<b>Total</b>	<b>25,629</b>	<b>25,629</b>	<b>100%</b>

The Hazus hurricane model was also extrapolated to provide an overview of vulnerable populations throughout Morehouse Parish. These populations are illustrated in the following tables:

*Table 2-58: Vulnerable Populations in Unincorporated Morehouse Parish for a 100-Year Hurricane Event (Source: Hazus)*

Morehouse Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	14,879	100.0%
Persons Under 5 Years	997	6.7%
Persons Under 18 Years	3,586	24.1%
Persons 65 Years and Over	2,812	18.9%
White	7,127	47.9%
Minority	7,752	52.1%

*Table 2-59: Vulnerable Populations in Bastrop for a 100-Year Hurricane Event (Source: Hazus)*

Bastrop		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	9,691	100.0%
Persons Under 5 Years	717	7.4%
Persons Under 18 Years	2,888	29.8%
Persons 65 Years and Over	1,279	13.2%
White	1,948	20.1%
Minority	7,743	79.9%

*Table 2-60: Vulnerable Populations in Bonita for a 100-Year Hurricane Event (Source: Hazus)*

Bonita		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	170	100.0%
Persons Under 5 Years	5	3.2%
Persons Under 18 Years	24	14.2%
Persons 65 Years and Over	34	20.0%
White	55	32.4%
Minority	115	67.6%



*Table 2-61: Vulnerable Populations in Collinston for a 100-Year Hurricane Event  
(Source: Hazus)*

Collinston		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	274	100.0%
Persons Under 5 Years	21	7.5%
Persons Under 18 Years	73	26.6%
Persons 65 Years and Over	67	24.3%
White	140	51.1%
Minority	134	48.9%

*Table 2-62: Vulnerable Populations in Mer Rouge for a 100-Year Hurricane Event  
(Source: Hazus)*

Mer Rouge		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	491	100.0%
Persons Under 5 Years	40	8.2%
Persons Under 18 Years	108	22.0%
Persons 65 Years and Over	128	26.0%
White	282	57.4%
Minority	209	42.6%

*Table 2-63: Vulnerable Populations in Oak Ridge for a 100-Year Hurricane Event  
(Source: Hazus)*

Oak Ridge		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	124	100.0%
Persons Under 5 Years	0	0.0%
Persons Under 18 Years	27	22.1%
Persons 65 Years and Over	35	28.3%
White	112	90.0%
Minority	12	10.0%

*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.

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 2-64: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale.  
(Source: Southern Wildfire Assessment Portal)

Fire Intensity	
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 worse-case scenario for Morehouse Parish and the incorporated area of Bastrop is a level 5; Bonita and Collinston a level 3.5; and Mer Rouge and Oak Ridge a level 1. The following figure displays the areas of wildland-urban interface and intermix in Morehouse Parish and its jurisdictions.

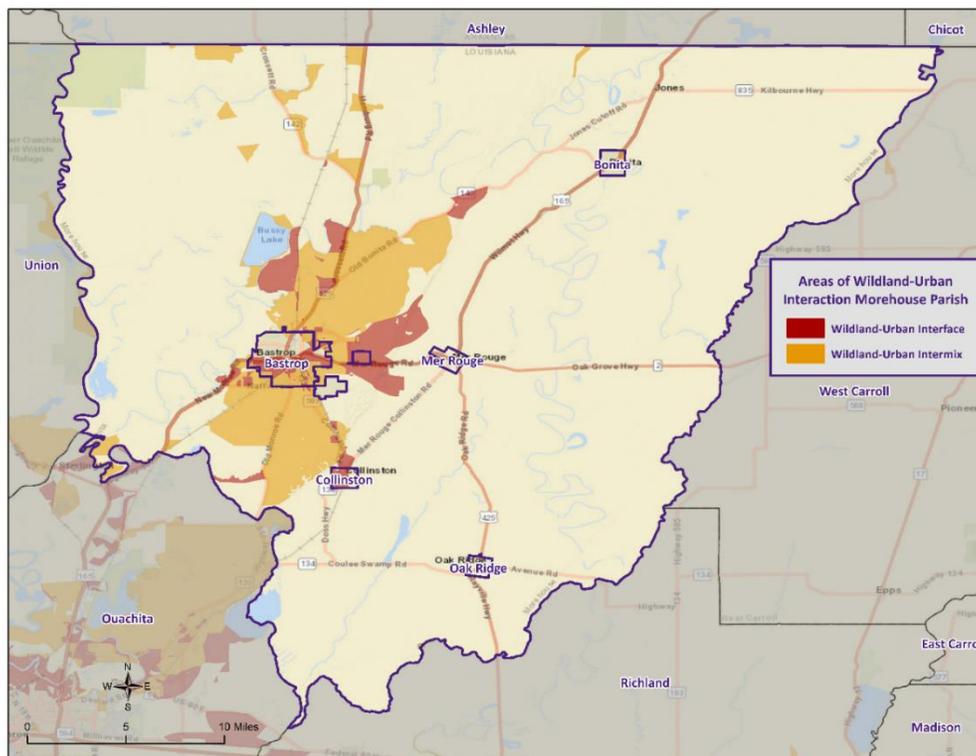


Figure 2-29: Wildland-Urban Interaction in Morehouse Parish.

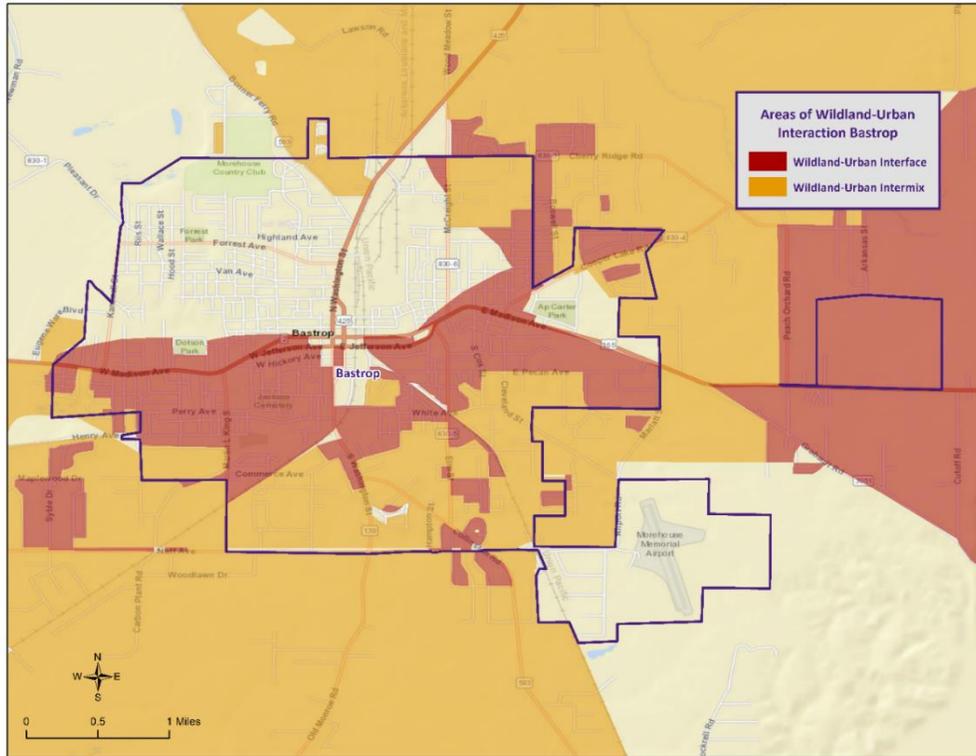


Figure 2-30: Wildland-Urban Interaction in Bastrop.

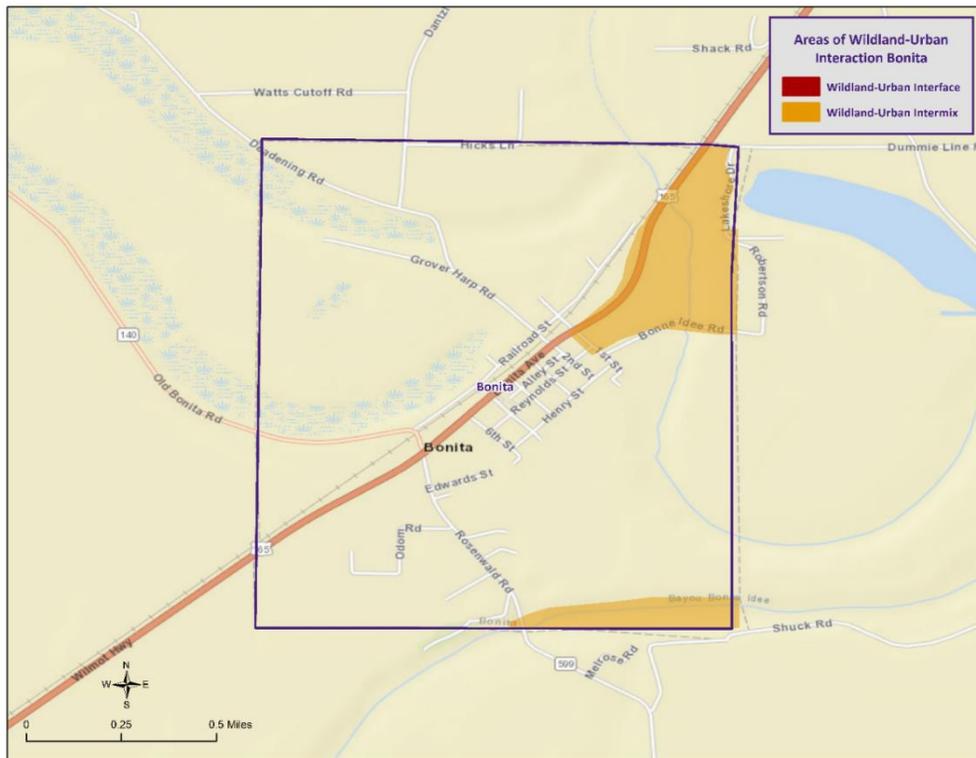


Figure 2-31: Wildland-Urban Interaction in Bonita.





Figure 2-34: Wildland-Urban Interaction in Oak Ridge.

*Previous Occurrences / Extents*

The NCEI Storm Events report no wildfire events occurring within the boundaries of Morehouse Parish between the years 1990 and 2021.

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

Table 2-65: Potential Wildfire Intensity Levels for Morehouse Parish.  
(Source: Southern Wildfire Assessment Portal)

Fire Intensity	
<b>Morehouse Parish (Unincorporated)</b>	High Intensity Level 5
<b>Bastrop</b>	High Intensity Level 5
<b>Bonita</b>	Moderate to High Intensity Level 3.5
<b>Collinston</b>	Moderate to High Intensity Level 3.5
<b>Mer Rouge</b>	Lowest Intensity Level 1
<b>Oak Ridge</b>	Lowest Intensity Level 1

*Frequency / Probability*

Based on historical records, there have been no significant wildfire events within the boundaries of Morehouse Parish and its jurisdictions; therefore, the annual chance of occurrence for wildfires is estimated at less than 1%.

*Estimated Potential Loses*

According to the NCEI Storm Events database, there have been no wildfire events which have caused property damage, crop damage, injuries, or fatalities in Morehouse Parish and its jurisdictions. In assessing over risk to population, the most vulnerable population throughout the parish consists of those residing in areas of wildland-urban interaction.

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

*Table 2-66: Total Building Exposure by Wildland-Urban Interaction Areas.  
(Source: Hazus)*

Jurisdiction	Estimated Total Building Exposure
<b>Morehouse Parish (Unincorporated)</b>	\$1,524,758,000
<b>Bastrop</b>	\$1,161,064,000
<b>Bonita</b>	\$18,767,000
<b>Collinston</b>	\$34,735,000
<b>Mer Rouge</b>	\$0
<b>Oak Ridge</b>	\$0
<b>Total</b>	<b>\$2,739,324,000</b>

Hazus 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 2-67: Estimated Exposure for Unincorporated Morehouse Parish by Sector.  
(Source: Hazus)*

Morehouse Parish (Unincorporated)	Estimated Total Building Exposure by Sector
<b>Agricultural</b>	\$8,306,000
<b>Commercial</b>	\$124,505,000
<b>Government</b>	\$13,768,000
<b>Industrial</b>	\$38,496,000
<b>Religious / Non-Profit</b>	\$68,706,000
<b>Residential</b>	\$1,263,511,000
<b>Schools</b>	\$7,466,000
<b>Total</b>	<b>\$1,524,758,000</b>

*Table 2-68: Estimated Exposure for Bastrop by Sector.  
(Source: Hazus)*

Bastrop	Estimated Total Building Exposure by Sector
Agricultural	\$1,702,000
Commercial	\$221,129,000
Government	\$16,726,000
Industrial	\$24,273,000
Religious / Non-Profit	\$50,766,000
Residential	\$827,130,000
Schools	\$19,338,000
<b>Total</b>	<b>\$1,161,064,000</b>

*Table 2-69: Estimated Exposure in Bonita by Sector.  
(Source: Hazus)*

Bonita	Estimated Total Building Exposure by Sector
Agricultural	\$0
Commercial	\$2,760,000
Government	\$0
Industrial	\$0
Religious / Non-Profit	\$848,000
Residential	\$14,777,000
Schools	\$382,000
<b>Total</b>	<b>\$18,767,000</b>

*Table 2-70: Estimated Exposure in Collinston by Sector.  
(Source: Hazus)*

Collinston	Estimated Total Building Exposure by Sector
Agricultural	\$504,000
Commercial	\$4,838,000
Government	\$720,000
Industrial	\$124,000
Religious / Non-Profit	\$0
Residential	\$25,963,000
Schools	\$2,586,000
<b>Total</b>	<b>\$34,735,000</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 2-71: Population Located within a Wildland-Urban Interaction Areas.  
(Source: 2010 U.S. Census Data)*

Number of People Located in Wildland-Urban Interaction Areas			
Location	# in Community	# in Hazard Area	% in Hazard Area
<b>Morehouse Parish (Unincorporated)</b>	14,879	3,274	22.0%
<b>Bastrop</b>	9,691	3,836	39.6%
<b>Bonita</b>	170	6	3.5%
<b>Collinston</b>	274	279	101.8%
<b>Mer Rouge</b>	491	0	0.0%
<b>Oak Ridge</b>	124	0	0.0%
<b>Total</b>	<b>25,629</b>	<b>7,395</b>	<b>28.9%</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. The data is illustrated in the following tables:

*Table 2-72: Population in Unincorporated Morehouse Parish Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Morehouse Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
<b>Number in Hazard Area</b>	3,274	22.0%
<b>Persons Under 5 Years</b>	219	6.7%
<b>Persons Under 18 Years</b>	789	24.1%
<b>Persons 65 Years and Over</b>	619	18.9%
<b>White</b>	1,568	47.9%
<b>Minority</b>	1,706	52.1%

*Table 2-73: Population in Bastrop Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Bastrop		
Category	Total Numbers	Percentage of People in Hazard Area
<b>Number in Hazard Area</b>	3,836	39.6%
<b>Persons Under 5 Years</b>	284	7.4%
<b>Persons Under 18 Years</b>	1,143	29.8%
<b>Persons 65 Years and Over</b>	506	13.2%
<b>White</b>	771	20.1%
<b>Minority</b>	3,065	79.9%

Table 2-74: Population in Bonita Located within a Wildland-Urban Interaction Area.

(Source: 2010 Census Data)

Bonita		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	6	3.5%
Persons Under 5 Years	0	3.2%
Persons Under 18 Years	1	14.2%
Persons 65 Years and Over	1	20.0%
White	2	32.4%
Minority	4	67.6%

Table 2-75: Population in Collinston Located within a Wildland-Urban Interaction Area.

(Source: 2010 Census Data)

Collinston		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	279	101.8%
Persons Under 5 Years	21	7.5%
Persons Under 18 Years	74	26.6%
Persons 65 Years and Over	68	24.3%
White	143	51.1%
Minority	136	48.9%

*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 Weather

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 following table 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 2-76: 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 Morehouse Parish as all of the adjacent parishes, the entire planning area for Morehouse Parish is equally at risk for winter storms. The worse-case scenario for Morehouse Parish and all of its jurisdictions is a level 2 on the Sperry-Piltz Ice Accumulation Index.

*Previous Occurrences / Extents*

The NCEI Storm Events Database reports four winter weather events occurring within the boundaries of Morehouse Parish between the years 1990 and 2021. On the following page is a brief synopsis of the winter weather events which occurred since the last Morehouse Parish HMP Update in 2016.



Table 2-77: Previous Occurrences for Winter Storm Events

Date	Synopsis	Property Damage	Crop Damage
February 15, 2021	Heavy snow and sleet fell across the parish. Sleet fell initially and two to three inch accumulations occurred. Heavy snow then fell and around five inches accumulated, leading to a total sleet/snow accumulation of around seven inches. Roads were icy with accidents occurring and motorists stranded.	\$150,000	\$0
February 17, 2021	Light fell across northern parts of the parish during the morning, but freezing rain became the concern during the afternoon. Up to around 0.25 inches of ice accumulated across the parish, and widespread power outages occurred due to fallen trees, limbs, and power lines.	\$100,000	\$0

*Frequency / Probability*

Based on historical records, there have been four significant winter weather events within the boundaries of Morehouse Parish and its jurisdictions; therefore, the annual chance of occurrence for winter weather is estimated at 13%.

*Estimated Potential Losses*

Since 1990, there have been four winter weather events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately \$250,000. To estimate the potential losses of a winter weather event on an annual basis, the total damages recorded for winter weather was divided by the total number of years of available winter weather in the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential loss of \$8,065 and \$62,500 per event. The following table provides an estimate of potential property losses for Morehouse Parish:

Table 2-78: Estimated Annual Losses Morehouse Parish and its Jurisdictions Resulting from Winter Weather.

Winter Weather Estimated Annual Potential Losses					
Unincorporated Area	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge
\$4,682	\$3,049	\$53	\$86	\$154	\$39

There have been no reported injuries or fatalities as a result of winter weather over the 31-year record.

*Vulnerability*

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

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### 3. Capability Assessment

This section summarizes the results of efforts by each jurisdiction and other agency 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, Morehouse Parish and the incorporated jurisdictions are able to identify strengths that could be used to reduce losses and reduce risk throughout the communities. 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

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

Table 3-1: Planning and Regulatory Capabilities

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

All jurisdictions within the Morehouse Parish planning area will work to expand their capabilities by adding to these plans, as well as work to create new plans that will address a long-term recovery and resiliency framework. In instances where there are no existing plans, there will be a concerted effort to explore opportunities to create new plans that will address long-term recovery and resiliency framework as parish and local resources allow.

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

Morehouse Parish Government provides oversight for building permits and codes, land use planning, and all parish ordinances.

As of the 2023 update, Morehouse Parish and the incorporated communities 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 Morehouse Parish Police Jury is also responsible for enforcing the parish ordinances related to health and safety, property maintenance standards, and condemnation of unsafe structures.

The Morehouse 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, the jurisdictions within the Morehouse Parish planning area as a whole have a system in place to coordinate and share these capabilities through the OHSEP 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

The jurisdictions within the Morehouse Parish planning area have 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 on the following page shows examples of resources in place.

Table 3-2: Administration and Technical Capabilities

Administration and Technical							
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources							
	Morehouse Parish	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge	Comments
<b>Administration</b>	<b>Yes / No</b>						
Planning Commission	Yes	Yes	Yes	Yes	Yes	Yes	
Mitigation Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	No	No	No	No	No	
<b>Staff</b>	<b>Yes / No</b>						
Chief Building Official	Yes	Yes	Yes	Yes	Yes	Yes	
Floodplain Administrator	Yes	Yes	Yes	Yes	Yes	Yes	
Emergency Manager	Yes	Yes	Yes	Yes	Yes	Yes	
Community Planner	No	No	No	No	No	No	
Civil Engineer	Yes	Yes	Yes	Yes	Yes	Yes	
GIS Coordinator	No	No	No	No	No	No	
Grant Writer	No	No	No	No	No	No	
Other	No	No	No	No	No	No	
<b>Technical</b>	<b>Yes / No</b>						
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Yes	Yes	Yes	Yes	Yes	
Hazard Data & Information	No	No	No	No	No	No	
Grant Writing	Yes	Yes	Yes	Yes	Yes	Yes	
Hazus Analysis	No	No	No	No	No	No	
Other	No	No	No	No	No	No	

Financial capabilities are the resources that Morehouse 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 parish may vary from little to no cost actions, such as outreach efforts, or substantial action costs such acquisition of flood prone properties.

The following financial resources are available to fund mitigation actions in the Morehouse Parish planning area:

Table 3-3: Financial Capabilities

Financial							
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.							
	Morehouse Parish	Bastrop	Bonita	Collinston	Mer Rouge	Oak Ridge	Comments
<b>Funding Resource</b>	<b>Yes / No</b>						
Capital Improvements project funding	No	No	No	No	No	No	
Authority to levy taxes for specific purposes	Yes	Yes	Yes	Yes	Yes	Yes	
Fees for water, sewer, gas, or electric services	No	No	No	No	No	No	
Impact fees for new development	No	No	No	No	No	No	
Stormwater Utility Fee	No	No	No	No	No	No	
Community Development Block Grant (CDBG)	Yes	Yes	Yes	Yes	Yes	Yes	
Other Funding Programs	No	No	No	No	No	No	

### Education and Outreach

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

The jurisdictions within the Morehouse Parish planning area have existing education and outreach programs to implement mitigation activities, as well as communicate risk and hazard related information to its communities. Specifically, focusing on advising repetitive loss property owners of ways they can reduce their exposure to damage by repetitive flooding remains a priority for the entire parish. The existing programs are as follows:

*Table 3-4: Education and Outreach Capabilities*

Education and Outreach							
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.							
	Morehouse Parish	Bastrop	Bonita	Collinston	Metairie	Oak Ridge	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	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Yes	Yes	Yes	Yes	Yes	
Natural Disaster or safety related school program	Yes	Yes	Yes	Yes	Yes	Yes	
Storm Ready certification	No	No	No	No	No	No	
Firewise Communities certification	Yes	Yes	Yes	Yes	Yes	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	No	No	No	No	No	
Other	No	No	No	No	No	No	

As reflected with the above existing regulatory mechanisms, programs and resources within the parish, the jurisdictions within the Morehouse Parish planning area remain committed to expanding and improving on the existing capabilities within the parish. Communities will work together along with Morehouse Parish 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 parish, will enhance and expand overall risk reduction for the entirety of Morehouse Parish.

### Flood Insurance and Community Rating System

Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements. As noted in the CRS Eligible Communities List effective October 1, 2022, Morehouse Parish nor any of the incorporated jurisdictions within the parish participate in the CRS program.

The Federal Emergency Management Agency’s National Flood Insurance Program (NFIP) administers the Community Rating System (CRS). 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.

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

As of October 2022, 352 communities in the State of Louisiana participate in the Federal Emergency Management Agency’s National Flood Insurance Program (NFIP). Of these communities, 47 (or 13%) participate in the Community Rating System (CRS). Jefferson Parish leads the state with a rating of Class 5, followed by three cities with a rating of Class 6: the Cities of Gretna and Kenner in Jefferson Parish and the City of Mandeville in St.

Tammany Parish. Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 29 participate in the CRS. The remaining 21 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. Once the parish has obtained a CRS rating and is a participant, 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 1 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 (CRS) that resulted 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 to evaluate the CRS and refine the program to meet its stated goals. The changes helped to 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.

Since the revision of the 2013 Coordinator’s Manual, FEMA released the 2017 CRS Coordinator’s Manual which continued the evolution of the CRS program and its mission to reward communities that prioritize mindful floodplain regulations. As with the 2013 manual, the changes made in the 2017 manual impact each CRS community differently. Some communities see an increase in the points they receive since points for certain activities have increased (e.g., Activity 420 Open Space Preservation). Other communities receive fewer points for certain activities (e.g., Activity 320 Map Information Service). It is

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

likely that some communities with marginal CRS Class 9 programs have to identify new CRS credits in order to remain in the CRS class. Most notably, as it relates to this hazard mitigation plan, more credit was made available for Activity 410 Floodplain Mapping.

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 2017 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 the 2017 manual will impact their community and when.

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 program 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.

## NFIP Worksheets

Parish NFIP worksheets can be found in [Appendix E: State Required Worksheets](#).

## 4. Mitigation Strategy

### Introduction

The Hazard Mitigation Strategy for Morehouse Parish and its incorporated communities have a common guiding principle and is the demonstration of the parish's 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.

Officials from all jurisdictions within the planning area confirmed the goals, objectives, actions and projects over the period of the hazard mitigation plan update process. The mitigation actions and projects in this 2023 HMP update are a product of analysis and review of the Morehouse Parish Hazard Mitigation Plan Planning Committee under the coordination of the Morehouse Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2016 plan, for review from October 2022 – February 2023.

An online public opinion survey of Morehouse Parish residents was conducted between January 2023 – February 2023. The survey was designed to capture public perceptions and opinions regarding natural hazards in the Morehouse Parish planning area. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards. However, because there were no responses to the survey, this public feedback could not be incorporated into the plan. The full Morehouse Parish survey can be found at the following link:

<https://www.surveymonkey.com/r/MorehouseHM2022>

### 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 Morehouse 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, Morehouse Parish 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 Morehouse Parish Hazard Mitigation Plan Update Planning Committee represent long-term commitments by the parish. After assessing these goals, the committee decided that the current remain valid.

The goals are as follows:

1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities.
2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact.
3. Improve data collection, use, and sharing to reduce the impact of hazards.
4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities.

The Mitigation Action Plan focuses on actions to be taken by Morehouse Parish and its communities. All of the activities in the Mitigation Action Plan will be focused on helping the parish and its communities 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 Planning Committee 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.

### 2023 Mitigation Actions and Update on Previous Plan Actions

The Morehouse Parish Hazard Mitigation Plan Planning Committee identified new actions that would reduce and/or prevent future damage within the Morehouse Parish planning area. In that effort, the committee focused on a comprehensive range of specific mitigation actions. These actions were identified in thorough fashion by the consultant team and the committee by way of frequent and open communications and meetings held throughout the planning process. The addition of these new actions, coupled with any ongoing and/or carried over projects from their previous update, provide Morehouse Parish with a solid mitigation strategy through which risk and losses will be reduced throughout the parish and its communities.

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.

Status updates for actions included in the previous plan can be found on the following pages. Additionally, new mitigation actions agreed upon by the parish and its jurisdictions are included.

**Morehouse Parish Mitigation Actions**

*Previous Action Update*

Unincorporated Morehouse Parish Mitigation Action Plan						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
MOR1: 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	Morehouse Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 1)
MOR2: 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 storm periods.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	In Progress
MOR3: 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	Morehouse Parish OHSEP	Dam Failure, Flooding, Levee Failure, Tropical Cyclone	Not Started - Carried Over (See Morehouse Parish Mitigation Action 2)
MOR4: Safe Room Projects	Construction of a safe room for first responders located in Morehouse Parish. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 3)

MOR5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclone, tornados, wildfire, thunderstorms (lightning, high wind, hail), dam and levee failure and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	In Progress
MOR6: 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	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
MOR7: 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	Morehouse Parish OHSEP	Thunderstorms	Not Started - Carried Over (See Morehouse Parish Mitigation Action 4)
MOR8: Warning Systems	Update/upgrade public warning system components throughout Morehouse Parish as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 5)



MOR9: 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	Morehouse Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 6)
MOR10: 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	Morehouse Parish OHSEP	Dam Failure, Flooding Levee Failure, Tropical Cyclones	In Progress
MOR11: Pursuing Elevation, Acquisition, Floodproofing Projects	Pursue elevation / acquisition / floodproofing projects and structural solutions to flooding using available grant funding for the repetitive loss structure.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR12: Review Repetitive Loss List	Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR13: Localized Interior Drainage Project	Investigate and implement a localized interior drainage project along US Highways 165, & 425, and the Parish roads, which are repetitive loss areas, and reduce its flood potential.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR14: Drainage Way Improvement	Improve drainage ways, along Bayou Galion, Staulkinghead Creek, Tisdale Brake and W-10 Canal, by enlarging any inferior culverts and replacing any substandard bridges along the major drainage laterals.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)



MOR15: Hardening by Floodproofing and Generators	Harden the Morehouse Parish EOC, Eastside Elementary School and Morehouse Junior High School, by utilizing applicable floodproofing techniques and add back up power supply/generators at these locations. Also include generators at the Bastrop Municipal Center, Morehouse Parish General Hospital, the Parish Courthouse, Beekman Water System, LSU Agriculture Auditorium, and the Beekman School Gym.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR16: Hardening EOC	Harden Parish EOC	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR17: Hailproofing	Hail proof public buildings	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR18: Drinking Water System Development	Contingency development of drinking water system connections to other systems	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress



MOR19: Parish Communications Antennas	Harden parish communications antennas at 5 repeater sites	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR20: Irrigation Management	Land use – irrigation management explore redefinition of well head protection zones	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 7)
MOR21: Generators	Install generator at Parish Courthouse, Parish EOC, and water wells (portable)	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR22: Warning Systems	Implement Parish Wide Warning systems for Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)

MOR23: Fee Waiving	Building permit fee waiving for improvements that address hazard mitigation (grant pursuit to help pay for inspectors where fees are waived)	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 8)
MOR24: Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP). Benefits: Enables homeowners to financially recover from the devastating effects of flooding as rapidly as possible. Serves to educate area residents that any homeowner, regardless of location, can purchase flood insurance.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR25: NFIP Participation	Increasing participation in NFIP, particularly with future of decertification of levees.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR26: Public Awareness	Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding flood hazards, SFHA's, and potential mitigation measures using the local newspaper, utility bill inserts, inserts in the phone book, and parish hazards awareness website, or "how to" classes in retrofitting by local merchants.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



MOR27: Disaster Resistance Education	Integrate "Disaster Resistance Education" into the public school curriculum.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR28: Public Education	Provide public education on importance of maintaining ditches.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR29: Multi-Hazard Awareness Week	Sponsor a "Multi-Hazard Awareness Week", to educate the public on hailstorms and severe storms (sheltering in place, evacuation, emergency preparedness, and structural retrofitting), flooding (evacuation, emergency preparedness, retrofitting, and flood insurance), thunderstorms and lightning (emergency preparedness).	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR30: Education Efforts	Continue and expand efforts to educate the public regarding Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather, including direct mail, technical assistance, and development / implementation of general advertising campaign.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



MOR31: Local Business Involvement	Work with location businesses to identify hazards to their business and mitigation actions that can be taken to protect Parish's economy.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	N/A
MOR32: Parish Employee Involvement	Work with parish and municipal employees to identify potential ways to mitigate the impact of hazards upon employees, assets and infrastructure	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
MOR33: Emergency Personnel Training	Work to provide training to emergency personnel Parish-wide in NIMS and ICS	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
MOR34: Data Improvement	Repetitive loss data improvement	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Not Started - Carried Over (See Morehouse Parish Mitigation Action 9)
MOR35: Building Code Insurance Partnership	Develop partnerships with insurance companies to promote building codes	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress



MOR36: Alternate Water Sources	Study to determine alternate water sources	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MOR37: FEMA Partnership	Work with FEMA to update FIRMs	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Not Started - Carried Over (See Morehouse Parish Mitigation Action 10)
MOR38: Update Mitigation Requirements	Continue to include and update mitigation requirements in floodplain development regulations	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR39: Wildfire Analysis	Consider wildfire analysis	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Wildfires	Not Started - Carried Over (See Morehouse Parish Mitigation Action 11)
MOR40: Vegetation Mitigation	Identify and consider vegetation mitigation programs and methods	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Wildfires, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 12)
MOR41: Auxiliary Power Sources	Identify and prioritize auxiliary power sources for critical infrastructure	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



MOR42: Reservoir Sites	Examine current resources and potential reservoir sites	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Drought	Not Started - Carried Over (See Morehouse Parish Mitigation Action 13)
MOR43: Floodplain Development Regulations	Update and implement floodplain development regulations, which limit the opportunity for new homes and businesses to be constructed in the floodplain and update associated mitigation requirements.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Not Started - Carried Over (See Morehouse Parish Mitigation Action 14)
MOR44: Master Drainage Plan	Develop a master drainage plan which will evaluate drainage projects at major drainage laterals to determine best method of increasing drainage capacity. Implement recommended projects resulting from drainage plan.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
MOR45: Community Rating System	Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Not Started - Carried Over (See Morehouse Parish Mitigation Action 15)
MOR46: NFIP Insurance Partnership	Partner with insurance agents to increase awareness and policyholders in the NFIP	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)



MOR47: International Building Codes	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Flooding	Not Started - Carried Over (See Morehouse Parish Mitigation Action 16)
MOR48: New Development Regulation	Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; stormwater retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Flooding, Levee Failure	Not Started - Carried Over (See Morehouse Parish Mitigation Action 17)
MOR49: New Subdivision Developments Utility Requirements	Require new subdivision developments to install underground utilities, which would help reduce the chances of power outages.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Morehouse Parish Mitigation Action 18)
MOR50: Water-Saving Measures	Adopt ordinance requiring water-saving measures in time of drought.	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Drought	Not Started - Carried Over (See Morehouse Parish Mitigation Action 19)
MOR51: Effort Coordination	Coordination of all preparedness and mitigation efforts; hosting disaster response drills; regular attendance at networking and coordination meetings	FEMA HMGP, Local	1-5 years	Morehouse Parish OHSEP	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress



<p>MOR52: Monitoring and Communications Systems</p>	<p>Work to enhance monitoring and communications systems to improve ability to predict and prepare for flood events</p>	<p>FEMA HMGP, Local</p>	<p>1-5 years</p>	<p>Morehouse Parish OHSEP</p>	<p>Flooding</p>	<p>Deleted (Duplicate Action)</p>
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*New Mitigation Actions*

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 1</b>	Building Retrofits
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, use, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Retrofit public buildings exterior shell to maintain use during and after storm events
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Reduces damage from high wind related events, and helps assure that the public buildings can be used, occupied and operable during or after storms.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 2</b>	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Eliminates flooding risk of repetitive and severe repetitive loss structures.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Dam Failure, Flooding, Levee Failure, Tropical Cyclone



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITGATION ACTION 3</b>	Safe Room Projects
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Construction of a safe room for first responders located in Morehouse Parish. Other locations will be identified based on funding availability.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Allows for continued operations of essential personal to actively respond during a natural hazard event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 4</b>	Lightning Mitigation
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Thunderstorms



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 5</b>	Warning Systems
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Update/upgrade public warning system components throughout Morehouse Parish as necessary. Install audible and/or reverse 911 warning system(s)
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Dam Failure, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITGATION ACTION 6</b>	Potable Water
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	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.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
	DESCRIPTION
<b>MOREHOUSE PARISH MITIGATION ACTION 7</b>	Irrigation Management
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Land use – irrigation management explore redefinition of well head protection zones
<b>Type of Mitigation Action</b>	Natural System Protection, Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Redefinition of well head protection zones will ensure that drinking water systems will have a greater chance of not becoming contaminated from activities on the ground surface
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 8</b>	Fee Waiving
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	High
<b>Action Description</b>	Building permit fee waiving for improvements that address hazard mitigation (grant pursuit to help pay for inspectors where fees are waived)
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Fee waiving will give a higher incentive for building permits to address necessary improvements as it relates to hazard mitigation
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 9</b>	Data Improvement
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Repetitive loss data improvement
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Data improvement on repetitive loss will allow agencies to take necessary actions to make repetitive loss properties less receptive to loss
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 10</b>	FEMA Partnership
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	High
<b>Action Description</b>	Work with FEMA to update FIRMs
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Updating FIRMs will ensure the better coordination of response to a natural disaster and assist the NFIP in accordance to floodplain management and insurance purposes
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 11</b>	Wildfire Analysis
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Consider wildfire analysis
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Taking wildfire analysis into consideration will allow for proper steps to be taken when updating building codes for property that may be susceptible to such events
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Wildfires



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 12</b>	Vegetation Mitigation
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Identify and consider vegetation mitigation programs and methods
<b>Type of Mitigation Action</b>	Natural System Protection, Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Vegetation mitigation can enforce proper steps to be taken when dealing with irrigation. Can also be a resource as an identifier for a no burn ordinance to be placed under certain jurisdictions to avoid wildfires
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Excessive Heat, Flooding, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 13</b>	Reservoir Sites
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine current resources and potential reservoir sites
<b>Type of Mitigation Action</b>	Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Examining potential reservoir sites will allow for further development in the supply of drinking water and forms of hydroelectric power
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 14</b>	Floodplain Development Regulations
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Update and implement floodplain development regulations, which limit the opportunity for new homes and businesses to be constructed in the floodplain and update associated mitigation requirements.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects, Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Limiting property being built in floodplain areas will reduce the likelihood of that property experiencing repetitive loss. Updating mitigation requirements will require new development to adhere to codes that will reduce their exposure to hazards and loss
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 15</b>	Community Rating System
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums.
<b>Type of Mitigation Action</b>	Education Awareness Programs, Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Education of CRS program can result in flood insurance premium discounts allowing the public to invest in flood insurance or to have other items covered.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 16</b>	International Building Code
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 year
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects, Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Adopting International Building Codes will make structures less susceptible to hazards like flooding or high wind related events
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 17</b>	New Development Regulation
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; stormwater retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects, Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Ordinances that regulate new development will ensure that the property is less susceptible to hazards and/or repetitive loss.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Dam Failure, Flooding, Levee Failure



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 18</b>	New Subdivision Developments Utility Requirements
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Require new subdivision developments to install underground utilities, which would help reduce the chances of power outages.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	The burying of utilities will help to reduce or eliminate the interruption to critical facilities caused by a disaster.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITGATION ACTION 19</b>	Water-Saving Measures
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Adopt ordinance requiring water-saving measures in time of drought.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Increases local capabilities and reduces impacts to infrastructure and public during times of drought
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 20</b>	Dam and Levee Failure Working Group
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury, US Army Corps of Engineers
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HGMP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Create a working group in order to assess the extent and determine the possible impact of a dam or levee failure.
<b>Type of Mitigation Action</b>	Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Creation of working group will allow dams and levees to be assessed and determine the possible outcomes during failure. This is a preventive measure that will allow the group to call upon others to reinforce structures if failure event is imminent.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Dam Failure, Flooding, Levee Failure



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 21</b>	Fans and Cooling Devices
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Parish Budget
<b>ASSOCIATED GOALS</b>	4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine funding source to purchase fans and other cooling devices for at risk population
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Cooling devices will serve as a backup in the event of a widespread power outage during excessive heat events
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Excessive Heat



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 22</b>	Identify and pursue preventative measures that will reduce future damages from hazards.
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Local Budget, State Grants, HMGP, and Additional Grant Sources
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, use, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Send Morehouse Parish Office of Emergency Preparedness representative to relevant State and National hazard mitigation meetings to identify and pursue grants and project funding sources and measures that will mitigate future damages from hazards.
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Will allow for loss in the community to decrease when hazards become prevalent
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Dam Failure, Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 23</b>	Emergency Response Communications Plan
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Maintain parish-wide emergency response communications plan
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Structure and Infrastructure Projects, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Emergency response communication plans will allow for improvement of response when mitigation hazard/disaster events and for essential personal to assess the areas in need
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS MOREHOUSE PARISH	
DESCRIPTION	
<b>MOREHOUSE PARISH MITIGATION ACTION 24</b>	Remove Beaver Dams
<b>LEAD AGENCY</b>	Morehouse Parish OHSEP
<b>SUPPORTING AGENCIES</b>	Morehouse Parish Police Jury
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	High
<b>Action Description</b>	Examine methods of removing beaver dams around town to alleviate flooding issues.
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Removing beaver dams will reduce the risk of backwater flooding.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Flooding

**City of Bastrop Mitigation Actions**

*Previous Action Update*

City of Bastrop						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
BAS1: Building Retrofits	Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See City of Bastrop Mitigation Action 1)
BAS2: 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 storm periods.	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	In Progress
BAS3: Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties. .	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See City of Bastrop Mitigation Action 2)

BAS4: Safe Room Projects	Construction of a safe room for first responders located in Bastrop. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See City of Bastrop Mitigation Action 3)
BAS5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclone, tornados, wildfire, thunderstorms (lightning, high wind, hail), dam failure, levee failure and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	In Progress
BAS6: Generators for continuity of operations and government	Procurement and Installation of generators at public facilities to ensure continued operations during and after events.	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
BAS7: Lightning Mitigation	Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Thunderstorms	In Progress



BAS8: Warning Systems	Update/upgrade public warning system components throughout Bastrop as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	Not Started - Carried Over (See City of Bastrop Mitigation Action 4)
BAS9: Potable Water	Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See City of Bastrop Mitigation Action 5)
BAS10: Promote Flood Insurance	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	In Progress
BAS11: Wildfire/Vegetation Analysis	Conduct wildfire/vegetation analysis	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Wildfires	Not Started - Carried Over (See City of Bastrop Mitigation Action 6)
BAS12: Municipal Center Safe Room	Safe room project for Municipal Center	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



BAS13: Dodson Center Safe Room	Safe room project for Dodson Center	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
BAS14: Garment Factory Safe Room	Safe room project for old garment factory owned by Bastrop	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
BAS15: Alternate Location	Examine alternate location for dispatch center due to proximity to Railroads and highway intersections	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See City of Bastrop Mitigation Action 7)
BAS16: Public Education	Public education and outreach program for Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
BAS17: NIMS/ICS Training	Continued NIMS/ICS training for Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	FEMA HMGP, Local	1-5 years	City of Bastrop/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Ongoing

*New Mitigation Actions*

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 1</b>	Building Retrofits
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Retrofit public buildings exterior shell to maintain use during and after storm events.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Reduces damage from high winds events and helps assure that the public buildings can be used, occupied and operable during or after storms
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 2</b>	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Eliminates flooding risk of repetitive and severe repetitive loss structures.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 3</b>	Safe Room Projects
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Construction of a safe room for first responders located in Bastrop. Other locations will be identified based on funding availability.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Allows for continued operations of essential personal to actively respond during a natural hazard event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 4</b>	Warning Systems
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Update/upgrade public warning system components throughout Bastrop as necessary. Install audible and/or reverse 911 warning system(s)
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITGATION ACTION 5</b>	Potable Water
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	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.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
	DESCRIPTION
<b>CITY OF BASTROP MITGATION ACTION 6</b>	Wildfire/Vegetation Analysis
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Conduct wildfire/ vegetation analysis
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Conducting analysis on nearby vegetation will give insight to what measures need to be taken to prevent future wildfires
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Wildfires



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 7</b>	Alternate Location
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Build an alternate location for dispatch center due to proximity to Railroads and highway intersections
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Alternate location for a dispatch center will decrease the chances for railroad and highways to be an interference with ongoing hazards
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITGATION ACTION 8</b>	Fans and Cooling Devices
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Parish Budget
<b>ASSOCIATED GOALS</b>	1. Identifying and pursuing preventive measures that will reduce future damages from hazards 4. Facilitating sound development in the parish to reduce or eliminate the potential impact of hazards
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine funding source to purchase fans and other cooling devices for at risk population
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Cooling devices will serve as a backup in the event of a widespread power outage during excessive heat events
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Excessive Heat



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 9</b>	Identify and pursue preventative measures that will reduce future damages from hazards.
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Local Budget, State Grants, HMGP, and Additional Grant Sources
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards 3. Reduce repetitive flood losses in the parish and towns 4. Facilitate sound development in the parish and towns to reduce or eliminate hazard damages
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Send Morehouse Parish Office of Emergency Preparedness representative to relevant State and National hazard mitigation meetings to identify and pursue grants and project funding sources and measures that will mitigate future damages from hazards.
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Will allow for loss in the community to decrease when hazards become prevalent
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 10</b>	Emergency Response Communications Plan
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Maintain parish-wide emergency response communications plan
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Structure and Infrastructure Projects, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Emergency response communication plans will allow for improvement of response when mitigation hazard/disaster events and for essential personal to assess the areas in need
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 11</b>	Enhance Landscaping and Design Measures
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Incentivize drought-tolerant landscape which will reduce the dependence on irrigation practices, using permeable driveways and surfaces to reduce runoff and promote groundwater recharge, and provide incentives for the public that engages in these practices
<b>Type of Mitigation Action</b>	Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Enhancing landscape and design measures allows for drought events to be less severe.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITGATION ACTION 12</b>	Water Conservation Ordinance
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HGMP, Local
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Implements mandatory measures surrounding water conservation during drought events/emergencies
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Ordinances in place will prioritize water control in the parish and communities, particularly for essential personnel and Fire Search and Rescue
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS CITY OF BASTROP	
DESCRIPTION	
<b>CITY OF BASTROP MITIGATION ACTION 13</b>	Procure All-Weather/Hazard Emergency Alert Radios
<b>LEAD AGENCY</b>	City of Bastrop Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Purchase weather radios for public, to be used for emergency notification.
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather, Wildfires



**Village of Bonita Mitigation Actions**

*Previous Action Update*

Village of Bonita						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
BON1: 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 Bonita/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Village of Bonita Mitigation Action 1)
BON2: 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 propertyowners 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 storm periods.	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	In Progress
BON3: 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 Bonita/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Bonita Mitigation Action 2)

BON4: Safe Room Projects	Construction of a safe room for first responders located in Bonita. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Bonita Mitigation Action 3)
BON5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclone, tornados, wildfire, thunderstorms (lightning, high wind, hail), dam failure, levee failure and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	In Progress
BON6: 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 Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
BON7: 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 Bonita/Morehouse Parish OHSEP	Thunderstorms	In Progress



BON8: Warning Systems	Update/upgrade public warning system components throughout Bonita as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Bonita Mitigation Action 4)
BON9: 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 Bonita/Morehouse Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Village of Bonita Mitigation Action 5)
BON10: 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 Bonita/Morehouse Parish OHSEP	Dam Failure, Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Bonita Mitigation Action 6)
BON11: Water System	Winterize/weatherize water system	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
BON12: Hardening Fire Station	Harden fire station with wind straps and bay doors	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



BON13: Wind Retrofitting	Wind retrofit for Town Hall / Police Department	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
BON14: Fire Department Generator	Generator for fire department	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
BON15: Town Hall/Police Department Generator	Generator for Town Hall / police department	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
BON16: Safe Room	Retrofit Town Hall/Police department to serve as safe room	FEMA HMGP, Local	1-5 years	Village of Bonita/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



*New Mitigation Actions*

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 1</b>	Building Retrofits
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Retrofit public buildings exterior shell to maintain use during and after storm events.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Reduces damage from high winds events and helps assure that the public buildings can be used, occupied and operable during or after storms
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 2</b>	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Eliminates flooding risk of repetitive and severe repetitive loss structures.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 3</b>	Safe Room Projects
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Construction of a safe room for first responders located in Bonita. Other locations will be identified based on funding availability.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Allows for continued operations of essential personal to actively respond during a natural hazard event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 4</b>	Warning Systems
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Update/upgrade public warning system components throughout Bonita as necessary. Install audible and/or reverse 911 warning system(s)
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITGATION ACTION 5</b>	Potable Water
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	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.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITGATION ACTION 6</b>	Promote Flood Insurance
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITGATION ACTION 7</b>	Fans and Cooling Devices
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Parish Budget
<b>ASSOCIATED GOALS</b>	4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine funding source to purchase fans and other cooling devices for at risk population
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Cooling devices will serve as a backup in the event of a widespread power outage during excessive heat events
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Excessive Heat



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 8</b>	Identify and pursue preventative measures that will reduce future damages from hazards.
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Local Budget, State Grants, HMGP, and Additional Grant Sources
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Send Morehouse Parish Office of Emergency Preparedness representative to relevant State and National hazard mitigation meetings to identify and pursue grants and project funding sources and measures that will mitigate future damages from hazards.
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Will allow for loss in the community to decrease when hazards become prevalent
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 10</b>	Emergency Response Communications Plan
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Maintain parish-wide emergency response communications plan
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Structure and Infrastructure Projects, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Emergency response communication plans will allow for improvement of response when mitigation hazard/disaster events and for essential personal to assess the areas in need
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 11</b>	Enhance Landscaping and Design Measures
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Incentivize drought-tolerant landscape which will reduce the dependence on irrigation practices, using permeable driveways and surfaces to reduce runoff and promote groundwater recharge, and provide incentives for the public that engages in these practices
<b>Type of Mitigation Action</b>	Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Enhancing landscape and design measures allows for drought events to be less severe.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 12</b>	Water Conservation Ordinance
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HGMP, Local
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Implements mandatory measures surrounding water conservation during drought events/emergencies
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Ordinances in place will prioritize water control in the parish and communities, particularly for essential personnel and Fire Search and Rescue
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF BONITA	
DESCRIPTION	
<b>VILLAGE OF BONITA MITIGATION ACTION 13</b>	Procure All-Weather/Hazard Emergency Alert Radios
<b>LEAD AGENCY</b>	Village of Bonita Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Purchase weather radios for public, to be used for emergency notification.
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather, Wildfires



**Village of Collinston Mitigation Actions**

*Previous Action Update*

Village of Collinston						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
COL1: 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 Collinston/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Village of Collinston Mitigation Action 1)
COL2: 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 storm periods.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	In Progress
COL3: 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 Collinston/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Collinston Mitigation Action 2)

COL4: Safe Room Projects	Construction of a safe room for first responders located in Collinston. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Collinston Mitigation Action 3)
COL5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclone, tornados, wildfire, thunderstorms (lightning, high wind, hail), dam failure, levee failure and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	In Progress
COL6: 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 Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
COL7: 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 Collinston/Morehouse Parish OHSEP	Thunderstorms	In Progress



COL8: Warning Systems	Update/upgrade public warning system components throughout Collinston as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Collinston Mitigation Action 4)
COL9: 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 Collinston/Morehouse Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Village of Collinston Mitigation Action 5)
COL10: 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 Collinston/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Collinston Mitigation Action 6)
COL11: Drainage Project	Drainage project to address flooding due to canals around village, increase flow capacity to alleviate flooding.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
COL12: Drainage Ditch	Drainage ditch from East to West toward Ouachita River needs to be enhanced to alleviate flooding issues. Flooding causes loss of function of local sewer system to approximately 375 residents.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
COL13: Remove Beaver Dams	Examine methods of removing beaver dams around town to alleviate flooding issues.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Flooding	Deleted – Added to Parish (See Morehouse Parish Mitigation Action 24)

COL14: Culvert Project	Culvert project on Dowd Rd at the railroad right of way to reduce flooding.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Flooding	Deleted (Duplicate Action)
COL15: Hardening Town Hall	Harden Town Hall with straps and shutters	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
COL16: Surge Protection	Surge protection needed for water system to avoid power outages	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
COL17: Public Education	Implement Public education and outreach program for Dam Failure, Drought, Excessive Heat, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather approach	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
COL18: Water System	Winterize/weatherize water system	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
COL19: Waste Water Examination	Examine waste water treatment/storage facility due to water backing up into facility due to flooding causing loss of function to entire town for 1-2 days.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Flooding	Not Started - Carried Over (See Village of Collinston Mitigation Action 7)

COL20: Hardening Fire Station	Hardening project for fire station with wind straps and bay doors.	FEMA HMGP, Local	1-5 years	Village of Collinston/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
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*New Mitigation Actions*

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 1</b>	Building Retrofits
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Retrofit public buildings exterior shell to maintain use during and after storm events.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Reduces damage from high winds events and helps assure that the public buildings can be used, occupied and operable during or after storms
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITIGATION ACTION 2</b>	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Eliminates flooding risk of repetitive and severe repetitive loss structures.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 3</b>	Safe Room Projects
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Construction of a safe room for first responders located in Collinston. Other locations will be identified based on funding availability.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Allows for continued operations of essential personal to actively respond during a natural hazard event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITIGATION ACTION 4</b>	Warning Systems
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Update/upgrade public warning system components throughout Collinston as necessary. Install audible and/or reverse 911 warning system(s)
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 5</b>	Potable Water
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	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.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 6</b>	Promote Flood Insurance
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 7</b>	Waste Water Examination
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	High
<b>Action Description</b>	Examine waste water treatment/storage facility due to water backing up into facility due to flooding causing loss of function to entire town for 1-2 days.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Examining waste water treatment will decrease the chances of flooding in the community and will ensure the functions of the town remain operable.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 8</b>	Fans and Cooling Devices
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Parish Budget
<b>ASSOCIATED GOALS</b>	4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine funding source to purchase fans and other cooling devices for at risk population
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Cooling devices will serve as a backup in the event of a widespread power outage during excessive heat events
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Excessive Heat



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITIGATION ACTION 9</b>	Identify and pursue preventative measures that will reduce future damages from hazards.
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Local Budget, State Grants, HMGP, and Additional Grant Sources
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Send Morehouse Parish Office of Emergency Preparedness representative to relevant State and National hazard mitigation meetings to identify and pursue grants and project funding sources and measures that will mitigate future damages from hazards.
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Will allow for loss in the community to decrease when hazards become prevalent
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITIGATION ACTION 10</b>	Emergency Response Communications Plan
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Maintain parish-wide emergency response communications plan
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Structure and Infrastructure Projects, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Emergency response communication plans will allow for improvement of response when mitigation hazard/disaster events and for essential personal to assess the areas in need
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITIGATION ACTION 11</b>	Enhance Landscaping and Design Measures
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Incentivize drought-tolerant landscape which will reduce the dependence on irrigation practices, using permeable driveways and surfaces to reduce runoff and promote groundwater recharge, and provide incentives for the public that engages in these practices
<b>Type of Mitigation Action</b>	Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Enhancing landscape and design measures allows for drought events to be less severe.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITGATION ACTION 12</b>	Water Conservation Ordinance
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HGMP, Local
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Implements mandatory measures surrounding water conservation during drought events/emergencies
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Ordinances in place will prioritize water control in the parish and communities, particularly for essential personnel and Fire Search and Rescue
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF COLLINSTON	
DESCRIPTION	
<b>VILLAGE OF COLLINSTON MITIGATION ACTION 13</b>	Procure All-Weather/Hazard Emergency Alert Radios
<b>LEAD AGENCY</b>	Village of Collinston Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Purchase weather radios for public, to be used for emergency notification.
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather, Wildfires



**Village of Mer Rouge Mitigation Actions**

*Previous Action Update*

Village of Mer Rouge						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
MR1: 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 Mer Rouge/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	In Progress
MR2: 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 propertyowners 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 storm periods.	FEMA HMGP, Local	1-5 years	Village of Mer Rouge/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	In Progress
MR3: 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 Mer Rouge/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Mer Rouge Mitigation Action 1)

MR4: Safe Room Projects	Construction of a safe room for first responders located in Mer Rouge. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Mer Rouge/Morehouse Parish OHSEP	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Mer Rouge Mitigation Action 2)
MR5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclone, tornados, wildfire, thunderstorms (lightning, high wind, hail), dam failure, levee failure and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Mer Rouge/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Mer Rouge Mitigation Action 3)
MR6: 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 Mer Rouge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
MR7: 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 Mer Rouge/Morehouse Parish OHSEP	Thunderstorms	In Progress

MR8: Warning Systems	Update/upgrade public warning system components throughout Mer Rouge as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Mer Rouge/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	In Progress
MR9: 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 Mer Rouge/Morehouse Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	In Progress
MR10: 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 Mer Rouge/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Mer Rouge Mitigation Action 4)
MR11: Hardening Fire Station	Harden fire station with wind straps and bay doors	FEMA HMGP, Local		Village of Mer Rouge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MR12: Town Hall Hardening/Retrofitting	Wind retrofit/hardening project for town hall	FEMA HMGP, Local		Village of Mer Rouge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



MR13: Town Hall Safe Room	Retrofit Town Hall to serve as safe room	FEMA HMGP, Local		Village of Mer Rouge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
MR14: Water System	Winterize/weatherize water system	FEMA HMGP, Local	1-5 years	Village of Mer Rouge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress



*New Mitigation Actions*

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITIGATION ACTION 1</b>	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Eliminates flooding risk of repetitive and severe repetitive loss structures.
<b>Current Status of Action</b>	Not Started – Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITIGATION ACTION 2</b>	Safe Room Projects
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Construction of a safe room for first responders located in Mer Rouge. Other locations will be identified based on funding availability.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Allows for continued operations of essential personal to actively respond during a natural hazard event
<b>Current Status of Action</b>	Not Started – Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITGATION ACTION 3</b>	Education and Outreach
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires 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.
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.
<b>Current Status of Action</b>	Not Started – Carried Over in 2016 Plan
<b>Hazard Addressed</b>	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITGATION ACTION 4</b>	Promote Flood Insurance
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events
<b>Current Status of Action</b>	Not Started – Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITGATION ACTION 5</b>	Fans and Cooling Devices
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Parish Budget
<b>ASSOCIATED GOALS</b>	4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine funding source to purchase fans and other cooling devices for at risk population
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Cooling devices will serve as a backup in the event of a widespread power outage during excessive heat events
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Excessive Heat



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITIGATION ACTION 6</b>	Identify and pursue preventative measures that will reduce future damages from hazards.
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Local Budget, State Grants, HMGP, and Additional Grant Sources
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Send Morehouse Parish Office of Emergency Preparedness representative to relevant State and National hazard mitigation meetings to identify and pursue grants and project funding sources and measures that will mitigate future damages from hazards.
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Will allow for loss in the community to decrease when hazards become prevalent
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITGATION ACTION 7</b>	Emergency Response Communications Plan
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Maintain parish-wide emergency response communications plan
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Structure and Infrastructure Projects, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Emergency response communication plans will allow for improvement of response when mitigation hazard/disaster events and for essential personal to assess the areas in need
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITGATION ACTION 8</b>	Enhance Landscaping and Design Measures
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Incentivize drought-tolerant landscape which will reduce the dependence on irrigation practices, using permeable driveways and surfaces to reduce runoff and promote groundwater recharge, and provide incentives for the public that engages in these practices
<b>Type of Mitigation Action</b>	Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Enhancing landscape and design measures allows for drought events to be less severe.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITIGATION ACTION 9</b>	Enhance Landscaping and Design Measures
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Incentivize drought-tolerant landscape which will reduce the dependence on irrigation practices, using permeable driveways and surfaces to reduce runoff and promote groundwater recharge, and provide incentives for the public that engages in these practices
<b>Type of Mitigation Action</b>	Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Enhancing landscape and design measures allows for drought events to be less severe.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITGATION ACTION 10</b>	Water Conservation Ordinance
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HGMP, Local
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Implements mandatory measures surrounding water conservation during drought events/emergencies
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Ordinances in place will prioritize water control in the parish and communities, particularly for essential personnel and Fire Search and Rescue
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF MER ROUGE	
DESCRIPTION	
<b>VILLAGE OF MER ROUGE MITIGATION ACTION 12</b>	Procure All-Weather/Hazard Emergency Alert Radios
<b>LEAD AGENCY</b>	Village of Mer Rouge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Purchase weather radios for public, to be used for emergency notification.
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather, Wildfires



**Village of Oak Ridge Mitigation Actions**

*Previous Action Update*

Village of Oak Ridge						
Jurisdiction-Specific Action	Action Description	Funding Source	Target Completion Date	Responsible Party, Agency, or Department	Hazard	Status
OR1: 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 Oak Ridge/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Village of Oak Ridge Mitigation Action 1)
OR2: 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 propertyowners 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 storm periods.	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Flooding, Thunderstorms, Tropical Cyclones	In Progress
OR3: 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 Oak Ridge/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	Not Started - Carried Over (See Village of Oak Ridge Mitigation Action 2)

OR4: Safe Room Projects	Construction of a safe room for first responders located in Oak Ridge. Other locations will be identified based on funding availability.	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Oak Ridge Mitigation Action 3)
OR5: Education and Outreach	Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Flooding, Tropical Cyclone, tornados, wildfire, thunderstorms (lightning, high wind, hail), dam failure, levee failure and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	In Progress
OR6: 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 Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	In Progress
OR7: 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 Oak Ridge/Morehouse Parish OHSEP	Thunderstorms	In Progress



OR8: Warning Systems	Update/upgrade public warning system components throughout Oak Ridge as necessary. Install audible and/or reverse 911 warning system(s)	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather	Not Started - Carried Over (See Village of Oak Ridge Mitigation Action 4)
OR9: 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 Oak Ridge/Morehouse Parish OHSEP	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather	Not Started - Carried Over (See Village of Oak Ridge Mitigation Action 5)
OR10: 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 Oak Ridge/Morehouse Parish OHSEP	Flooding, Tropical Cyclones	In Progress
OR11: Water System Generator	Backup generator for water system	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
OR12: Portable Generator	Portable generator for sewer lift stations	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)

OR13: Town Hall Generator	Backup generator for Town Hall/Police department	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
OR14: Fire Department Generator	Generator for fire department	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
OR15: Hardening Fire Station	Harden fire station with wind straps and bay doors	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)
OR16: Retrofitting/Hardening Town Hall	Retrofit / harden town hall / police station and roof retrofit	FEMA HMGP, Local	1-5 years	Village of Oak Ridge/Morehouse Parish OHSEP	Drought, Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather	Deleted (Duplicate Action)



*New Mitigation Actions*

IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 1</b>	Building Retrofits
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 3. Improve data collection, us, and sharing to reduce the impact of hazards 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Retrofit public buildings exterior shell to maintain use during and after storm events.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Reduces damage from high winds events and helps assure that the public buildings can be used, occupied and operable during or after storms
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 2</b>	Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.
<b>Type of Mitigation Action</b>	Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection
<b>How Action Aligns with Risk Reduction</b>	Eliminates flooding risk of repetitive and severe repetitive loss structures.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tropical Cyclones



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITGATION ACTION 3</b>	Safe Room Projects
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Construction of a safe room for first responders located in Oak Ridge. Other locations will be identified based on funding availability.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Allows for continued operations of essential personal to actively respond during a natural hazard event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Flooding, Tornadoes, Thunderstorms, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 4</b>	Warning Systems
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Update/upgrade public warning system components throughout Oak Ridge as necessary. Install audible and/or reverse 911 warning system(s)
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	An upgraded public warning system will increase the likelihood of public notification immediately prior to an event
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Excessive Heat, Flooding, Thunderstorms, Tornadoes, Tropical Cyclone, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITGATION ACTION 5</b>	Potable Water
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HMGP, Local
<b>ASSOCIATED GOALS</b>	1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities 4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	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.
<b>Type of Mitigation Action</b>	Structure and Infrastructure Projects
<b>How Action Aligns with Risk Reduction</b>	Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.
<b>Current Status of Action</b>	Not Started - Carried Over from 2016 Plan
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITGATION ACTION 6</b>	Fans and Cooling Devices
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Parish Budget
<b>ASSOCIATED GOALS</b>	4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Examine funding source to purchase fans and other cooling devices for at risk population
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Cooling devices will serve as a backup in the event of a widespread power outage during excessive heat events
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Excessive Heat



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 7</b>	Identify and pursue preventative measures that will reduce future damages from hazards.
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	Local Budget, State Grants, HMGP, and Additional Grant Sources
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>3. Improve data collection, us, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Send Morehouse Parish Office of Emergency Preparedness representative to relevant State and National hazard mitigation meetings to identify and pursue grants and project funding sources and measures that will mitigate future damages from hazards.
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Will allow for loss in the community to decrease when hazards become prevalent
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 8</b>	Emergency Response Communications Plan
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Pursue opportunities to mitigate repetitive and severe repetitive loss properties and other appropriate hazard mitigation projects, programs, and activities</li> <li>2. Improve education and outreach efforts regarding potential impacts of hazards and the identification of specific measures that can be taken to reduce their impact</li> <li>3. Improve data collection, use, and sharing to reduce the impact of hazards</li> <li>4. Improve capabilities, coordination, and opportunities at municipal and parish levels to plan and implement hazard mitigation projects, programs, and activities</li> </ol>
<b>PRIORITY</b>	High
<b>Action Description</b>	Maintain parish-wide emergency response communications plan
<b>Type of Mitigation Action</b>	Local Planning and Regulation, Structure and Infrastructure Projects, Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Emergency response communication plans will allow for improvement of response when mitigation hazard/disaster events and for essential personnel to assess the areas in need
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 9</b>	Enhance Landscaping and Design Measures
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Incentivize drought-tolerant landscape which will reduce the dependence on irrigation practices, using permeable driveways and surfaces to reduce runoff and promote groundwater recharge, and provide incentives for the public that engages in these practices
<b>Type of Mitigation Action</b>	Natural Systems Protection
<b>How Action Aligns with Risk Reduction</b>	Enhancing landscape and design measures allows for drought events to be less severe.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 10</b>	Water Conservation Ordinance
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA HGMP, Local
<b>ASSOCIATED GOALS</b>	1. Identify and pursue preventative measures that will reduce future damages from hazards. 4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Implements mandatory measures surrounding water conservation during drought events/emergencies
<b>Type of Mitigation Action</b>	Local Plans and Regulations
<b>How Action Aligns with Risk Reduction</b>	Ordinances in place will prioritize water control in the parish and communities, particularly for essential personnel and Fire Search and Rescue
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Drought



IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS VILLAGE OF OAK RIDGE	
DESCRIPTION	
<b>VILLAGE OF OAK RIDGE MITIGATION ACTION 11</b>	Procure All-Weather/Hazard Emergency Alert Radios
<b>LEAD AGENCY</b>	Village of Oak Ridge Mayor’s Office
<b>SUPPORTING AGENCIES</b>	Morehouse Parish OHSEP
<b>TIMELINE</b>	1-5 years
<b>COST ESTIMATE</b>	Unknown
<b>POSSIBLE FUNDING SOURCE(S)</b>	FEMA, HGMP, Parish Budget
<b>ASSOCIATED GOALS</b>	<ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>
<b>PRIORITY</b>	Medium
<b>Action Description</b>	Purchase weather radios for public, to be used for emergency notification.
<b>Type of Mitigation Action</b>	Education and Awareness Programs
<b>How Action Aligns with Risk Reduction</b>	Allows for redundant communications with citizens. Also provides citizens with method to access weather related information in the event of systems being down. Increases overall safety of the community.
<b>Current Status of Action</b>	New
<b>Hazard Addressed</b>	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather, Wildfires



### Action Prioritization

During the prioritization process, the planning 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. Therefore, many projects were prioritized with these factors in mind. In addition, prioritization of the mitigation actions was performed based on the following economic criteria: i) whether the action can be performed with the existing parish resources; ii) whether the action requires additional funding from external sources; and iii) relative costs of the mitigation actions.

In all cases, the committee 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 planning committee prioritized the possible activities that could be pursued. Planning committee members consulted appropriate agencies in order to assist with the prioritizations. The results were items that address the major hazards, are appropriate for those hazards, are cost-effective, and are affordable. The planning committee met internally for mitigation action meetings to review and approve mitigation actions for Morehouse Parish and the incorporated jurisdictions. On-going actions, as well as actions which will provide maximum benefit that can be undertaken by existing parish staff with or without additional external funding were given high priority. The actions with medium benefit and relatively 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 and would result in limited benefit to the community were given low priority.

Morehouse Parish and the incorporated jurisdictions will implement and administer the identified actions based off 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. 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 planning 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 Morehouse Parish Hazard Mitigation Plan Update

The Morehouse Parish Hazard Mitigation Plan Update process began in October 2022 with a series of emails, phone calls, meetings, and collaborations between the contractor (SDMI) and a diverse group of participating agencies and stakeholders. Update activities were intended to give each participating agency and stakeholder the opportunity to shape the plan to best fit their community’s mitigation goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

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

Date	Meeting or Outreach	Location	Public Invited	Purpose
11/16/2022	Kick Off Meeting	Zoom Conference	No	Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.
12/7/2022	Initial Planning Committee Meeting	Bastrop, LA	No	Discuss with Morehouse Parish Hazard Mitigation Planning Committee the process and expectations of plan participants. Discuss timeline and action items for parish and each jurisdiction.
1/10/2023	Mitigation Action Workshop	Bastrop, LA	No	Discussion with Morehouse Parish Hazard Mitigation Planning Committee of the outstanding data required for plan update, as well as discussion of mitigation actions (old and new) for plan update.
2/14/2023	Planning Committee Risk Assessment Review	Bastrop, LA	Yes	Presentation of Risk Assessment and profiled hazards to Planning Committee.
2/14/2023	Public Meeting	Bastrop, LA	Yes	Presentation of Risk Assessment s and profiled hazards to public. Presentation also includes current mitigation project highlights within communities and public survey discussion.
1/4/2023 – 2/15/2023	Public Opinion Survey	Online	Yes	This survey asked participants about public perceptions and opinions regarding natural hazards in Morehouse Parish. In addition, questions covered the methods and techniques preferred for reducing the risks and losses associated with these hazards. The survey can be found here: <a href="https://www.surveymonkey.com/r/MorehouseHM2022">https://www.surveymonkey.com/r/MorehouseHM2022</a>

### Planning

The plan update process consisted of several phases:

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	
<b>Plan Revision</b>	[Red]							[White]			
<b>Data Collection</b>	[Red]					[White]					
<b>Risk Assessment</b>	[Red]					[White]					
<b>Public Input</b>	[White]	[Red]				[White]					
<b>Mitigation Strategy and Actions</b>	[Red]					[White]					
<b>Plan Review by GOHSEP and FEMA</b>	[White]				[Red]		[White]				
<b>FEMA APA</b>	[White]						[Red]	[White]			
<b>Plan Adoptions</b>	[White]						[Red]			[White]	
<b>Final Plan Approval</b>	[White]									[Green]	

### Coordination

The Morehouse Parish Office of Homeland Security and Emergency Preparedness (OHSEP) oversaw the coordination of the 2023 Hazard Mitigation Plan Update Planning Committee during the update process. The parish OHSEP was responsible for identifying members for the committee.

The Parish Director was responsible for inviting the planning committee and key stakeholders to scheduled meetings and activities via phone call and/or email. SDMI assisted the Parish Director with press releases and social media statements for notification to the media and general public for public meetings and public outreach activities.

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

### Neighboring Community, Local and Regional Planning Process Involvement

From the outset of the planning process, the planning committee encouraged participation from a broad range of parish 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 planning meetings at the local and parish level
- Sharing local data and information with jurisdictions
- Incorporation of other planning documents, studies and efforts
- Action item development and action progress from 2016 update
- Risk Assessment review
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan

The Morehouse Parish OHSEP Director was invited to attend the Initial Planning and Risk Assessment Meetings for Morehouse Parish in an effort to coordinate mitigation efforts where possible as neighboring communities. The Morehouse OHSEP Director was invited via email and phone call to participate in an effort to collaborate with neighboring communities. SDMI assisted Morehouse Parish with encouraging the collaboration with these neighboring communities via email by extending an invitation to the Morehouse Hazard Mitigation Plan Update Meetings.

As part of the coordination and planning process, the parish was provided the State Required Hazard Mitigation Plan Update Worksheet. The completed worksheets can be found in [Appendix E: State Required Worksheets](#).

The 2023 Hazard Mitigation Plan Update Planning Committee consisted of representatives from the following parish, municipal or community stakeholders. Below is a detailed list of the 2023 HMPU Planning Committee:

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Betty Alford-Olive	Mayor	City of Bastrop
Lee E. Cleveland	Mayor	Village of Bonita
Derrick Quillar	Police Chief	Village of Bonita
Christopher Carter	Mayor	Village of Collinston
Randy Tappin	Police Chief	Village of Collinston
John D. McAdams, III	Mayor	Village of Mer Rouge
Antonio German	Police Chief	Village of Mer Rouge
Malcolm Williams	Mayor	Village of Oak Ridge
James Marble, III	Police Chief	Village of Oak Ridge

## 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 Morehouse Parish programs and planning.

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

Morehouse Parish will continue to integrate the requirements of this Hazard Mitigation Plan into other local planning mechanisms that are to be identified through future meetings of the parish, and through the five-year review process described in [Appendix B: Plan Maintenance](#). The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of any individual municipal plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the Morehouse Parish Hazard Mitigation Planning Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their communities 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 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 2016 Hazard Mitigation Plan was also used in the planning process. Other existing data and plans used in the planning process include those listed below.

- Parish Emergency Operations Plan
- Stormwater Management Plan
- Flood Insurance Rate Maps
- State of Louisiana Hazard Mitigation Plan

Further information on the plans can be found in [Section 3: Capability Assessment](#).

## Meeting Documentation and Public Outreach Activities

The following pages contain documentation of the meetings and public outreach activities conducted during this hazard mitigation plan update.

Meeting #1: Hazard Mitigation Plan Update Kick-Off

**Date:** November 16, 2022

**Location:** Zoom Call

**Purpose:** Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.

**Public Invitation:** No

**Meeting Invitees:**

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Chris Rippetoe	Program Manager	LSU-SDMI
Ashleigh Dozier	Emergency Management Specialist	LSU-SDMI

Meeting #2: Hazard Mitigation Plan Update Initial Planning Committee Meeting

**Date:** December 7, 2022

**Location:** Bastrop, LA

**Purpose:** Discuss the expectations and requirements of the hazard mitigation plan update process and establish an initial project timeline with the Parish’s Hazard Mitigation Plan Planning Committee.

**Public Invitation:** No

**Meeting Invitees:**

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Betty Alford-Olive	Mayor	City of Bastrop
Lee E. Cleveland	Mayor	Village of Bonita
Derrick Quillar	Police Chief	Village of Bonita
Christopher Carter	Mayor	Village of Collinston
Randy Tappin	Police Chief	Village of Collinston
John D. McAdams, III	Mayor	Village of Mer Rouge
Antonio German	Police Chief	Village of Mer Rouge
Malcolm Williams	Mayor	Village of Oak Ridge
James Marble, III	Police Chief	Village of Oak Ridge

Meeting #3: Hazard Mitigation Plan Update Mitigation Action Workshop

**Date:** January 10, 2023

**Location:** Bastrop, LA

**Purpose:** Discussion with Morehouse Parish Hazard Mitigation Planning Committee of the outstanding data required for plan update, as well as discussion of mitigation actions (old and new) for plan update. Continued timeline discussions.

**Public Invitation:** No

**Meeting Invitees:**

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Betty Alford-Olive	Mayor	City of Bastrop
Lee E. Cleveland	Mayor	Village of Bonita
Derrick Quillar	Police Chief	Village of Bonita
Christopher Carter	Mayor	Village of Collinston
Randy Tappin	Police Chief	Village of Collinston
John D. McAdams, III	Mayor	Village of Mer Rouge
Antonio German	Police Chief	Village of Mer Rouge
Malcolm Williams	Mayor	Village of Oak Ridge
James Marble, III	Police Chief	Village of Oak Ridge

Meeting #4: Hazard Mitigation Plan Update Planning Committee Risk Assessment Review

**Date:** February 14, 2023

**Location:** Bastrop, LA

**Purpose:** Presentation of Risk Assessment hazards and maps to Planning Committee.

**Public Invitation:** No

**Meeting Invitees:**

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Betty Alford-Olive	Mayor	City of Bastrop
Lee E. Cleveland	Mayor	Village of Bonita
Derrick Quillar	Police Chief	Village of Bonita
Christopher Carter	Mayor	Village of Collinston
Randy Tappin	Police Chief	Village of Collinston
John D. McAdams, III	Mayor	Village of Mer Rouge
Antonio German	Police Chief	Village of Mer Rouge
Malcolm Williams	Mayor	Village of Oak Ridge
James Marble, III	Police Chief	Village of Oak Ridge



Meeting #5: Hazard Mitigation Plan Update Public Meeting

**Date:** February 14, 2023

**Location:** Bastrop, LA

**Purpose:** The Public Meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Presentation also included highlights of current mitigation projects highlights, as well as public survey discussion.

**Public Invitation:** Yes

**Meeting Invitees:**

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Betty Alford-Olive	Mayor	City of Bastrop
Lee E. Cleveland	Mayor	Village of Bonita
Derrick Quillar	Police Chief	Village of Bonita
Christopher Carter	Mayor	Village of Collinston
Randy Tappin	Police Chief	Village of Collinston
John D. McAdams, III	Mayor	Village of Mer Rouge
Antonio German	Police Chief	Village of Mer Rouge
Malcolm Williams	Mayor	Village of Oak Ridge
James Marble, III	Police Chief	Village of Oak Ridge

**Meeting Announcement:**

MOREHOUSE PARISH OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

**PUBLIC MEETING ANNOUNCEMENT**

**Morehouse Parish and its partners are seeking community input for the 2023  
Morehouse Parish Hazard Mitigation Plan update!**

Morehouse Parish OEP, in partnership with The Louisiana Governor's Office of Homeland Security and Emergency Preparedness and the Stephenson Disaster Management Institute at LSU, is leading the process to update the plan. The Morehouse Parish Hazard Mitigation Multi-Jurisdictional Plan describes the **naturally occurring** risks to the region and outlines strategies to reduce these risks to save lives, reduce property damage, and lessen the impact of future disasters.

Are you passionate about building a more resilient future for your parish? Do you have questions about the natural hazards your community is at risk to? Please join us on Tuesday, February 14 for a public meeting at 9:00AM to learn more about the plan and share your input on the risks and vulnerabilities that most impact you and your community.

**Meeting Location:**

Morehouse Parish Sheriff's Office  
351 S. Franklin St.  
Bastrop, LA 71220

Residents of Morehouse 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 the following link:

<https://www.surveymonkey.com/r/MorehouseHM2022>

The Parish appreciates your input.

If you have questions, please contact: Morehouse Parish OHSEP

### Outreach Activity #1: Public Opinion Survey

**Date:** Ongoing throughout planning process

**Location:** Web survey

**Public Invitation:** Yes

As referenced in the *Mitigation Strategy* section of this document, an online public opinion survey of Morehouse Parish residents was conducted between January and February 2023. The survey was designed to capture public perceptions and opinions regarding natural hazards in Morehouse Parish. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards. As of February 15<sup>th</sup>, 2023 because there were no responses to the survey, this public feedback could not be incorporated into the plan. Full survey results can be found here: <https://www.surveymonkey.com/r/MorehouseHM2022>

### Outreach Activity #2: Public Meeting Activity - Incident Questionnaire

**Date:** February 14, 2023

**Location:** Public Meeting – Bastrop, LA

**Public Invitation:** Yes

An incident/issue questionnaire was provided at the public meeting in an effort to collect additional information from residents of Morehouse Parish regarding hazard events and their localized impacts. While the information collected via the questionnaire was to be integrated into this planning document, there was no public turnout for the meeting, and subsequently no results could be collected. A copy of the incident questionnaire can be found on the next page.

### Outreach Activity #3: 2023 Morehouse Parish Hazard Mitigation Plan Public Review

**Date:** Ongoing

**Location:** SDMI Hazard Mitigation Website

**Public Initiation:** Yes

After an initial review by the Morehouse Parish Planning Committee was completed, the 2023 Morehouse Parish Hazard Mitigation Plan was made available for public review and comment. The plan was hosted on SDMI's Hazard Mitigation website: <https://www.surveymonkey.com/r/MorehouseHM2022>

## MOREHOUSE PARISH PUBLIC MEETING

### PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

#### 1. HAZARD TYPE(S):

- A. DAM FAILURE
- B. DROUGHT
- C. EXCESSIVE HEAT
- D. FLOODING
- E. LEVEE FAILURE
- F. THUNDERSTORMS
- G. TORNADOES
- H. TROPICAL CYCLONES
- I. WILDFIRES
- J. WINTER WEATHER

#### F. OTHER:

#### 2. DESCRIBE INCIDENT OR ISSUE:

#### 3. LOCATION:

A. CITY:

B. ADDRESS OR AREA:

C. LOCALIZED OR DISPERSED:

#### 4. INTENSITY

A. DEPTH (FLOODING) OR SIZE (HAIL ETC.):

B. WIND STRENGTH:

#### 5. RE-OCCURRING OR ONE-TIME

A. IF RE-OCCURRING, HOW OFTEN?

6. WHAT TYPE OF INTERRUPTIONS DOES/DID THE INCIDENT OR ISSUE CAUSE? (BUSINESS CLOSURE, DAMAGE, EVACUATION, ETC.)

7. HOW LONG WAS THE INTERRUPTION (HOURS, DAYS, WEEKS, ETC.)?

8. HOW COULD THIS PROBLEM OR IMPACT BE PREVENTED, FIXED OR ALLEVIATED?

## 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 Morehouse Parish Hazard Mitigation 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 other applicable plans. This process provides for continued public participation through the diverse resources of the parish to help in achieving the goals and objectives of the plan. Public participation will be achieved through availability of copies of HMP in parish public buildings and SDMI HM 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

Morehouse Parish has developed a method to ensure that a regular review and update of this Hazard Mitigation Plan occurs. This will be the responsibility of the planning 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 planning committee.

Although the people filling the positions may change from year to year, the parish and its stakeholders will have representatives on the planning committee. The future planning committee will continue to be comprised of the same job functions as currently evident in the planning 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

Morehouse 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 seek to 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 Morehouse 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 fully 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 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) Any new or existing procedures that can be done more efficiently
- 4) Any additional ways to gain more diverse and widespread cooperation
- 5) 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 Morehouse 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 SDMI Hazard Mitigation Website.

The review by the planning 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 planning 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.

### 2023 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 2023 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 Morehouse Parish Hazard Mitigation Plan Planning Committee and participating jurisdictions to determine additional implementation procedures when appropriate. This may include integrating the requirements of the Morehouse Parish Hazard Mitigation Plan into each jurisdiction's planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances
- Economic Development Plans
- Emergency Operations Plans
- Continuity of Operations Plans

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the Morehouse Parish Hazard Mitigation Planning 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.). While there have been no instances of the mitigation strategy being incorporated into other planning documents since the adoption of the 2016 Morehouse Hazard Mitigation Plan, the committee members recognize the importance of a holistic approach across all planning efforts and will use their standing to integrate the mitigation strategy outlined in the 2023 Morehouse Hazard Mitigation Plan into other planning documents when appropriate.

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 planning committee to be the most effective and appropriate method to ensure implementation of Parish and local hazard mitigation actions.

On behalf of the City of Bastrop, Village of Bonita, Village of Collinston, Village of Mer Rouge, and Village of Oak Ridge, Morehouse 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 planning committee member and jurisdiction representation throughout the planning process as described above:

**Morehouse Parish**

<i>Economic Development Plan</i>	Updated as needed	Morehouse Parish Police Jury	✓
<i>Local Emergency Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓
<i>Continuity of Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓

**City of Bastrop**

<i>Economic Development Plan</i>	Updated as needed	Morehouse Parish Police Jury	✓
<i>Local Emergency Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓
<i>Continuity of Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓

**Village of Bonita**

<i>Economic Development Plan</i>	Updated as needed	Morehouse Parish Police Jury	✓
<i>Local Emergency Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓
<i>Continuity of Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓

Village of Collinston

<i>Economic Development Plan</i>	Updated as needed	Morehouse Parish Police Jury	✓
<i>Local Emergency Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓
<i>Continuity of Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓

Village of Mer Rouge

<i>Economic Development Plan</i>	Updated as needed	Morehouse Parish Police Jury	✓
<i>Local Emergency Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓
<i>Continuity of Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓

Village of Oak Ridge

<i>Economic Development Plan</i>	Updated as needed	Morehouse Parish Police Jury	✓
<i>Local Emergency Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓
<i>Continuity of Operations Plan</i>	Updated as needed	Morehouse Parish OHSEP	✓

Continued Public Participation

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

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

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## Appendix C: Critical Facilities

### Critical Facilities within the Morehouse Parish Planning Area

Morehouse Parish Planning Area Critical Facilities											
Type	Name	Dam Failure	Drought	Extreme Heat	Flooding	Levee Failure	Thunderstorms	Tornadoes	Tropical Cyclones	Wildfires	Winter Weather
Government Facilities	Bastrop City Hall		X	X			X	X	X		X
	Bastrop Municipal Center		X	X			X	X	X		X
	Bonita Town Hall		X	X	X		X	X	X		X
	Collinston Town Hall		X	X			X	X	X	X	X
	Mer Rouge City Hall		X	X			X	X	X		X
	Morehouse Parish Courthouse		X	X			X	X	X		X
	Morehouse Parish Courthouse Annex		X	X			X	X	X		X
	Morehouse Parish Police Jury		X	X			X	X	X		X
Oak Ridge Town Hall		X	X			X	X	X		X	
Fire & SAR	6th Ward Fire Protection District #1 Station #2		X	X			X	X	X		X
	Bastrop Fire Station 2		X	X			X	X	X	X	X
	Bastrop Fire Station 1		X	X			X	X	X	X	X
	Bastrop City Central Fire Station		X	X			X	X	X	X	X
	Bastrop Fire Department		X	X			X	X	X		X
	Bonita Fire Station		X	X			X	X	X		X
	District 2 Fire Station 4		X	X			X	X	X		X
	District 2 Fire Station 5		X	X			X	X	X	X	X
	Fire Station		X	X			X	X	X	X	X
	Fire Station		X	X			X	X	X	X	X
	Holly Ridge Station		X	X	X		X	X	X	X	X
	Jones Fire Station		X	X			X	X	X		X
	Mer Rouge Fire Station Annex		X	X			X	X	X		X
	Morehouse 10th Ward Fire District 1 - Volunteer		X	X			X	X	X		X
	Oak Ridge Volunteer Fire Department		X	X			X	X	X		X
Ward 2 Fire District 1		X	X			X	X	X		X	
Ward 8 Volunteer Fire Department		X	X			X	X	X	X	X	
Law Enforcement	Bastrop Police Department		X	X			X	X	X		X
	Bonita Police Department/Town Hall Annex		X	X			X	X	X		X

	Collinston Police Department/City Hall		X	X			X	X	X		X
	Mer Rouge Police Station		X	X			X	X	X		X
	Morehouse Jail		X	X			X	X	X		X
	Morehouse Parish Correctional		X	X	X		X	X	X		X
	Morehouse Parish Jail		X	X			X	X	X		X
	Morehouse Parish Sheriff's Office		X	X			X	X	X		X
<b>Public Health</b>	Morehouse General Hospital		X	X			X	X	X	X	X
<b>Education</b>	Bastrop High School		X	X			X	X	X		X
	Beekman Charter School		X	X			X	X	X		X
	Delta Elementary/Jr. High School		X	X			X	X	X		X
	Morehouse Elementary/Jr. High School		X	X			X	X	X	X	X
	Morehouse Magnet School		X	X			X	X	X		X

## Appendix D: Plan Adoption

### Morehouse Parish

MOREHOUSE PARISH POLICE JURY  
125 East Madison Avenue  
Bastrop, Louisiana 71220  
(318) 281-4132 \* Fax: (318) 283-1243

#### RESOLUTION NO. 2023-02

##### 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan

**Whereas** the Morehouse Parish Police Jury recognizes the threat that natural hazards pose to people and property withing Morehouse Parish; and

**Whereas**, Morehouse Parish has prepared a muti-hazard mitigation plan, hereby known as 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

**Whereas** 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Morehouse Parish from the impacts of future hazards and disasters; and

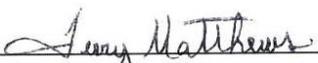
**Whereas** adoption by the Morehouse Parish Police Jury demonstrates their commitment to the hazard mitigation and achieving the goals outline 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan

##### **NOW THEREFORE, BE IT RESOLVED BY MOREHOUSE PARISH, LOUISIANA, THAT:**

Section 1. In accordance with the Disaster Mitigation Act of 2000, the Morehouse Parish Police Jury adopts the Therefore, let it be resolved by the Morehouse Parish Police Jury 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan.

**ADOPTED:** by a vote of 7 in favor and 0 against, and 0 abstaining, this 8<sup>th</sup> day of May 2023. This resolution was offered by Jason Crockett, duly seconded by Harry Reese, Sr.

MOREHOUSE PARISH POLICE JURY

  
Terry Matthews, President

Attest:

  
Shasidee Phillips, Secretary-Treasurer

City of Bastrop

CITY OF BASTROP, LOUISIANA  
RESOLUTION 23-2039

A RESOLUTION ADOPTING A 2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD  
MITIGATION PLAN FOR THE CITY OF BASTROP, LOUISIANA

WHEREAS, the City of Bastrop recognizes the threat that natural hazards pose to people and property within City of Bastrop and,

WHEREAS, the City of Bastrop, Louisiana, Morehouse Parish has prepared a multi-hazard mitigation plan, hereby known as 2023 Morehouse Parish Multi-Jurisdictional Hazard Plan in accordance with the Disaster Mitigation Act of 2000 and

WHEREAS, the 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the City of Bastrop, Louisiana, from the impacts of future hazards and disasters and

WHEREAS, adoption by the City of Bastrop, Louisiana demonstrates their commitment to the hazard mitigation and achieving the goals outlined 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan.

Therefore, be it resolved, that City of Bastrop, Louisiana, Morehouse Parish through its governing authority, the City of Bastrop, Louisiana, hereby adopts the 2023 Morehouse Parish Hazard Mitigation Plan update on this the 11th day of May 2023.

YEAS:

*Howard Lohr*  
~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~  
*Angela Moore*  
\_\_\_\_\_

NAYS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ABSENT:

*Mr. Darry Green*  
\_\_\_\_\_

ABSTAIN:

\_\_\_\_\_  
\_\_\_\_\_

*Betty Alford Olive*  
Betty Alford Olive, Mayor

*Sandra Goleman*  
Sandra Goleman, City Clerk

Village of Bonita

Hon. Lee Cleveland Mayor & Judge  
Pamela Wilson, Town Clerk



Margarita Brown, Council Member  
Gaddis Glosson, Council Member  
Linda Bruce, Council Member

*Village of Bonita*

P. O. Box 278 ·15446 Bonita Avenue  
Bonita, LA 71223  
Phone: (318) 823-2128 Fax: (318) 823-2703  
Email: [villageofbonita1@ne-tel.net](mailto:villageofbonita1@ne-tel.net)

RESOLUTION NO. \_\_\_\_\_

RESOLUTION OF THE VILLAGE OF BONITA

2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan

WHEREAS, the Village of Bonita recognizes the threat that natural hazards pose to the people and property within the Village of Bonita; and

WHEREAS the Village of Bonita has prepared a multi-hazard mitigation plan, hereby known as 2023 Morehouse Parish Multi-Jurisdiction Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2023 Morehouse Parish Multi- Jurisdiction Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long –term risk to people and property in Village of Bonita from the impact of future hazards and disaster; and

WHEREAS adoption by the Village of Bonita demonstrates their commitment to the hazard mitigation and achieving the goals outlined 2023 Morehouse Parish Multi- Jurisdictional Hazards Mitigation Plan

NOW THEREFORE, BE IT RESOLVED BY VILLAGE OF BONITA, LOUISIANA, THAT;

Section1. In accordance with 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan the Village of Bonita adopts the Hazmat Mitigation Plan.

ADOPTED by a vote 3 in favor and 0 against, and 0 abstaining, this 6<sup>th</sup> day of June, 2023.

By: Lee E Cleveland, Mayor  
(Print name)

ATTEST:  
By: \_\_\_\_\_  
(Print name)

ATTEST:  
By: \_\_\_\_\_  
(Print name)

APPROVED AS TO FORM:  
By: \_\_\_\_\_  
(Print name)

This institution is an equal opportunity provider.

## Village of Collinston

VILLAGE OF COLLINSTON

LOUISIANA

RESOLUTION NO. 16/2023

A RESOLUTION OF THE VILLAGE OF COLLINSTON

2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the Village of Collinston recognizes the threat that natural hazards pose to people and property within Village of Collinston; and

WHEREAS the Village of Collinston has prepared a multi-hazard mitigation plan, hereby known as 2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Collinston demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF COLLINSTON, LOUISIANA, THAT:

Section 1. In accordance with **Pre-Disaster Mitigation; Hazard Mitigation Grant Program; Flood Mitigation Assistance Program**, THE Village of Collinston adopts the 2023 MOREHOUSE PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 11<sup>th</sup> day of April, 2023.

By: Emma Jones

(print name) EMMA JONES

ATTEST:

By: Dorothy Bradshaw

(print name) Dorothy Bradshaw

APPROVED AS TO FORM:

By: Christopher Carter

(print name) Christopher Carter

Village of Mer Rouge

*Village of Mer Rouge*  
*PO Box 238*  
*Mer Rouge LA 71261*  
*318-647-3622*  
[patti@merrouge.org](mailto:patti@merrouge.org)

MER ROUGE  
 LOUISIANA

**RESOLUTION**

A RESOLUTION OF THE VILLAGE OF MER ROUGE

**2023 Morehouse Parish Mutli-Jurisdictional Hazard Mitigation Plan**

WHEREAS, the Village of Mer Rouge recognizes the threat that natural hazards pose to people and property within the Village of Mer Rouge; and

WHEREAS the Village of Mer Rouge has prepared a multi-hazard mitigation plan, hereby known as 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan identifies mitigation goals and action to reduce or eliminate long term risk to people and property in the Village of Mer Rouge from the impacts of future hazards and disaster; and

WHEREAS adoption by the Village of Mer Rouge demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2023 Morehouse Parish Mutli-Jurisdictional Hazard Mitigation Plan

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF MER ROUGE, LOUISIANA, THAT:

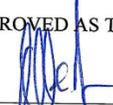
Section 1. In accordance with the Lwarson Act, the Village of Mer Rouge adopts the 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan.

ADOPTED by a vote of 3 in favor and 0 against, and 0 abstaining, this 9<sup>th</sup> day of May, 2023.

  
 John D. McAdams, III  
 Mayor-Village of Mer Rouge

  
 Patti D. Gregory  
 City Clerk

APPROVED AS TO FORM:

  
 By: \_\_\_\_\_  
 Allen Spires, Jr.  
 Mayor Pro Tem

## Village of Oak Ridge

**VILLAGE OF OAK RIDGE**  
**POST OFFICE BOX 58**  
**OAK RIDGE, LOUISIANA 71264**  
"AN EQUAL OPPORTUNITY EMPLOYER"

Oak Ridge  
Louisiana

RESOLUTION NO. 0012023

A RESOLUTION OF THE VILLAGE OF OAK RIDGE

**2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan**

WHEREAS the Village of Oak Ridge recognizes the threat that natural hazards pose to people and property within Village of Oak Ridge; and

WHEREAS the Village of Oak Ridge has prepared a multi-hazard mitigation plan, hereby known as 2023 Morehouse Parish Multi-Jurisdictional Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan identifies mitigation goals and actions to reduce or eliminate long term risk to people and property in Village of Oak Ridge from the impacts of future hazards and disasters; and

WHEREAS adoption by the Village of Oak Ridge demonstrates their commitment to the Hazard mitigation and achieving the goals outlined 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE OF OAK RIDGE, LOUISIANA, THAT:

Section 1. In accordance with Village of Oak Ridge rule for adopting resolutions, the Village of Oak Ridge adopts the 2023 Morehouse Parish Multi-Jurisdictional Hazard Mitigation Plan.

ADOPTED by a vote 3 in favor and 0 against, and 0 abstaining, this 9th day of May, 2023.

By: Malcom Williams, Mayor

ATTEST:

By: Cathy Fitch, Town Clerk

APPROVED AS TO FORM

By: Betsy Mullins, Alderman

## Appendix E: State Required Worksheets

During the planning process ([Appendix A: Planning Process](#)), the Hazard Mitigation Plan Update Planning Committee was provided state-required plan update process worksheets to be filled out. The worksheets were presented at the Initial Planning Meeting by SDMI as tools for assisting in the update of the Hazard Mitigation Plan, but also as a state requirement for the update. The plan update worksheets allowed for collection of information such as planning team members, community capabilities, community infrastructure, vulnerable populations and NFIP information. The following pages contain documentation of the state required worksheets.

### Mitigation Planning Team

Morehouse Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
James Mardis	Director	Morehouse Parish EOP
Todd Smith	Regional Coordinator	GOHSEP
Betty Alford-Olive	Mayor	City of Bastrop
Lee E. Cleveland	Mayor	Village of Bonita
Derrick Quillar	Police Chief	Village of Bonita
Christopher Carter	Mayor	Village of Collinston
Randy Tappin	Police Chief	Village of Collinston
John D. McAdams, III	Mayor	Village of Mer Rouge
Antonio German	Police Chief	Village of Mer Rouge
Malcolm Williams	Mayor	Village of Oak Ridge
James Marble, III	Police Chief	Village of Oak Ridge

Capability Assessment  
Unincorporated Morehouse Parish

Capability Assessment Worksheet - Morehouse Parish		
Local mitigation capabilities are existing authorities, polices and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.		
Planning and Regulatory		
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.		
Plans	Yes/No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	Yes	economic development board
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	Yes/No	Comments
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	Yes	city class 1, district #2 - class 4
Site plan review requirements	Yes	
Land Use Planning and Ordinances	Yes/No	Comments
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes/No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	On contract
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical	Yes/No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	No	
Hazus Analysis	No	
Other	No	



Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	Yes/No	Comments
Capital Improvements project funding	No	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	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)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



City of Bastrop

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



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes/No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	On contract
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical	Yes/No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
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)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



Village of Bonita

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



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes/No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical	Yes/No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
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)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



Village of Collinston

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



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes/No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical	Yes/No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
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)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



Village of Mer Rouge

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



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes/No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical	Yes/No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
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	
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)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



Village of Oak Ridge

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



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes/No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes/No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	No	
Civil Engineer	Yes	
GIS Coordinator	No	
Grant Writer	No	
Other	No	
Technical	Yes/No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
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	
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)	Yes	
Natural Disaster or safety related school program	Yes	
Storm Ready certification	No	
Firewise Communities certification	Yes	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	No	



Building Inventory

Morehouse Parish and Jurisdiction Owned Building Information								
Unincorporated Morehouse Parish								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Beekman Charter School	Education	A.M. Baker Rd.	Beekman	32.92482224	-91.88647799	\$200,000	1970	Concrete
Ward 2 Fire District 1	Fire Search and Rescue	15516 Crossett Hwy	Beekman	32.92378863	-91.88575583	\$150,000	1980	Concrete
Holly Ridge Station	Fire Search and Rescue	Holly Ridge Rd.	Jones	32.93376307	-91.54843832	\$150,000	1980	Concrete
Jones Fire Station	Fire Search and Rescue	Hopkins Hill Rd.	Jones	32.9690101	-91.64849792	\$100,000	1990	Concrete
Bonita Fire Station	Fire Search and Rescue	Henry Rd.	Jones	32.91902844	-91.67287024	\$100,000	1990	Concrete
Morehouse Parish Health Unit	Public Health	650 School St.	Bastrop	32.77264484	-91.9131259			
City of Bastrop								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Morehouse Jr. High School	Education	1001 West Madison Avenue	Bastrop	32.77426587	-91.92416556	\$4,000,000	1950	concrete
Morehouse Magnet School	Education	Larche Ln.	Bastrop	32.78704988	-91.91878871	\$1,000,000	1950	concrete
Bastrop High School	Education	Highland Ave.	Bastrop	32.78897591	-91.92026946	\$10,000,000	1950	concrete
Bastrop Fire Station	Fire Search and Rescue	717 North Marable Street	Bastrop	32.76124133	-91.90595722	\$2,000,000	1970	concrete
Fire Station #2	Fire Search and Rescue	102 North Cox Street	Bastrop	32.78161902	-91.89984351	\$750,000	1990	metal
Fire Station #3	Fire Search and Rescue	602 Collinston Road	Bastrop	32.761277	-91.905963			metal
District 2 Fire Station 4	Fire Search and Rescue	13526 Old Bonita Road	Bastrop	32.86071746	-91.83842492	\$750,000	1990	metal
Fire Station #5	Fire Search and Rescue	7421 Old Monroe Road	Bastrop	32.7266888	-91.9226696			metal
Morehouse Parish Sheriff's Office	Law Enforcement	351 South Franklin Street	Bastrop	32.77571095	-91.9127845	\$1,000,000	1999	concrete
Bastrop Police Department	Law Enforcement	202 E. Jefferson Ave	Bastrop	32.77697314	-91.9127523	\$2,000,000	1970	concrete
Morehouse Parish Jail	Prisons and Correctional Facilities	Nearby: 4273-4781 Eugene Ware Boulevard	Bastrop	32.78135623	-91.93988966	\$1,000,000	1970	metal
Morehouse Jail	Prisons and Correctional Facilities	Nearby: 250 East Walnut Avenue	Bastrop	32.77505623	-91.91275093	\$1,000,000	1999	metal
Morehouse Parish Courthouse	Civil Government	100 East Madison Avenue	Bastrop	32.77776915	-91.91382491	\$20,000,000	1914	concrete
Morehouse Parish Police Jury	Civil Government	125 E. Madison Ave.	Bastrop	32.77847687	-91.91362729	\$750,000	1920	concrete
Morehouse Parish Resource Center	Civil Government	6091 Mer Rouge Road	Bastrop	32.77191183	-91.91470027	\$25,000	1970	concrete

Morehouse Highway Department	Civil Government	3230 New Monroe Road	Bastrop	32.7694456	-91.95237729	\$500,000	1970	metal
Bastrop Municipal Center	Civil Government	1901 Moeller Drive	Bastrop	32.78248367	-91.89044202	\$500,000	1980	metal
Morehouse Parish Assessor	Civil Government	106 E. Madison Ave.	Bastrop	32.77705256	-91.91390152	\$500,000	1970	concrete
Bastrop City Hall	Civil Government	Nearby: 201-299 South Franklin Street	Bastrop	32.7769034	-91.91310435	\$2,000,000	1970	concrete
Morehouse Parish Chamber of Commerce	Civil Government	110 North Franklin Street	Bastrop	32.77861958	-91.91311055	\$500,000	1960	concrete
Morehouse Parish Courthouse Annex	Civil Government	100 East Madison Avenue	Bastrop	32.7791001	-91.91353832	\$750,000	1970	concrete
Morehouse General Hospital	Hospital or Medical Center	323 West Walnut Avenue	Bastrop	32.77476816	-91.91722056	\$20,000,000	1950	concrete

Village of Bonita

Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Bonita Police Department/Town Hall Annex	Law Enforcement	Nearby: 15416-15448 Bonita Avenue	Bonita	32.92119469	-91.67373707	\$150,000	1970	concrete
Bonita Water System	Public Utilities	Railroad Street	Bonita	32.9213438	-91.6745025			metal
Morehouse 10th Ward Fire District 1 - Volunteer	Fire Search and Rescue	14992 Henry	Bonita	32.9191252	-91.6731202			metal

Village of Collinston

Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Ward 8 Volunteer Fire Department	Fire Search and Rescue	Nearby: 4476-4532 Main Street	Collinston	32.6877472	-91.87500435	\$100,000	1990	metal
Collinston Police Department/City Hall	Law Enforcement	Nearby: 4598-4628 Main Street	Collinston	32.68917101	-91.87062911	\$150,000	1990	concrete

Village of Mer Rouge

Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Delta Junior High	Education	7661 Mer Rouge-Collinston Road	Mer Rouge	32.75465268	-91.81354135	\$2,000,000	1980	concrete
Mer Rouge Fire Station Annex	Fire Search and Rescue	Nearby: 200-298 West 17th Street	Mer Rouge	32.77677288	-91.79318442	\$50,000	1980	metal
6th Ward Fire Protection District #1 Station #2	Fire Search and Rescue	Nearby: 12000 Horseshoe Lake Road	Mer Rouge	32.71315941	-91.70466153	\$100,000	1980	metal
Mer Rouge Police Station	Law Enforcement	Nearby: U.S. 425	Mer Rouge	32.77581158	-91.79386418	\$100,000	1960	concrete
Mer Rouge City Hall	Civil Government	107 North 18th Street	Mer Rouge	32.77686443	-91.79390325	\$100,000	1920	concrete

Mer Rouge Public Works	Civil Government	202 North 17th Street	Mer Rouge	32.7770126	-91.7926492	\$300,000	1980	metal
<b>Village of Oak Ridge</b>								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Oak Ridge Volunteer Fire Department	Fire Search and Rescue	Nearby: U.S. 425	Oak Ridge	32.62440421	-91.7732255	\$100,000	1950	Concrete
Unknown	Fire Search and Rescue	Nearby: 10700-11232 Trails End Road	Oak Ridge	32.6475814	-91.71731693	\$100,000	1990	metal
Oak Ridge Town Hall	Civil Government	205 North Oak Street	Oak Ridge	32.62358274	-91.77288172	\$150,000	1970	Concrete
Oak Ridge Water System	Public Utilities	Nearby: 200-206 North Oak Street	Oak Ridge	32.6236829	-91.7731155			Concrete

Vulnerable Populations

Vulnerable Populations Worksheet					
Morehouse Parish					
All Hospitals (Private or Public)	Street	City	Zip Code	Latitude	Longitude
Morehouse General	323 West Walnut Avenue	Bastrop	71220	32.7749812	-91.9181503
Bastrop Community Health Center	314 N. Franklin Street	Bastrop	71220	32.7821275	-91.9133307
Qayyum Family Medical Center	Nearby: 416-498 Cason Avenue	Bastrop	71220	32.77270377	-91.91831149
Nursing Homes (Private or Public)	Street	City	Zip Code	Latitude	Longitude
Cherry Ridge Skilled Nursing Facility	5980 Cherry Ridge	Bastrop	71220	32.7960963	-91.8916079
Savannah Court of Bastrop	10280 Boswell Street	Bastrop	71220	32.788821	-91.8932254
Premier Hospice	Nearby: 1523 Texas Avenue	Bastrop	71220	32.77983181	-91.89760946
Lagniappe Healthcare	Nearby: 1308 Summerlin Lane	Bastrop	71220	32.78881122	-91.89785214
LA Grand Nursing Home	650 Holt Street	Bastrop	71220	32.784494	-91.8887486
Oak Woods Home for the Elderly	1400 Davenport Avenue	Mer Rouge	71261	32.7814411	-91.8068372
Mobile Home Parks	Street	City	Zip Code	Latitude	Longitude
Unknown Trailer Park	Lindsey Road	Bastrop	71220	32.8348259	-91.910289
Unknown Trailer Park	Scott Street	Bastrop	71220		
Unknown Trailer Park	Dowd Road	Collinston	71229		
The Timbers Trailer Park	9634-9662 Flowers Road	Bastrop	71220	32.7726153	-91.8651846
Roseview Mobile Home Park	Nearby: 6187-6235 Van Buron Road	Bastrop	71220	32.77223982	-91.86551772
Lowrey's Mobile Home Park	Nearby: 11955-11999 Scotty Lane	Bastrop	71220	32.83438116	-91.90925871
Mobile Home Park	Nearby: 11610-11906 Shelton Road	Bastrop	71220	32.83232677	-91.90656946
Unknown	Nearby: Mc Creight Street	Bastrop	71220	32.79222977	-91.90340771
East Carter Mobile Home	Nearby: 701-799 Mockingbird Lane	Bastrop	71220	32.79333909	-91.90704503
Spicewood Village R\V Park	Nearby: 4559-4566 Dowd Road	Bastrop	71220	32.72229757	-91.90455359
LA 425 North RV Park	14165 Crossett Road	Bastrop	71220	32.8965404	-91.862802
Cut-Off Road Trailer Park	Trevore Drive	Bastrop	71220	32.763443	-91.852365
Unnown	Ritchie Street	Bastrop	71220		
Unknown	Herlong Drive	Bastrop	71220	32.8471737	-91.8604904
Unknown Mobile Home Park	Nearby: 7220-7298 Bridgett Lane	Mer Rouge	71220	32.85842975	-91.85255082

National Flood Insurance Program (NFIP)

National Flood Insurance Program (NFIP)						
	Morehouse Parish	City of Bastrop	Village of Bonita	Village of Collinston	Village of Mer Rouge	Village of Oak Ridge
<b>Insurance Summary</b>						
How many NFIP policies are in the community? What is the total premium and coverage?	# of Policies: 147; Total Premiums: \$67,728; Total Coverage: \$31,876,100	# of Policies: 26; Total Premiums: \$11,696; Total Coverage: \$3,869,400	# of Policies: 2; Total Premiums: \$646; Total Coverage: \$296,000	# of Policies: -0-; Total Premiums: \$-0-; Total Coverage: \$-0-	# of Policies: 8; Total Premiums: \$3,043; Total Coverage: \$2,520,000	# of Policies: 8; Total Premiums: \$4,037; Total Coverage: \$3,228,000
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?	# of paid claims: 176; Total amount of paid claims: \$5,606,513; Substantial Damage: 45	# of paid claims: 46; Total amount of paid claims: \$829,597; Substantial Damage: 8	# of paid claims: 2; Total amount of paid claims: \$70,000; Substantial Damage: 1	# of paid claims: -0-; Total amount of paid claims: \$-0-; Substantial Damage: -0-	# of paid claims: 4; Total amount of paid claims: \$17,946; Substantial Damage: -0-	# of paid claims: -0-; Total amount of paid claims: \$-0-; Substantial Damage: -0-
How many structures are exposed to flood risk with in the community?						
Describe any areas of flood risk with limited NFIP policy coverage.						
<b>Staff Resources</b>						
Is the Community FPA or NFIP Coordinator certified?	No					
Is flood plain management an auxiliary function?	Yes					
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Certified Building Official does administration					
What are the barriers to running an effective NFIP program in the community, if any?						
<b>Compliance History</b>						
Is the community in good standing with the NFIP?	Yes	Yes	Yes	Yes	Yes	Yes
Are there any outstanding compliance issues(i.e., current violations)?	No	No	No	No	No	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	CAV: 11/19/2014; CAC: 10/16/2012	CAV: 10/17/2013; CAC: 7/18/2022	CAV: 6/20/2007; CAC: 10/17/2012	CAV: 6/15/1997; CAC: 10/18/2012	CAV: 4/21/2004; CAC: 10/16/2012	CAV: 3/3/2003; CAC: 11/10/2016
Is a CAV or CAC scheduled or needed? If so when?	No	No	No	No	No	No

Regulation						
When did the community enter the NFIP?	E = 4/14/1983; R = 10/15/1985	E = 7/2/1975; R = 12/16/1980	E = 4/3/1997; R = 4/1/2007	E = 6/17/1991; R = 7/6/2016	E = 5/3/1973; R = 6/27/1978	E = N/A R = 3/27/1997
Are the FIRMs digital or paper?	Digital	Digital	Digital	Digital	Digital	Digital
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Meets	Meets	Meets	Meets	Meets	Meets
<b>Community Rating System (CRS)</b>						
Does the community participate in CRS?	No	No	No	No	No	No
What is the community's CRS Class Ranking?	N/A	N/A	N/A	N/A	N/A	N/A
Does the plan include CRS planning requirements?						

