

# 2020

## **St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update**





# ST. TAMMANY PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

*Prepared for:*

**St. Tammany Parish and Incorporated Jurisdictions**



*Prepared by:*

**Stephenson Disaster Management Institute**

**Mr. Brant Mitchell, CEM**

**Mrs. Lauren Morgan, MEPP**

**Mr. Chris Rippetoe, CFM**

**Mr. Joseph B. Harris, PhD\***

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



\*Western Carolina University, Emergency and Disaster Management Program (Dept. of Criminology and Criminal Justice)

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Unincorporated St. Tammany Parish  
 Town of Abita Springs  
 City of Covington  
 Village of Folsom  
 Town of Madisonville  
 City of Mandeville  
 Town of Pearl River  
 City of Slidell  
 Village of Sun

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Clarence Powe	Director	St. Tammany Parish OHSEP
Ross Liner	Director of Planning	St. Tammany Parish Government
Jay Watson	Parish Engineer	St. Tammany Parish Government
Donna O'Dell	Engineer IV	St. Tammany Parish Government
deEtte Smythe	Regulatory Manager/CRS Coordinator	St. Tammany Parish Government
Amy Bouton	Public Information Officer	St. Tammany Parish Government
Bridget Saladino	Grants Manager	St. Tammany Parish Government
Jeanne Marino	Director of Grants	St. Tammany Parish Government
Dan Curtis	Mayor	Town of Abita Springs
Janet Dufrene	Town Clerk	Town of Abita Springs
Chris Brown	CBO, CFM, FPA	City of Covington
Nahketah Bagby	Director of Planning	City of Covington
David Zechenelly	Asst Dir., Dept. of Public Works	City of Covington
Lance Willie	Mayor	Village of Folsom
Margra Steele	Assistant to the Mayor	Village of Folsom
Al Courouleau	CBO, Floodplain Manager, Permits	Town of Madisonville
Louissette Scott	Director of Planning	City of Mandeville
Lori Spranley	Planning Secretary	City of Mandeville
Glenn Jones	Building Official	City of Mandeville
Tim Mathison	Town Attorney	Town of Pearl River
Melissa Guilbeau	Director of Planning	City of Slidell
Blaine Clancy	City Engineer	City of Slidell
Jennifer Puissegur	Clerk	Village of Sun
Ginger Strauss	Clerk	Village of Sun

Jay Newcomb	Resident	City of Slidell
Dave Martin	Resident	City of Slidell
Kyle Cooper	Owner	Cooper Homes
Cleosia Seay	Resident	City of Covington
Aaron Hebert	Resident	City of Covington
Randy Brown	Resident	City of Mandeville
David Bulloch	Regional Sales Director	Bankers Insurance Group
Jason Kaufman	Fire Protection Officer	Mandeville Fire District 4
Ren Clark	Resident	City of Mandeville
John Lopez	Coastal Programs Director	Lake Pontchartrain Basin Foundation
Chris Laborde	Resident	City of Covington

The 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update was written by the Stephenson Disaster Management Institute, Louisiana State University. Further comments should be directed to the St. Tammany Parish Office of Homeland Security and Emergency Preparedness: 510 E. Boston St. Covington, LA 70433.



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

- Unincorporated St. Tammany Parish
- Town of Abita Springs
- City of Covington
- Village of Folsom
- Town of Madisonville
- City of Mandeville
- Town of Pearl River
- City of Slidell
- Village of Sun

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

This Hazard Mitigation Plan is a comprehensive plan for disaster resiliency in St. Tammany 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 St. Tammany Parish and its communities with a blueprint for reducing the impacts of these natural hazards on people and property.

## Geography, Population and Transportation

### Geography

St. Tammany Parish is located in the southeast portion of Louisiana on the northern shore of Lake Pontchartrain. It is bordered to the north by Washington Parish, to the west by Tangipahoa Parish, to the south by Jefferson and Orleans Parishes, and to the east by the Pearl River, which forms the natural border between southeastern Louisiana and southern Mississippi. St. Tammany Parish has a surface area of approximately 715,652 acres, of which approximately 52% (373,226 acres) is water or wetlands. Below, *Figure 1-1* shows the geographical location of St. Tammany Parish.



*Figure 1-1: Location of St. Tammany Parish*

St Tammany Parish contains eight incorporated communities: the Villages of Folsom and Sun, the Towns of Abita Springs, Madisonville, and Pearl River, and the Cities of Covington, Mandeville, and Slidell. Covington, the parish seat, is located in the central-eastern part of the parish and is the second most populous city in the parish behind the City of Slidell.

The topography of St. Tammany Parish varies from gently rolling to low lying wetlands, with the highest elevation found in the northwestern portion of the parish and steadily decreases moving to the south and to the east. The lowest elevations in the parish are found in the far southern portion of the along the north shore of Lake Pontchartrain.

There are also a number of rivers and bayous that traverse the parish, generally in a north-south direction. The Tchefuncte River, found in the western portion of the parish, is used for a number of recreational activities, including the Wooden Boat festival in Madisonville. The Bogue Falaya River, which is a tributary of the Tchefuncte River, is another river that hosts a number of recreation activities, including kayaking, tubing, and swimming. Bayou Lacombe, part of the Big Branch Marsh National Wildlife Refuge, is known for its fishing and wildlife viewing. Lastly, the Pearl River is the largest river in the parish and forms the eastern border with the State of Mississippi.

St. Tammany Parish weather is typically warm and humid. Variations in daily temperature are fairly consistent throughout the parish, although small differences can be attributed to the proximity to Lake Pontchartrain, and to a much lesser degree, the differences in elevation between the northern and southern portions of the parish. 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 St. Tammany 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, with snowfall averages less than one inch per year. Average annual rainfall for the area is 55.45 inches. St. Tammany Parish is susceptible to the normal weather dangers, but due to its location within the state and its proximity to Lake Pontchartrain and the Gulf of Mexico, the parish is extremely susceptible to tropical cyclones and storm surge inundation.

### Population and Economy

The population of St. Tammany Parish is estimated at 260,419 (2019 estimate), with a population percent change from April 1, 2010 – July 1, 2019 of 11.4%.

*Table 1-1: St. Tammany Parish Population  
(Source: US Census)*

	2010 Census	2019 Estimate	Percent Change 2010 -2019
<b>Total Population</b>	233,740	260,419	11.40%
<b>Population Density (Pop/Sq. Mi.)</b>	276.4	-----	-----
<b>Total Households</b>	-----	91,975	-----
<b>Persons Per Household</b>	-----	2.72	-----

Table 1-2: St. Tammany Parish Business Patterns  
(Source: US Census, CBP)

Business Description	Number of Establishments	Number of Employees	Annual Payroll (\$1,000)
Retail Trade	932	13,854	357,024
Manufacturing	145	2,597	119,604
Health Care and Social Assistance	847	16,199	740,416
Mining, Quarrying, Oil and Gas Extraction	27	408	56,630
Transportation and Warehousing	159	1,955	105,479
Construction	595	4,542	257,804
Administration/Support and Waste Management/Remediation Services	369	3,401	136,639
Real Estate and Rental and Leasing	275	989	46,117
Wholesale Trade	295	2,813	213,460
Other Services (except Public Administration)	526	3,718	107,593
Accommodation and Food Services	610	11,445	190,026
Financial and Insurance	483	3,374	236,489
Professional, Scientific, and Technical Services	875	4,654	298,723
Information	91	1266	68,038
Educational Services	67	1,257	36,890
Arts, Entertainment, and Recreation	90	1595	30,476
Agriculture, Forestry, Fishing and Hunting	16	28	933
Utilities	20	252	18,239
Management of Companies and Enterprises	44	2,150	252,525
Industries Not Classified	3	13	88

## Hazard Mitigation

To fully understand hazard mitigation efforts in St. Tammany 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.

On the next page, *Figure 1-2* 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 1-2* demonstrates, mitigation relies on updating in the wake of disaster. This can give the appearance that mitigation is only reactive rather than proactive. In reality, however, post-disaster revision is a vital component of improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.

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



*Figure 1-2: The Four Phases of Emergency Management and their Relation to Future Hazard Mitigation (Source: Louisiana State Hazard Mitigation Plan 2014)*

The catastrophic events of 2005 had profound impacts on emergency management and hazard mitigation throughout Louisiana. As detailed later in this document, significant funding has been made available to the State of Louisiana and its parishes for the purpose of hazard mitigation planning. The storms also raised awareness of the importance of hazard mitigation among decision-makers and the general population, which

has been particularly important since natural hazards will likely be increasing in frequency, magnitude, and impact in the coming years due to climate change.

### General Strategy

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

Part of the ongoing integration process is that 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 2020 St. Tammany Parish Hazard Mitigation Plan (HMP) maintains much of the information from the 2015 plan version, but it now reflects the order and methodologies of the 2019 Louisiana State Hazard Mitigation Plan.

The sections in the 2015 St. Tammany HMP were as follows:

- Section 1 Introduction
- Section 2 Hazard Identification and Risk Assessment
- Section 3 Capability Assessment
- Section 4 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 St. Tammany Parish Hazard Mitigation Steering Committee was not ignorant or dismissive of the successful analysis and mitigation planning executed in previous plan updates. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

## 2020 Plan Update

This 2020 plan update proceeds with the previous goals of the St. Tammany Parish Hazard Mitigation Plan. The current goals are as follows:

1. Protect the lives and health of the Parish's residents from the dangers of natural hazards
2. Ensure that public services and critical facilities operate during and after a disaster
3. Ensure that adequate evacuation routes, streets, utilities and public and emergency communications are maintained and available during and after a disaster
4. Protect homes and businesses from damage
5. Use new infrastructure and development planning to reduce the impact of natural hazards
6. Give special attention to repetitively flooded areas
7. Maintain and improve CRS ratings throughout the parish

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 2019. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. Second, instead of ten separate sections for numerous tables, maps and appendices, the HMP update has four sections and five appendices. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of much repetition between sections from the previous plan updates.

The 2020 plan update is organized in the exact same format as the 2015 update, which is outlined below.

*Table 1-3: 2020 Plan Update Crosswalk*

Plan Update Crosswalk	
Section 1: Introduction	Section 1: Introduction
Section 2: Hazard Identification and Risk Assessment	Section 2: Hazard Identification and 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: Essential Facilities
Appendix D: Plan Adoptions	Appendix D: Plan Adoptions
Appendix E: State Required Worksheets	Appendix E: State Required Worksheets

Despite numerous 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 St. Tammany Parish and its communities. The extent of this risk is dictated primarily by its geographic location. Most significantly, St. Tammany Parish remains at high risk of water inundation from various sources, including flooding and tropical cyclone activity. The entire 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 communities, 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 St. Tammany 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 St. Tammany Parish Hazard Mitigation Plan published in 2015, as well as the hazards that were identified in the state's 2019 Hazard Mitigation Plan that were considered to be of high or medium risk for the parish by the state. Those hazards identified as high or medium risk by the state or previously identified as a risk by the parish, have been determined to provide a risk to the parish and will be profiled in this section.

*Table 2-1: Hazard Profile Summary.*

Hazard	Profiled in Last Plan	Considered Medium or High Risk in the State's HM Plan	Profiled in the 2020 Update
Coastal Hazards	X		X
Dam Failure	X		X
Drought	X		X
Earthquakes	X*		
Flooding	X	X	X
Fog	X		X
Levee Failure	X		X
Termites	X		X
Thunderstorms (Hail, Lightning, & Wind)	X	X	X
Tornadoes	X	X	X
Tropical Cyclones	X	X	X
Wildfires	X		X

\*Discounted in 2015 Plan

### Prevalent Hazards to the Community

While many of the hazards identified in [Table 2-1](#) occur in the parish, their occurrence was not merited for further study by the planning committee. The determination was made to focus attention and resources on the most prevalent hazards, which include the hazards previously profiled, along with thunderstorms.



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

- a) Coastal Hazards
- b) Dam Failure
- c) Drought
- d) Flooding
- e) Fog
- f) Levee Failure
- g) Termites
- h) Thunderstorms (Hail, Lightning, & Wind)
- i) Tornadoes
- j) Tropical Cyclones
- k) Wildfires

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

- Flooding from rivers and waterways, rain storms, tropical cyclones, and hurricanes in the following forms:
  - a) Riverine
  - b) Stormwater
  - c) Surge
  - d) Backwater flooding (as the result of river flooding and surge)
  - 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. Fifteen of the twenty-three disaster declarations St. Tammany Parish has received resulted from tropical cyclones, which validates this as the most significant hazard. 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 fairly common occurrences, and resultant wind damage is of utmost concern. Damage from high winds can include roof damage, destruction of homes and commercial buildings, downed trees and power lines, and damage and disruption to services caused by heavy debris. A wind map for St. Tammany Parish is included in the hurricane risk assessment.

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

## Previous Occurrences

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

*Table 2-2: St. Tammany Parish Major Disaster Declarations.*

Disaster Number	Year	Declaration
208	9/10/1965	TROPICAL CYCLONE - HURRICANE BETSY
272	8/19/1969	TROPICAL CYCLONE - HURRICANE CAMILLE
374	4/27/1973	SEVERE STORMS & FLOODING
3031	2/22/1977	DROUGHT AND FREEZING
616	4/9/1980	SEVERE STORMS & FLOODING
679	4/20/1983	SEVERE STORMS & FLOODING
752	11/1/1985	TROPICAL CYCLONE – HURRICANE JUAN
902	5/3/1991	FLOOD
956	8/26/1992	TROPICAL CYCLONE – HURRICANE ANDREW
978	2/2/1993	SEVERE STORM, FLOOD
1049	5/10/1995	SEVERE STORMS AND FLOODING
1246	9/23/1998	TROPICAL CYCLONE - HURRICANE GEORGES/TS FRANCES
1380	6/11/2001	TROPICAL CYCLONE - TROPICAL STORM ALLISON
1435	9/27/2002	TROPICAL CYCLONE - TROPICAL STORM ISIDORE
1437	10/3/2002	TROPICAL CYCLONE - HURRICANE LILI
1548	9/15/2004	TROPICAL CYCLONE - HURRICANE IVAN
1601	8/23/2005	TROPICAL CYCLONE - TROPICAL STORM CINDY
1603	8/29/2005	TROPICAL CYCLONE - HURRICANE KATRINA
1607	9/24/2005	TROPICAL CYCLONE - HURRICANE RITA
1786	9/2/2008	TROPICAL CYCLONE - HURRICANE GUSTAV
4080	8/29/2012	TROPICAL CYCLONE - HURRICANE ISAAC
3392	10/6/2017	TROPICAL CYCLONE – TROPICAL STORM NATE
4458	8/27/2019	TROPICAL CYCLONE – HURRICANE BARRY
4484	3/24/2020	COVID-19 PANDEMIC

## Probability of Future Hazard Events

The probability of a hazard event occurring in St. Tammany Parish is estimated in the tables 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 2019. In staying consistent with the state plan, the Storm Events Database was evaluated for the last thirty years (1989 – 2019) in order to determine future probability of a hazard occurring. While the 30-year record used by the State

was adopted for the purpose of determining the overall probability, in order to assist with determining estimated losses, unless otherwise stated, the full 70-year record was used when Hazus wasn't available to determine losses. This full record was used to provide a more extensive record to determine losses. All assessed damages were adjusted for inflation in order to reflect the equivalent amount of damages with the value of the U.S. dollar today. The following table shows the annual probability for each hazard occurring across the parish.

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

Hazard	Probability				
	St. Tammany Parish (Unincorporated)	Abita Springs	Covington	Folsom	Madisonville
Coastal Hazards	100%	< 1%	100%	<1 %	100%
Dam Failure	< 1%	< 1%	< 1%	< 1%	< 1%
Drought	7%	7%	7%	7%	7%
Flooding	100%	3%	10%	13%	20%
Fog	3%	3%	3%	3%	3%
Levee Failure	< 1%	< 1%	< 1%	< 1%	< 1%
Termites	100%	100%	100%	100%	100%
Thunderstorms - Hail	100%	100%	100%	100%	100%
Thunderstorms - Lightning	77%	77%	77%	77%	77%
Thunderstorms - Winds	100%	100%	100%	100%	100%
Tornadoes	100%	100%	100%	100%	100%
Tropical Cyclones	100%	100%	100%	100%	100%
Wildfires	< 1%	< 1%	< 1%	< 1%	< 1%

*Table 2-4: Probability of Future Hazard Reoccurrence.*

Hazard	Probability			
	Mandeville	Pearl River	Slidell	Sun
Coastal Hazards	100%	< 1%	100%	< 1%
Dam Failure	< 1%	< 1%	< 1%	< 1%
Drought	7%	7%	7%	7%
Flooding	40%	3%	83%	3%
Fog	3%	3%	3%	3%
Levee Failure	< 1%	< 1%	< 1%	< 1%
Termites	100%	100%	100%	100%
Thunderstorms - Hail	100%	100%	100%	100%
Thunderstorms - Lightning	77%	77%	77%	77%
Thunderstorms - Winds	100%	100%	100%	100%
Tornadoes	100%	100%	100%	100%
Tropical Cyclones	100%	100%	100%	100%
Wildfires	< 1%	< 1%	< 1%	< 1%

As shown in the tables on the previous page, coastal hazards for Mandeville, Slidell, Covington, Madisonville, and the unincorporated St. Tammany Parish along with termites, hailstorms, thunderstorm high winds, tornadoes, and tropical cyclones have the highest chance of occurrence in the parish (100%). These are followed by flooding for Slidell (83%), lightning (77%), flooding for Mandeville (40%), drought (7%), and fog (3%). Wildfires, dam failure, and levee failure have an annual chance of occurrence in the parish 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 \$23,404,462,000 in structures throughout the parish. The tables below provide the total estimated value for each type of structure by occupancy.

*Table 2-5: Estimated Total of Potential Losses throughout St. Tammany Parish.*

Occupancy	St. Tammany Parish	Unincorporated Area	Abita Springs	Covington	Folsom
<b>Agricultural</b>	\$62,975,000	\$49,693,000	\$1,368,000	\$2,521,000	\$1,056,000
<b>Commercial</b>	\$2,920,731,000	\$2,195,158,000	\$14,042,000	\$184,823,000	\$11,979,000
<b>Government</b>	\$121,172,000	\$64,662,000	\$1,252,000	\$6,517,000	\$0
<b>Industrial</b>	\$517,160,000	\$411,311,000	\$3,257,000	\$17,753,000	\$350,000
<b>Religion</b>	\$297,172,000	\$213,220,000	\$4,119,000	\$19,877,000	\$2,382,000
<b>Residential</b>	\$19,324,932,000	\$15,799,536,000	\$194,735,000	\$727,489,000	\$43,477,000
<b>Education</b>	\$160,320,000	\$111,870,000	\$377,000	\$9,396,000	\$1,977,000
<b>Total</b>	<b>\$23,404,462,000</b>	<b>\$18,845,450,000</b>	<b>\$219,150,000</b>	<b>\$968,376,000</b>	<b>\$61,221,000</b>

*Table 2-6: Estimated Total of Potential Losses throughout St. Tammany Parish.*

Occupancy	Madisonville	Mandeville	Pearl River	Slidell	Sun
<b>Agricultural</b>	\$0	\$3,652,000	\$221,000	\$4,464,000	\$0
<b>Commercial</b>	\$2,328,000	\$201,408,000	\$8,213,000	\$301,199,000	\$1,581,000
<b>Government</b>	\$2,041,000	\$38,543,000	\$0	\$6,912,000	\$1,245,000
<b>Industrial</b>	\$2,672,000	\$29,718,000	\$1,510,000	\$48,042,000	\$2,547,000
<b>Religion</b>	\$2,490,000	\$12,664,000	\$1,645,000	\$39,570,000	\$1,205,000
<b>Residential</b>	\$2,548,000	\$821,826,000	\$102,247,000	\$1,603,771,000	\$29,303,000
<b>Education</b>	\$2,131,000	\$20,366,000	\$0	\$14,203,000	\$0
<b>Total</b>	<b>\$14,210,000</b>	<b>\$1,128,177,000</b>	<b>\$113,836,000</b>	<b>\$2,018,161,000</b>	<b>\$35,881,000</b>



## Essential Facilities of the Parish

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

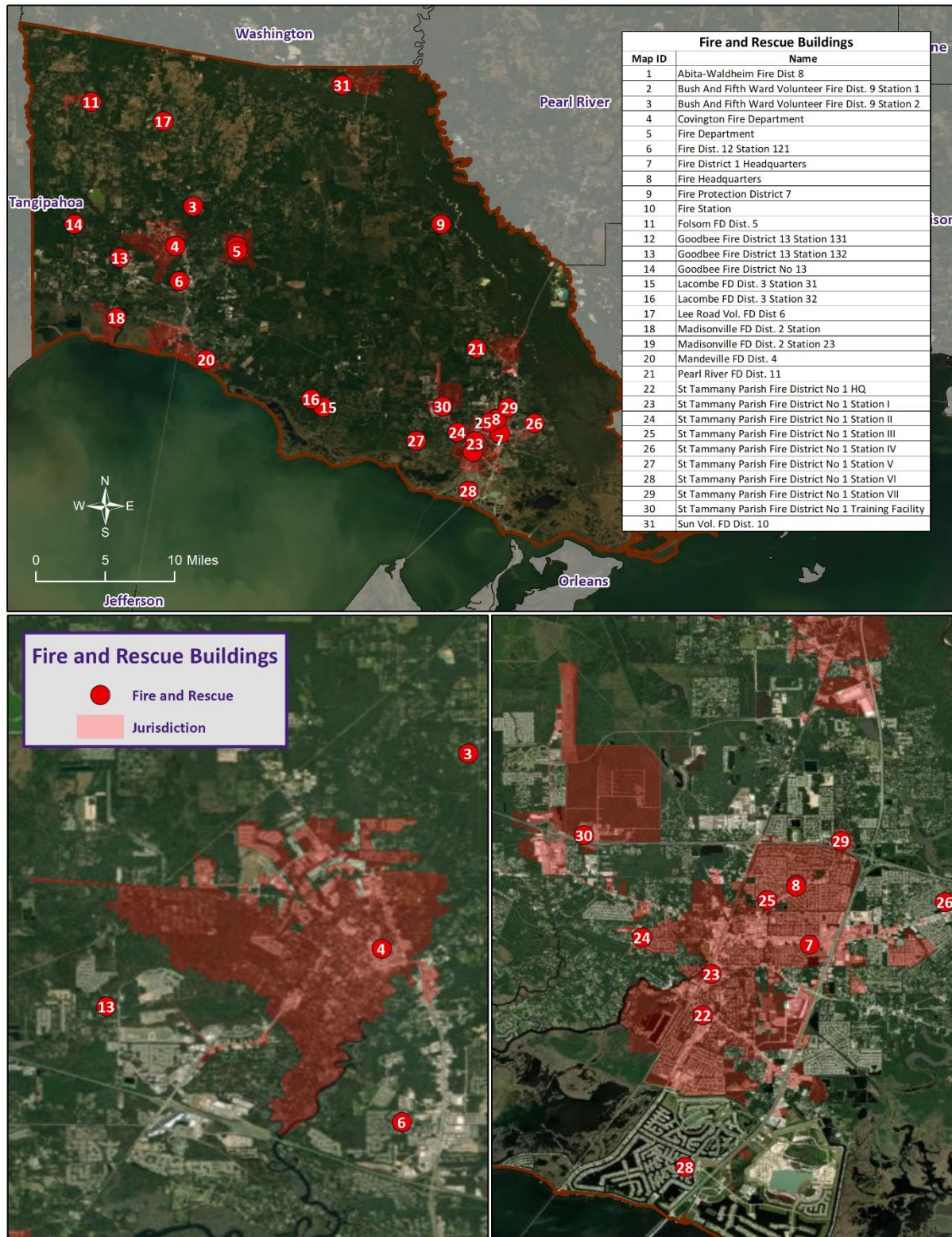


Figure 2-1: Fire and Rescue Facilities in St. Tammany Parish.



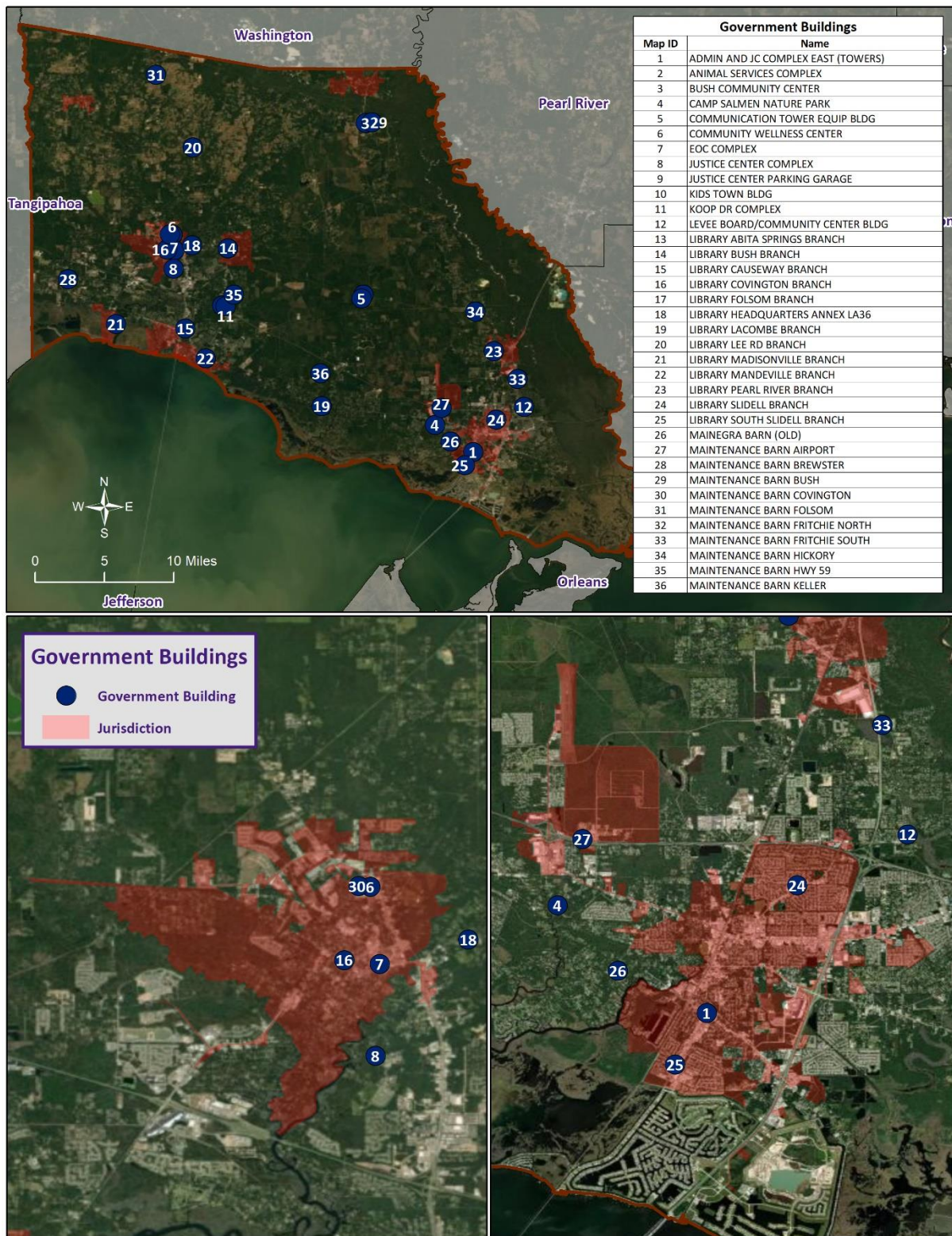


Figure 2-2a: Government Buildings in St. Tammany Parish.



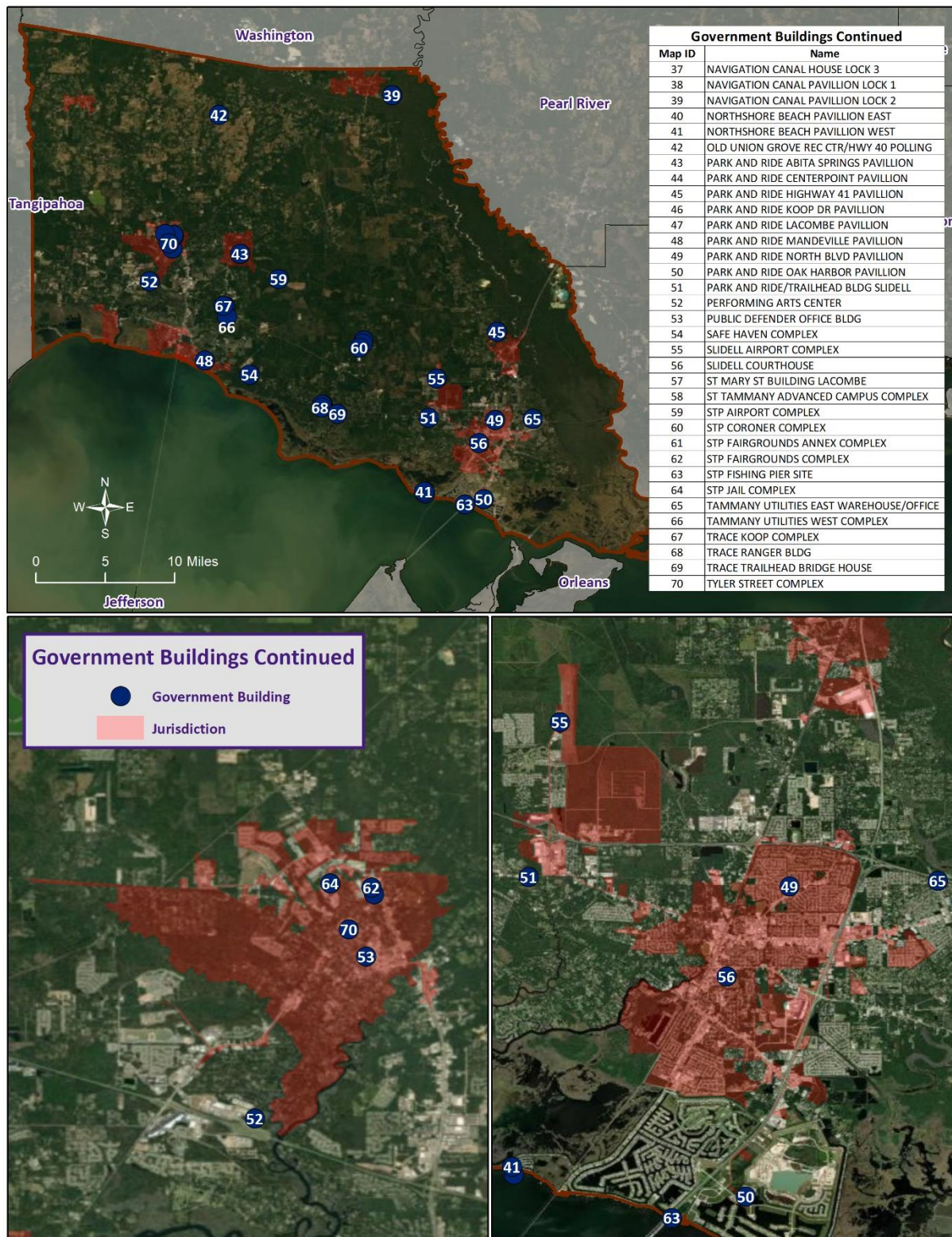


Figure 2-3b: Government Buildings Continued in St. Tammany Parish.



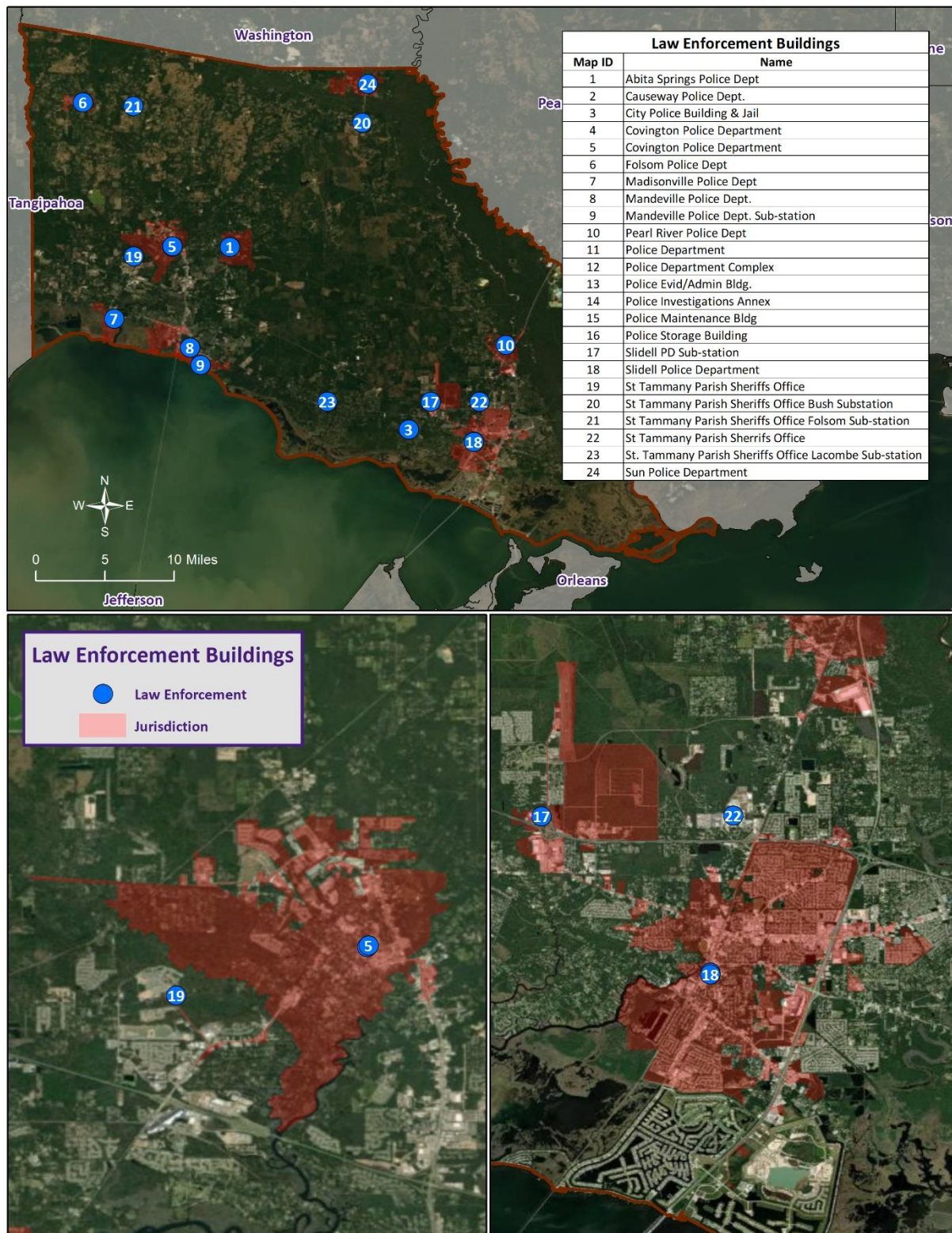


Figure 2-4: Law Enforcement in St. Tammany Parish.



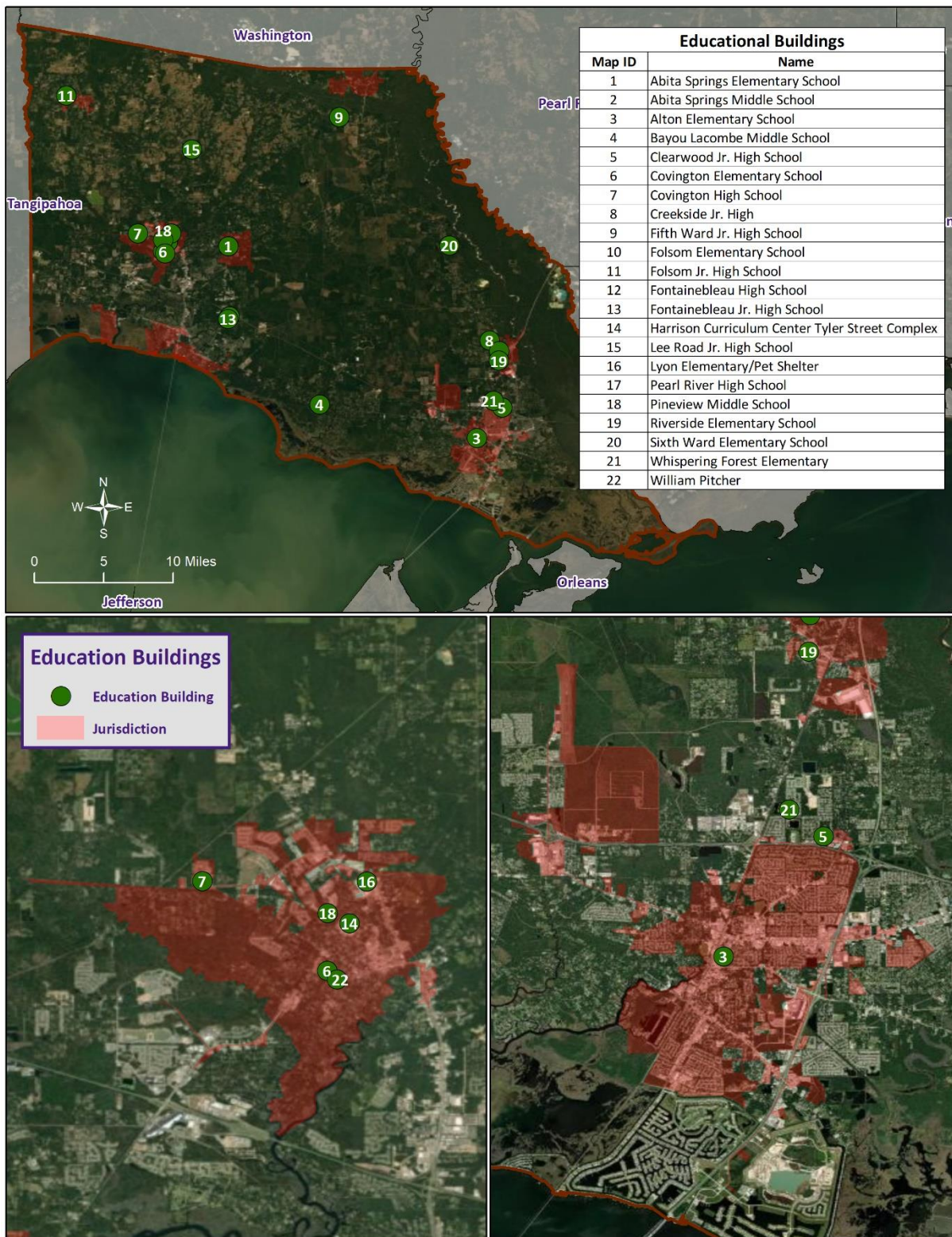
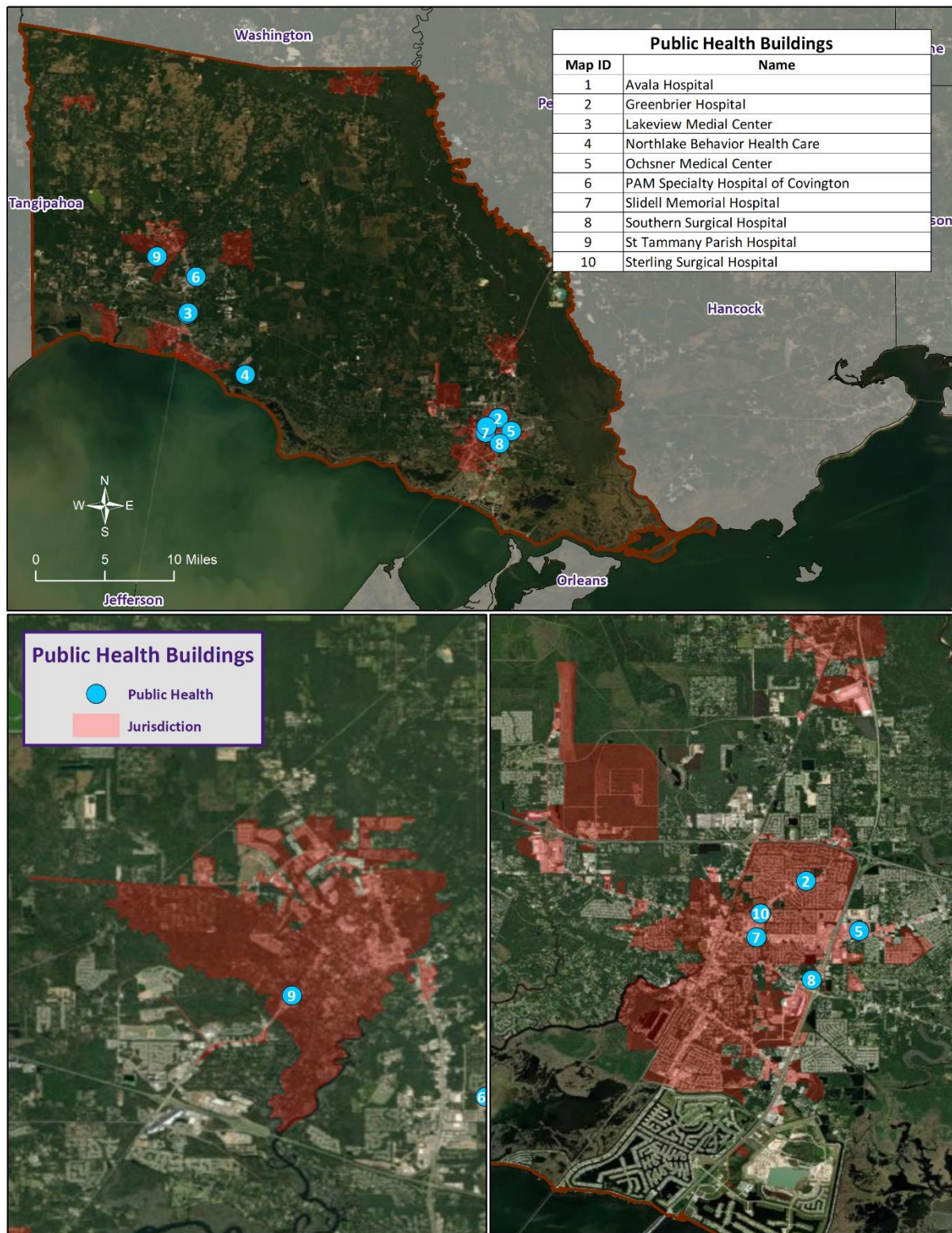


Figure 2-5: Educational Facilities in St. Tammany Parish.





### Future Development Trends

Growth in St. Tammany is mostly centered around access points to the 1-12 corridor. St. Tammany Parish experienced a growth in population and housing between the years of 2000 and 2018, increasing in population from 191,268 with 75,398 housing units in the year 2000 to a population of 260,419 with 105,699 housing units in the year 2018. Folsom experienced the largest population growth within the parish growing from a populace of 525 in 2010 to 847 in 2018 (18% overall growth). This is followed by Covington at 15.6% overall growth, and then the unincorporated areas of the parish at 13.2% overall growth from 2010 to 2018. The incorporated area of Sun is the only area in the parish to experience a decline in population during this same time period with an overall decline of approximately 28%.

Folsom also experienced the largest growth of housing units from 2010 to 2018 growing from 222 in 2010 to 372 in 2018. The incorporated areas of Madisonville, Mandeville, and Sun all experienced a decline in housing units during this time period. The unincorporated parts of the parish ranked 2<sup>nd</sup> in overall growth during this time increasing by approximately 14% over the eight-year period. 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 2018.

*Table 2-7: Population Growth Rate for St. Tammany Parish.*

Total Population	St. Tammany Parish	Unincorporated Area	Abita Springs	Covington	Folsom
1-Apr-00	191,268	141,132	1,957	8,483	525
1-Apr-10	233,740	179,512	2,377	8,765	718
1-Jul-18	260,419	203,224	2,511	10,133	847
Population Growth between 2000 – 2010	22.2%	27.2%	21.5%	3.3%	36.8%
Average Annual Growth Rate between 2000 – 2010	2.2%	2.7%	2.1%	0.3%	3.7%
Population Growth between 2010 – 2018	11.4%	13.2%	5.6%	15.6%	18.0%
Average Annual Growth Rate between 2010 – 2014	1.43%	1.65%	1.88%	5.20%	5.99%

*Table 2-8: Population Growth Rate for St. Tammany Parish.*

Total Population	Madisonville	Mandeville	Pearl River	Slidell	Sun
1-Apr-00	677	10,489	1,839	25,695	471
1-Apr-10	752	11,560	2,518	27,068	470
1-Jul-18	792	12,252	2,556	27,769	335
Population Growth between 2000 – 2010	11.1%	10.2%	36.9%	5.3%	-0.2%
Average Annual Growth Rate between 2000 – 2010	1.1%	1.0%	3.7%	0.5%	0.0%
Population Growth between 2010 – 2018	5.3%	6.0%	1.5%	2.6%	-28.7%
Average Annual Growth Rate between 2010 – 2014	1.77%	2.00%	0.50%	0.86%	-9.57%

*Table 2-9: Housing Growth Rate for St. Tammany Parish.*

Total Housing Units	St. Tammany Parish	Unincorporated Area	Abita Springs	Covington	Folsom
1-Apr-00	75,398	54,645	813	3,565	222
1-Apr-10	95,412	72,152	1,069	4,048	318
1-Jul-18	105,699	82,289	1,114	4,184	372
Housing Growth between 2000 – 2010	26.5%	32.0%	31.5%	13.5%	43.2%
Average Annual Growth Rate between 2000 – 2010	2.7%	3.2%	3.1%	1.4%	4.3%
Housing Growth between 2010 – 2014	10.8%	14.0%	4.2%	3.4%	17.0%
Average Annual Growth Rate between 2010 – 2014	1.3%	1.8%	1.4%	1.1%	5.7%

*Table 2-10: Housing Growth Rate for St. Tammany Parish.*

Total Housing Units	Madisonville	Mandeville	Pearl River	Slidell	Sun
1-Apr-00	346	4,669	788	10,133	217
1-Apr-10	372	5,033	1,033	11,155	232
1-Jul-18	363	4,991	1,014	11,215	157
Housing Growth between 2000 – 2010	7.5%	7.8%	31.1%	10.1%	6.9%
Average Annual Growth Rate between 2000 – 2010	0.8%	0.8%	3.1%	1.0%	0.7%
Housing Growth between 2010 – 2014	-2.4%	-0.8%	-1.8%	0.5%	-32.3%
Average Annual Growth Rate between 2010 – 2014	-0.8%	-0.3%	-0.6%	0.2%	-10.8%

### 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 continue to grow within St. Tammany Parish from the present until 2030. A summary of estimated future impacts is shown in the table on the next page. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%.

Table 2-11: Estimated Future Impacts, 2018-2028.

(Source: Hazus, US Census Bureau)

Hazard / Impact	Total in Parish (2018)	Hazard Area (2018)	Hazard Area (2025)	Hazard Area (2030)
<b>Flood Damage</b>				
<b>Structures</b>	105,699	4,257	4,287	4,308
<b>Value of Structures</b>	\$23,404,462,000	\$942,526,742.56	\$1,019,022,499.22	\$1,077,434,757
<b># of People</b>	264,135	10,487	11,581	12,431
<b>Tropical Cyclone</b>				
<b>Structures</b>	17,172	17,172	17,293	17,379
<b>Value of Structures</b>	\$3,681,095,000	\$3,681,095,000	\$3,979,853,788.10	\$4,207,986,381
<b># of People</b>	46,721	46,721	60,533	72,833

## Land Use

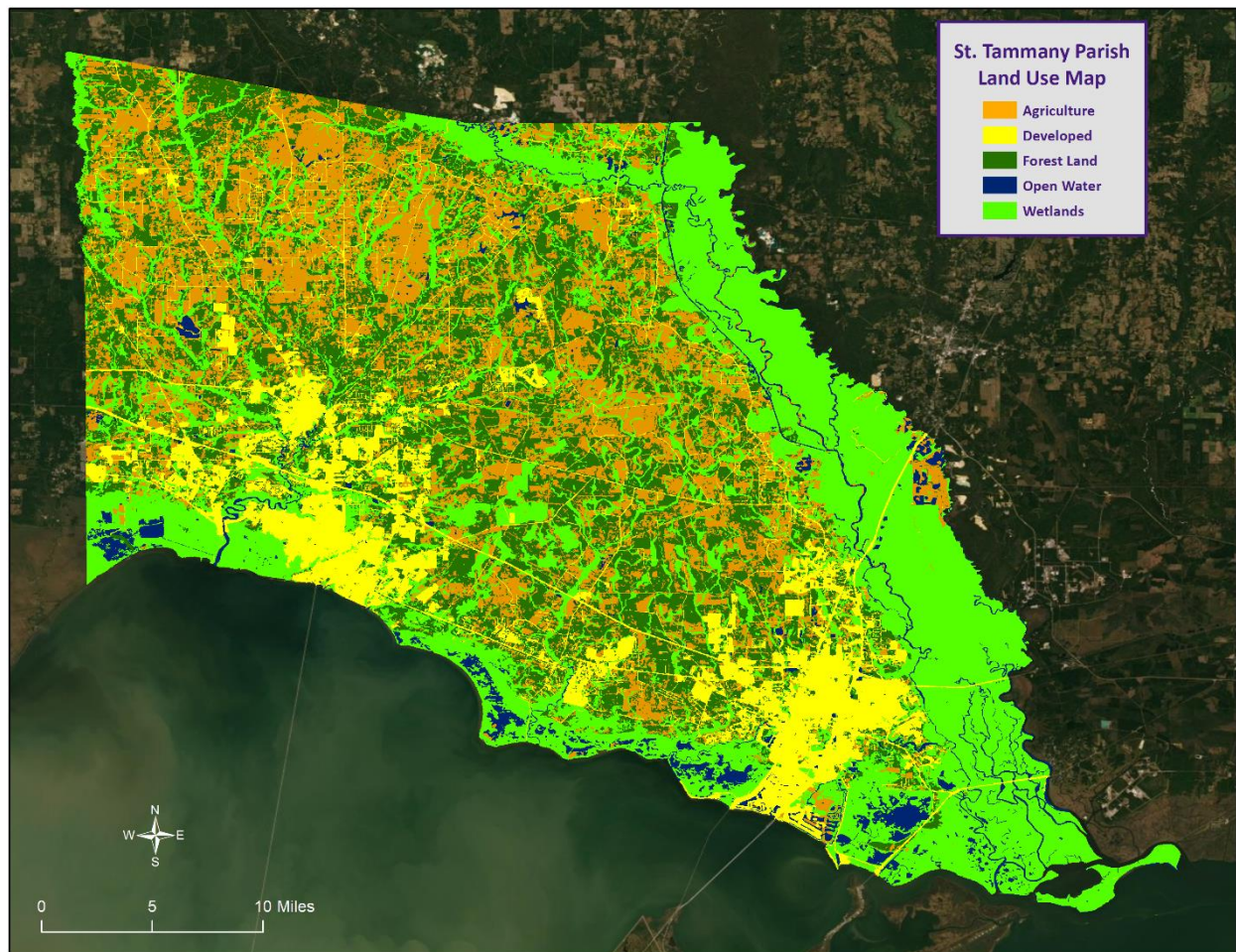
The St. Tammany Parish Land Use table is provided on the below. Residential, commercial, and industrial areas account for only 11% of the parish's land use. Wetland areas is the largest category, accounting for 194,666 acres (27%) of parish land. At 178,560 acres, water accounts for 25% of the parish composition, while 137,515 acres of forested areas account for 19% of parish lands. The parish also consists of 128,374 acres of agricultural areas, accounting for 18% of all parish lands.

Table 2-12: St. Tammany Parish Land Use.

(Source: USGS Land Use Map)

Land Use	Acres	Percentage
Agricultural Land, Cropland, and Pasture	128,374	18%
Wetlands	194,666	27%
Forest Land (Not including forested wetlands)	137,515	19%
Urban/Development	76,537	11%
Water	178,560	25%





*Figure 2-7: St. Tammany Parish Land Use Map.  
(Source: USGS Land Use Map)*

## 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 St. Tammany 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 St. Tammany 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 St. Tammany 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 2-13: 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 2-14: 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 2-15: Risk Assessment for Ascension Parish.

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	Overall Risk
Coastal Hazards	4	2	4	1	3	2.9
Dam Failure	1	2	2	4	2	2.05
Drought	2	4	4	1	4	3.05
Flooding	3	4	3	4	3	3.4
Fog	3	2	2	3	1	2.25
Levee Failure	1	3	2	4	2	2.3
Termites	4	2	1	1	2	2.15
Thunderstorms - Hail	3	2	3	3	1	2.45
Thunderstorms - Lightning	3	2	2	3	1	2.25
Thunderstorms - Winds	3	2	2	3	1	2.25
Tornadoes	3	3	2	4	3	2.95
Tropical Cyclones	4	4	4	1	4	3.55
Wildfires	1	3	3	4	4	2.8

## Hazard Identification

### Coastal Hazards/Subsidence

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

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

Sea level rise and subsidence impact Louisiana in a similar manner—again making it difficult to separate impacts. Together, rising sea level and subsidence—known together as relative sea level rise—can accelerate coastal erosion and wetland loss, exacerbate flooding, and increase the extent and frequency of storm impacts. According to NOAA, global sea level rise refers to the upward trend currently observed in the average global sea level. Local sea level rise is the level that the sea rises relative to a specific location (or, benchmark) at the coastline. The most prominent causes of sea level rise are thermal expansion, tectonic actions (such as sea floor spreading), and the melting of the Earth's glacial ice caps. The current U.S. Environmental Protection Agency (EPA) estimate of global sea level rise is 10–12 in. per century, while future sea level rise could be within the range of 1–4 ft. by 2100. According to the U.S. Geological Survey (USGS), the Mississippi Delta plain is subject to the highest rate of relative sea level rise of any region in the nation largely due to rapid geologic subsidence.

Subsidence results from a number of factors including:

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

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



Overall, subsidence creates three distinct problems in Louisiana:

- By lowering elevations in coastal Louisiana, subsidence accelerates the effects of saltwater intrusion and other factors that contribute to land loss.
- By lowering elevations, subsidence may make structures more vulnerable to flooding.
- By destabilizing elevations, subsidence undermines the accuracy of surveying benchmarks (including those affecting levee heights, coastal restoration programs, surge modeling, BFEs, and other engineering inputs), which can contribute to additional flooding problems if construction occurs at lower elevations than anticipated or planned.

Saltwater intrusion is one of the major causes of subsidence and marshland loss. Saltwater intrusion refers to the movement of saltwater into freshwater aquifers, or to the encroachment of saline water into freshwater estuaries. This intrusion flows into streams discharging into the Gulf of Mexico as well as the marsh areas, subsequently into freshwater streams. Intrusion of saltwater causes the loss of fresh and intermediate vegetation, which results in rapid erosion of marsh soils and the ultimate conversion of the area to open water.

#### *Location*

Historic areas of coastal land loss and gain (*Figure 2-8*) and subsidence rates (*Figure 2-9*) have been quantified for St. Tammany Parish using data from the U.S. Geologic Survey and Louisiana Coastal Protection and Restoration Authority (CPRA). Since 1932, the average annual land loss in Louisiana is 35 mi<sup>2</sup>, while the average annual land gain has been 3 mi<sup>2</sup> for a net loss of 32 mi<sup>2</sup> per year. Land loss is occurring in the southern portions of St. Tammany Parish including the unincorporated areas and the jurisdictions of Covington, Madisonville, Mandeville, and Slidell (*Figure 2-8*). Additionally, subsidence is also occurring in these areas. (*Figure 2-9*).

#### *Previous Occurrences / Extent*

Coastal land loss is an ongoing process, including discrete (hurricanes) and continuous (subsidence, sea level rise) processes. While historic flood loss data undoubtedly include the effects of coastal land loss, specific previous occurrences have not been identified as a source of direct disaster damage in Louisiana. Rather, the effects of the underlying flood or hurricane storm surge hazard are recorded. Land loss is a significant hazard, however, and assessment of the added flood impacts caused by land loss is quantified in the following sections. The southeastern portion of St. Tammany Parish can expect to experience subsidence rates of approximately 10 mm annually while the southern and southwestern areas of the parish can expect subsidence rates of approximately 6 mm annually.

#### *Frequency / Probability*

Subsidence, sea level rise, and coastal land loss are ongoing hazards. Based on historical subsidence rates and land loss/gain trends, the probability of future land loss in Louisiana is 100% certain, but actual rates of subsidence and land loss/gain vary along the coast based on various meteorological, geological, and human-influenced dynamics (e.g., water/resource extraction, canal dredging, saltwater intrusion, marsh restoration projects, etc.). The following table displays the annual probability of occurrence for coastal land loss/subsidence for St. Tammany and its jurisdictions.

Table 2-16: Estimated Annual Probability of Coastal Land Loss in St. Tammany Parish.  
(Source: Hazus)

Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
100%	< 1%	100%	<1 %	100%

Table 2-17: Estimated Annual Probability of Coastal Land Loss in St. Tammany Parish.  
(Source: Hazus)

Mandeville	Pearl River	Slidell	Sun
100%	< 1%	100%	< 1%



Figure 2-8: Historical Areas of Land Loss and Gain between 1932 and 2010.  
(Source: State of Louisiana Hazard Mitigation Plan)



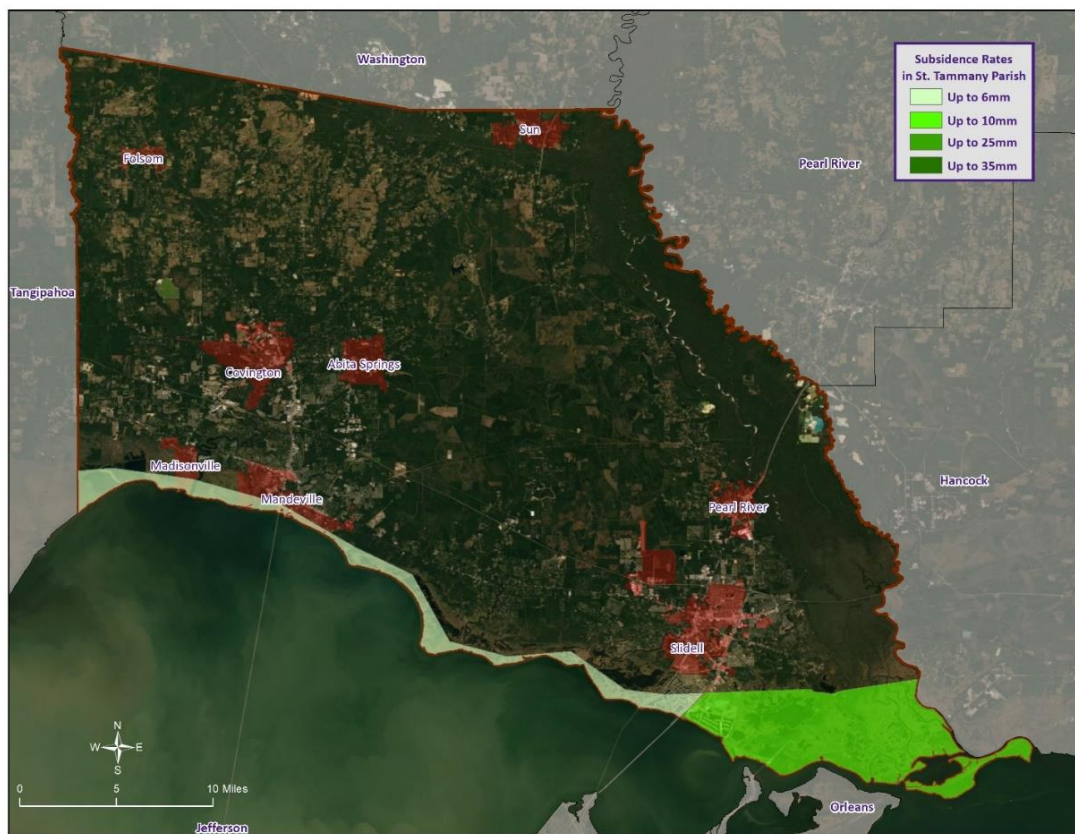


Figure 2-9: Maximum Annual Subsidence Rates Based on Subsidence Zones in Coastal Louisiana.  
(Source: State of Louisiana Hazard Mitigation Plan)

### *Estimated Potential Losses*

To determine the estimated potential losses, the methodology implemented in the 2014 Louisiana State Plan Update was used. In the state plan, two parameters were considered to estimate the projected increase in coastal flood losses from storm surge scenarios – global sea level rise and subsidence. A timeframe of 10 years was used for evaluation of future effects of sea level rise and subsidence for comparison with current conditions. The NOAA Sea, Lake and Overland Surges from Hurricanes (SLOSH) model was used to estimate the maximum of maximum (MOM) storm surge elevations for a Category 1 hurricane at mean tide along the coast of Louisiana. The MOM scenario is not designed to describe the storm surge that would result from a particular event, but rather evaluates the impacts of multiple hurricane scenarios with varying forward speeds and storm track trajectories to create the maximum storm surge elevation surface that would occur given the simultaneous occurrence of all hurricane events for a given category.

There are many global sea level rise scenarios from which to select; however, within a 10-year timeframe, methods that predict accelerating sea level rise rates do not deviate significantly from straight line methods. Therefore, a linear sea level rise projection for the sea level rise occurring in 10 years (SLR2024) using a linear global sea level rise rate of 3.1 mm/year was used (IPCC, 2007), which is also in accordance with the CPRA Coastal Master Plan. This resulted in an increase of 0.1 feet, which was applied to the NOAA MOM storm surge elevation results over the model output domain.

$$SLR_{2024} = 0.0031 \frac{m}{year} \times 10 \text{ years}$$

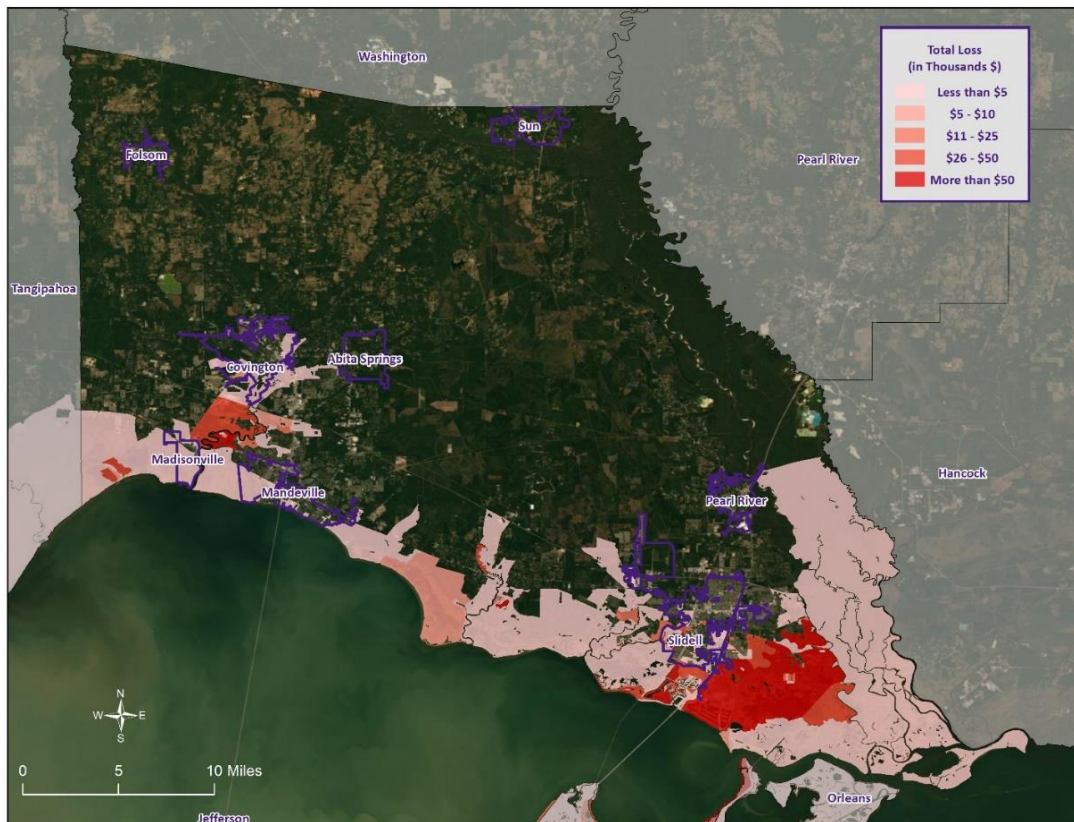
$$SLR_{2024} = 0.031 \text{ meters} = 0.10 \text{ ft in 2024}$$

To estimate the effects of subsidence, the elevation profile for southern Louisiana was separated into sections based on subsidence zones. The 20th percentile values for subsidence were used, in accordance with the CPRA Master Plan, and subtracted from the digital elevation model (DEM) for each zone and re-joined to create a final subsided ground elevation layer.

To perform the economic loss assessment, depth grids were created for current conditions (SLOSH MOM Results – Current Land Elevation) and for projected 2024 conditions ([SLOSH MOM Results + 0.1 ft sea level rise] – [Current Land Elevation – Subsidence]). Hazus was used to calculate economic loss for the current and future depth grids.

*Figure 2-10* shows the projected increase in total flood loss resulting from a SLOSH Category 1 MOM in the year 2024, with many areas expecting increase in losses. Some areas that would be currently unaffected by a SLOSH Category 1 MOM would be impacted in ten years based on subsidence and sea level rise projections (*Figure 2-11*).

To determine annual potential loss estimates for coastal land loss, increased exposure estimates over the next 10 years calculated using Hazus were annualized at the parish level (*Figure 2-12*). To provide an annual estimated potential loss per jurisdiction, the total loss for the census block groups within each jurisdiction were calculated. Based on hazard exposure, *Table 2-18* provides an estimate of annual potential losses for St. Tammany Parish.



*Figure 2-10: Increase in Total Loss Estimates in 2024 by Census Block Group Based on the Hazus Flood Model and NOAA SLOSH Model.*  
(Source: State of Louisiana Hazard Mitigation Plan)



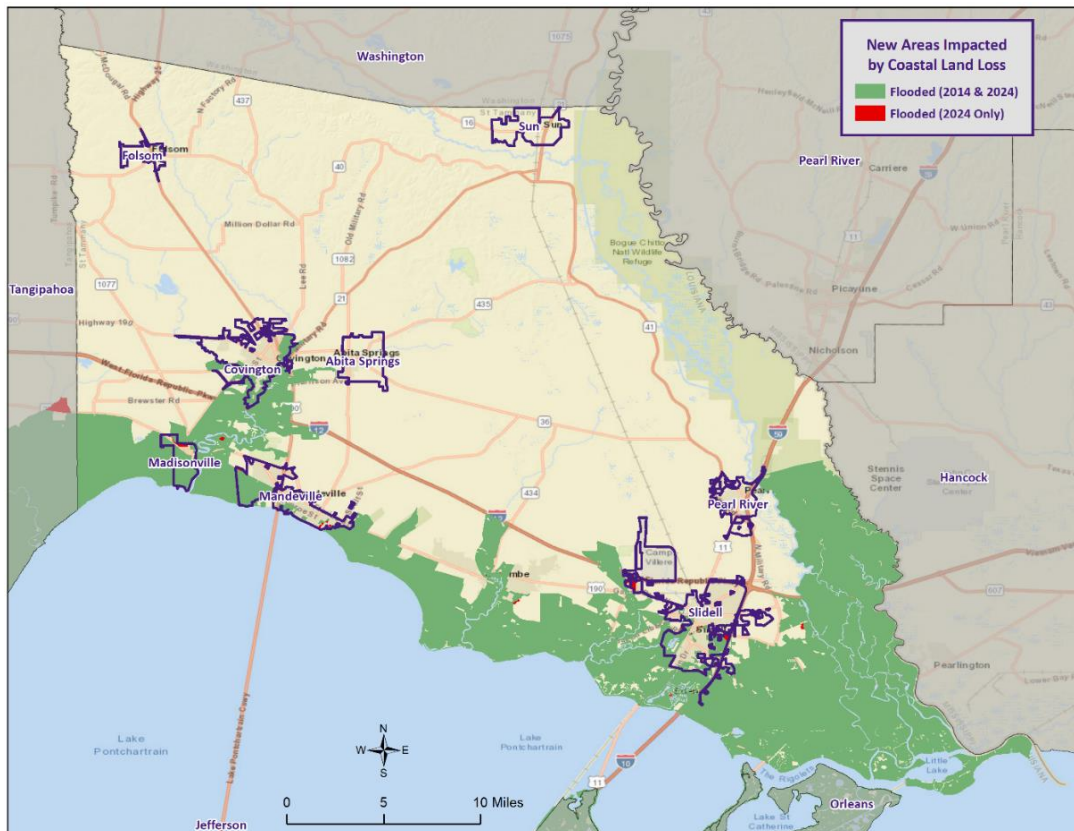


Figure 2-11: Census Block Groups not Currently Impacted by Category 1 Hurricane Storm Surge but Expected to be Impacted in 2024 are Shown in Red.  
(Source: State of Louisiana Hazard Mitigation Plan)

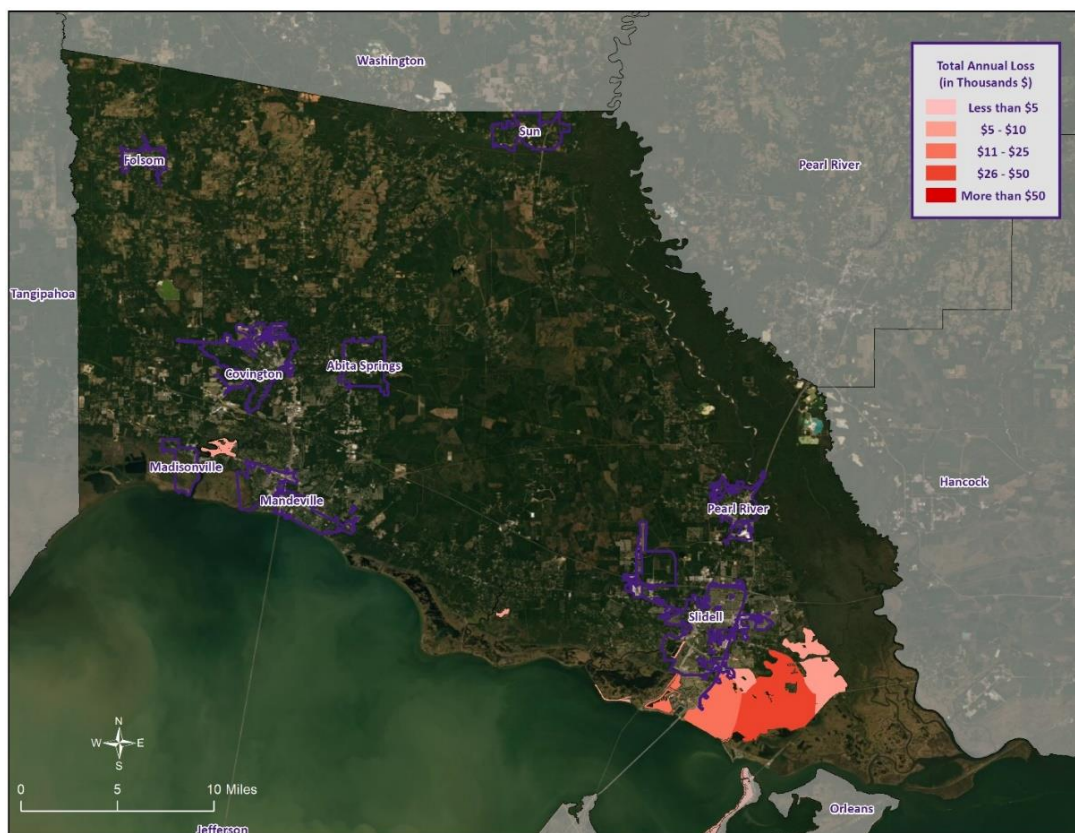


Figure 2-12: Estimated Annual Losses for Coastal Land Loss by Census Block Group.

The following tables show the current and future exposure potential based on the Hazus inventory database.

*Table 2-18: Estimated Annual Losses for Coastal Land Loss in St. Tammany Parish.*

*(Source: Hazus)*

Coastal Land Loss Estimated Annual Potential Losses				
Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
\$70,300	\$0	\$2,000	\$0	\$1,300

*Table 2-19: Estimated Annual Losses for Coastal Land Loss in St. Tammany Parish.*

*(Source: Hazus)*

Coastal Land Loss Estimated Annual Potential Losses			
Mandeville	Pearl River	Slidell	Sun
\$700	\$0	\$16,300	\$0

#### Threat to People

Coastal land loss can impact all demographics and age groups. Buildings located within highly vulnerable coastal land loss areas could be eventually permanently shut down and forced to re-locate. Long-term sheltering and permanent relocation could be a concern for communities that are at the highest risk for future coastal land loss. The total population within the parish that is susceptible to the effects of coastal land loss are shown in the following table.

*Table 2-20: Number of People Susceptible to Coastal Land Loss in St. Tammany Parish.*

Number of People Exposed to Coastal Land Loss Hazards			
Location	# in Community	# in Hazard Area	% in Hazard Area
<b>St. Tammany Parish (Unincorporated)</b>	179,512	45,613	25.3%
<b>Abita Springs</b>	2,377	0	0%
<b>Covington</b>	8,765	2,531	28.9%
<b>Folsom</b>	718	0	0%
<b>Madisonville</b>	752	568	75.9%
<b>Mandeville</b>	11,560	4,108	35.5%
<b>Pearl River</b>	2,518	0	0%
<b>Slidell</b>	27,068	8,169	30.2%
<b>Sun</b>	470	0	0%
<b>Total</b>	<b>233,740</b>	<b>60,989</b>	<b>26.1%</b>

The Hazus hurricane model was used to identify populations vulnerable to coastal land loss throughout the jurisdictions in the tables below.

*Table 2-21: Population Vulnerable to Coastal Land Loss in the Unincorporated Area of St. Tammany Parish.*

St. Tammany Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	45,613	25.4%
Persons Under 5 years	2,974	6.5%
Persons Under 18 years	8,762	19.2%
Persons 65 Years and Over	5,784	12.7%
White	38,123	83.6%
Minority	7,490	16.4%

*Table 2-22: Population Vulnerable to Coastal Land Loss in Covington.*

Covington		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,531	28.9%
Persons Under 5 years	160	6.3%
Persons Under 18 years	445	17.6%
Persons 65 Years and Over	379	15.0%
White	1,968	77.8%
Minority	563	22.2%

*Table 2-23: Population Vulnerable to Coastal Land Loss in Madisonville.*

Madisonville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	568	75.9%
Persons Under 5 years	36	6.4%
Persons Under 18 years	88	15.5%
Persons 65 Years and Over	84	14.8%
White	494	86.9%
Minority	74	13.1%

*Table 2-24: Population Vulnerable to Coastal Land Loss in Mandeville.*

Mandeville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	4,108	35.5%
Persons Under 5 years	211	5.1%
Persons Under 18 years	806	19.6%
Persons 65 Years and Over	664	16.2%
White	3,720	90.6%
Minority	388	9.5%

*Table 2-25: Population Vulnerable to Coastal Land Loss in Slidell.*

Slidell		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	8,169	30.2%
Persons Under 5 years	576	7.1%
Persons Under 18 years	1,505	18.4%
Persons 65 Years and Over	1,142	14.0%
White	6,204	76.0%
Minority	1,965	24.1%

*Vulnerability*

See Appendix C for parish and municipality buildings that are susceptible to coastal land loss and subsidence.

## Dam Failure

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

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

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

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

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

The USACE National Inventory of Dams classifies dams as a “high hazard potential,” “significant hazard potential,” and “low hazard potential.” These categories are defined below.

- High hazard potential dams are dams where failure or improper operation will probably cause loss of human life.
- Significant hazard potential dams are those where failure or improper operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or other impacts. Dams classified as having “significant hazard potential” are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.



- Low hazard potential dams are those where failure or improper 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.

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, St. Tammany Parish has 23 low hazard potential dams and four significant hazard potential dams. All of the low hazard dams are located in unincorporated St. Tammany Parish and are privately owned except the Huey P. Long Fish Hatchery Dam located in Lacombe and owned by the State of Louisiana. The following is a summary of the low hazard dam data contained within the National Inventory of Dams by location.

*Table 2-26: Low Hazard Dams Located in St. Tammany Parish.  
(Source: National Inventory of Dams)*

Inventory of Low Hazard Dams in St. Tammany Parish						
Dam Name	Year Completed	Structural Height (ft.)	Hydraulic Height (ft.)	Surface Area (Acres)	Normal Storage (Acre-ft.)	Drainage Area (Sq. Miles)
Abbey Pond	1960	8	6	16	60	1.5
Carden Dam #1	1984	16	15	28.2	22.59	2
Carden Dam #2	1984	21	15	30.6	459	2
Conway Farrel Pond	1996	34	24	12	86	0.26
Cormorant Lake	1988	10	8	33.8	338	1.5
Crane Lake	1988	25	23	98	2450	1.5
Egret Pond	1988	20	18	14.3	286	1.5
Goodyears Pond	1968	16	15	142	1800	1
Grande Hills Lake Dam	-	12	15	59.6	894	1.5
Gum Swamp	1963	7	6	20	75	1.5
Hemphill Lake Dam	1982	12	10	25	250	2
Heron Lake	1988	12	10	26.8	-	1
Hillcrest Pond	1964	10	8	60	178	1
Huey P Long Hatchery	1934	8	7	9	56	-
Lake Ramsey	1966	8	6	255	755	1
Loon Pond	1988	8	6	9.4	75.2	1
Money Hill Pond #1	1971	10	8	44	290	1
Money Hill Pond #2	1982	8	6	47.6	285.6	1
P+L Ranch Pond	1974	13	10	3	65	0.05
Polly Eagan Pond	1996	18.5	16.5	18.5	66	0.08
Spells Pond	1973	10	8	15	80	1
Thurmans Pond	1953	10	8	10	90	1
TL James Pond	1956	10	7	26	120	0.05

Details regarding the four significant hazard dams are provided below:

Two of the significant hazard dams are federally owned dams with the primary purpose of navigation, located on the Pearl River Canal in the Bogue Chitto National Wildlife Refuge along the eastern side of unincorporated St. Tammany Parish. The first of these dams, the Pearl River Lock #1 & Spillway, is a concrete dam built in 1949. It is 200 feet long, structural height is 15 feet, and hydraulic height is 11 feet. It can discharge, at maximum, 4,200 cubic feet per second. Its maximum storage is 3,400 acre-feet of water and has a surface area of 107 acres. The drainage area of this dam is 7,960 square miles. There is no emergency action plan in place.

The second of these dams, the Bogue Chitto Sill, is a gravity dam built in 1950. It is 310 feet long, structural height is 21 feet, and hydraulic height is 6 feet. It can discharge, at maximum, 7,500 cubic feet per second. Its maximum storage is 1,300 acre-feet of water and has a surface area of 30 acres. The drainage area of this dam is 7,896 square miles. There is no emergency action plan in place.

The remaining two of the significant hazard dams are owned by the Highlands Homeowners Association for the purpose of retaining successive fish and wildlife ponds along Bills Creek in northwest unincorporated St. Tammany Parish. Both are earthen dams built in 1980 and 1983, 810 feet and 1107 feet long, respectively. Structural heights for the dams are 20 feet and 26 feet with hydraulic heights of 17 feet and 22 feet, respectively. The dams' normal storage is 286 acre-feet and 590 acre-feet of water, with maximum storage of 320 acre-feet and 700 acre-feet, respectively and have no discharge. The surface areas of the dams are 33.7 acres and 59 acres, with drainage areas of 1.1 square miles and 0.7 square miles, respectively. The larger of the two dams, located upstream of the smaller dam, has an emergency action plan in place.

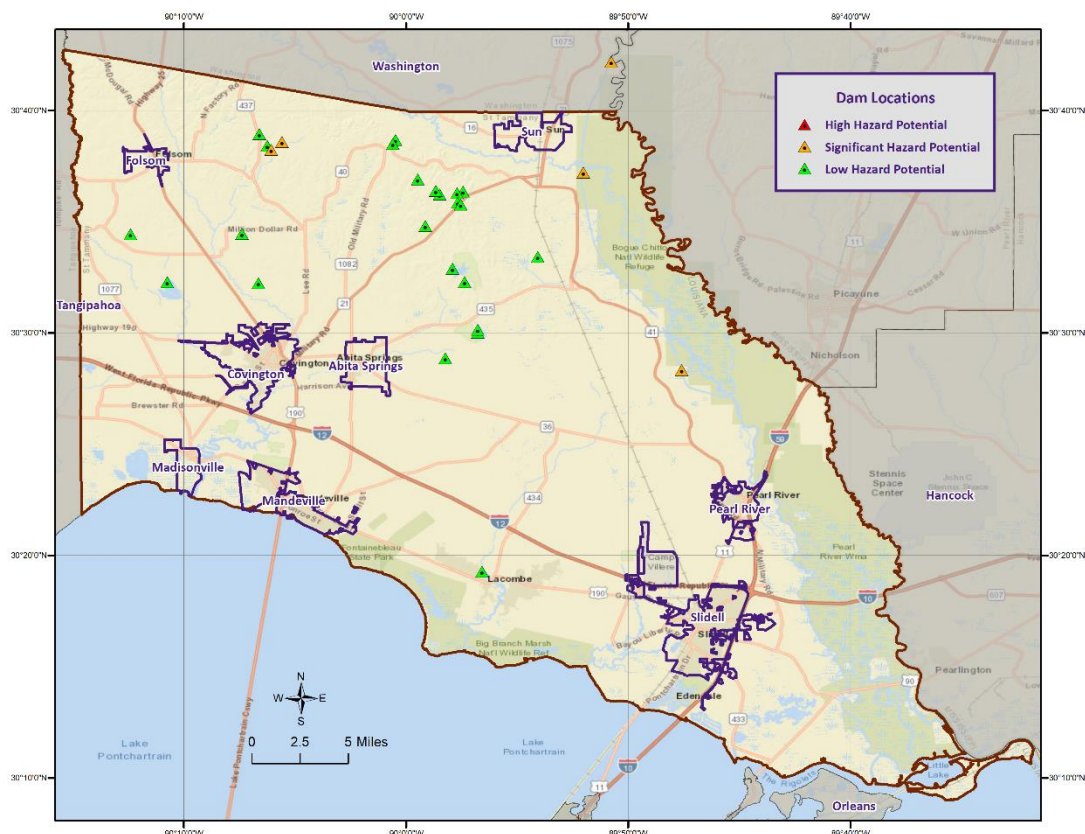


Figure 2-13: Dam Locations in St. Tammany Parish Categorized by Hazard Level  
(Source: National Inventory of Dams)

*Previous Occurrences / Extent*

The National Performance of Dams Program (NPDP), a database of dam incidents maintained by Stanford University, lists one dam incident in Louisiana, which occurred at the Kisatchie Lake Dam in Grant Parish in 1991. After heavy rains, the 25' high earthen dam was breached at the concrete spillway structure. There are no other reports of dam incidents in Louisiana reported by NPDP. The worst-case scenario for dam failures in St. Tammany Parish would be 2 to 3 feet of flooding in the unincorporated areas of the parish. There are no significant or high hazard potential dams within the vicinity of any of the St. Tammany's jurisdictions.

*Frequency / Probability*

There have been no incidences of dam failure in St. Tammany Parish or its jurisdictions; therefore, the annual chance of occurrence is calculated at less than 1% for a given year for St. Tammany Parish and its jurisdictions.

*Estimated Potential Loses*

There have been no dam failures which have occurred in St. Tammany Parish or its jurisdictions; therefore, there are no potential loss estimations for a dam failure event. Additionally, there have been no reported injuries or deaths as a direct result of dam failure in St. Tammany Parish or its jurisdictions due to no dam failure event ever occurring. However, loss estimations were completed to determine the impact a dam failure would have on the areas adjacent to the dam locations. In assessing overall risk to population, the most vulnerable population throughout the parish consists of those residing in the unincorporated areas of the parish adjacent and downstream of the dams.

For the two significant hazard dams located in the Bogue Chitto National Wildlife Refuge, there is the potential for environmental disruption, but there is little development exposed and no residents adjacent to these dams. The only structures which could be impacted from a dam failure are approximately 20 fishing and hunting camps downstream of these two dams with a total estimated value of approximately \$250,000. For the two significant hazard dams located along Bills Creek, a worst-case scenario considering cascading failure of the two successive dams would impact the unincorporated areas of the parish in the immediate vicinity of the dams. The incorporated areas of Abita Springs, Covington, Folsom, Madisonville, Mandeville, Pearl River, Slidell, and Sun are not impacted by dam failures.

Using Hazus, along with areas adjacent to the dams, the table on the next page presents an analysis of total building exposure that is located in proximity to the dams.

Table 2-27: Total Building Exposure to Dam Failures.

(Source: Hazus)

Jurisdiction	Estimated Total Building Exposure
<b>St. Tammany Parish (Unincorporated)</b>	<b>\$55,987,000</b>
Abita Springs	\$0
Covington	\$0
Folsom	\$0
Madisonville	\$0
Mandeville	\$0
Pearl River	\$0
Slidell	\$0
Sun	\$0
<b>Total</b>	<b>\$55,987,000</b>

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

Table 2-28: Estimated Exposure for Unincorporated St. Tammany Parish by Sector.

(Source: Hazus)

St. Tammany Parish (Unincorporated)	Estimated Total Building Exposure by Sector
<b>Agricultural</b>	<b>\$615,000</b>
<b>Commercial</b>	<b>\$7,311,000</b>
<b>Government</b>	<b>\$0</b>
<b>Industrial</b>	<b>\$966,000</b>
<b>Religious / Non-Profit</b>	<b>\$2,166,000</b>
<b>Residential</b>	<b>\$44,929,000</b>
<b>Schools</b>	<b>\$0</b>
<b>Total</b>	<b>\$55,987,000</b>

*Threat to People*

The total population within the parish that is located adjacent to a dam is shown in the table below:

*Table 2-29: Population Located Adjacent to a Dam.*

*(Source: 2010 U.S. Census Data)*

Number of People Located Adjacent to a Dam			
Location	# in Community	# in Hazard Area	% in Hazard Area
<b>St. Tammany Parish (Unincorporated)</b>	179,542	2,927	1.6%
<b>Abita Springs</b>	2,365	0	0%
<b>Covington</b>	8,765	0	0%
<b>Folsom</b>	716	0	0%
<b>Madisonville</b>	748	0	0%
<b>Mandeville</b>	11,560	0	0%
<b>Pearl River</b>	2,506	0	0%
<b>Slidell</b>	27,068	0	0%
<b>Sun</b>	470	0	0%
<b>Total</b>	<b>233,740</b>	<b>2,927</b>	<b>1.3%</b>

The 2010 U.S. Census data was also extrapolated to provide an overview of populations located near a dam throughout the jurisdictions. The data is illustrated in the following tables:

*Table 2-30: Population in Unincorporated St. Tammany Parish Located Adjacent to a Dam.*

*(Source: 2010 Census Data)*

St. Tammany Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
<b>Number in Hazard Area</b>	2,927	1.6%
<b>Persons Under 5 Years</b>	169	5.8%
<b>Persons Under 18 Years</b>	726	24.8%
<b>Persons 65 Years and Over</b>	421	14.4%
<b>White</b>	2,470	84.4%
<b>Minority</b>	457	15.6%

*Vulnerability*

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

## 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 2-31](#) displays the range and Palmer classifications of the PDSI index while [Figure 2-14](#) displays the current drought monitor for the state of Louisiana and its parishes.

Table 2-31: Palmer Drought Severity Index Classification and Range

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

The PDSI best measures the duration and intensity of drought-inducing circulation patterns at a somewhat long-term time scale, although not as long-term as the PHDI. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns in addition to the effects of cumulative patterns of previous months. Although weather patterns can change almost overnight from a long-term drought pattern to a long-term wet pattern, as a medium-response indicator, the PDSI responds relatively rapidly. Data compiled by the National Drought Mitigation Center indicates normal conditions currently exists within St. Tammany Parish and its jurisdictions.

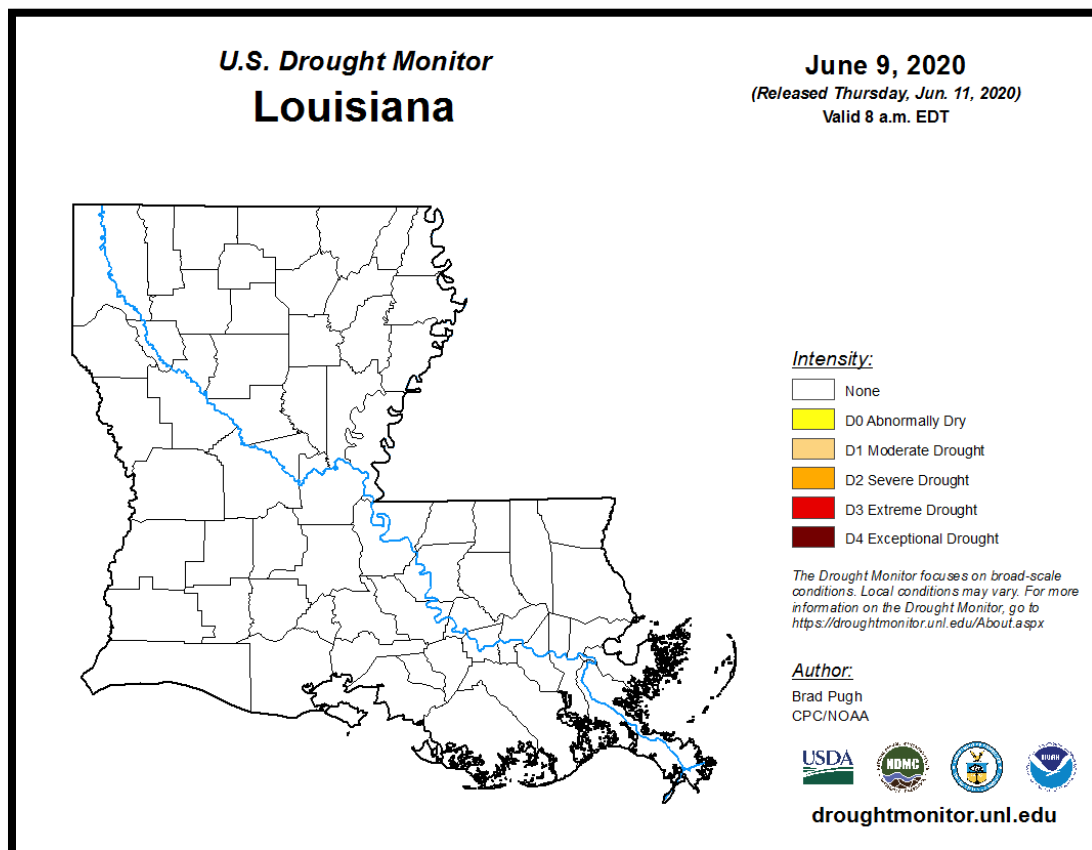


Figure 2-14: United States Drought Monitor for the State of Louisiana and its Parishes.  
(Source: The National Drought Mitigation Center)



#### *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 St. Tammany Parish is on the agricultural community. The worst-case drought scenario for St. Tammany Parish would be a severe drought (D2).

#### *Previous Occurrences / Extent*

Historically, there have been two drought incidents in St. Tammany Parish. Drought events have ranged from Mild to Moderate per the National Climatic Data Center. Since the last update, there has been no drought event within the boundaries of St. Tammany Parish and its jurisdictions.

#### *Frequency / Probability*

Based on two drought events since 1989, the annual chance of occurrence of a drought event occurring within a given year is calculated at 7% for St. Tammany Parish and its jurisdictions.

#### *Estimated Potential Losses*

According to the NCEI Storm Events Database, there have been two drought events which have impacted St. Tammany Parish which resulted in limited to no damage to crops in the parish and its jurisdictions. 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 St. Tammany Parish.

*Table 2-32: Agricultural Exposure by Crop Type for Droughts in St. Tammany Parish.  
(Source: LSU AG Center 2018 Parish Totals)*

Agricultural Exposure by Type for Drought			
Blueberry	Forestry	Hay	Nursery Crop
\$410,000	\$5,978,700	\$152,150	\$7,321,000

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

#### *Vulnerability*

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

## 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 St. Tammany Parish, most of these flooding events have historically been observed. 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

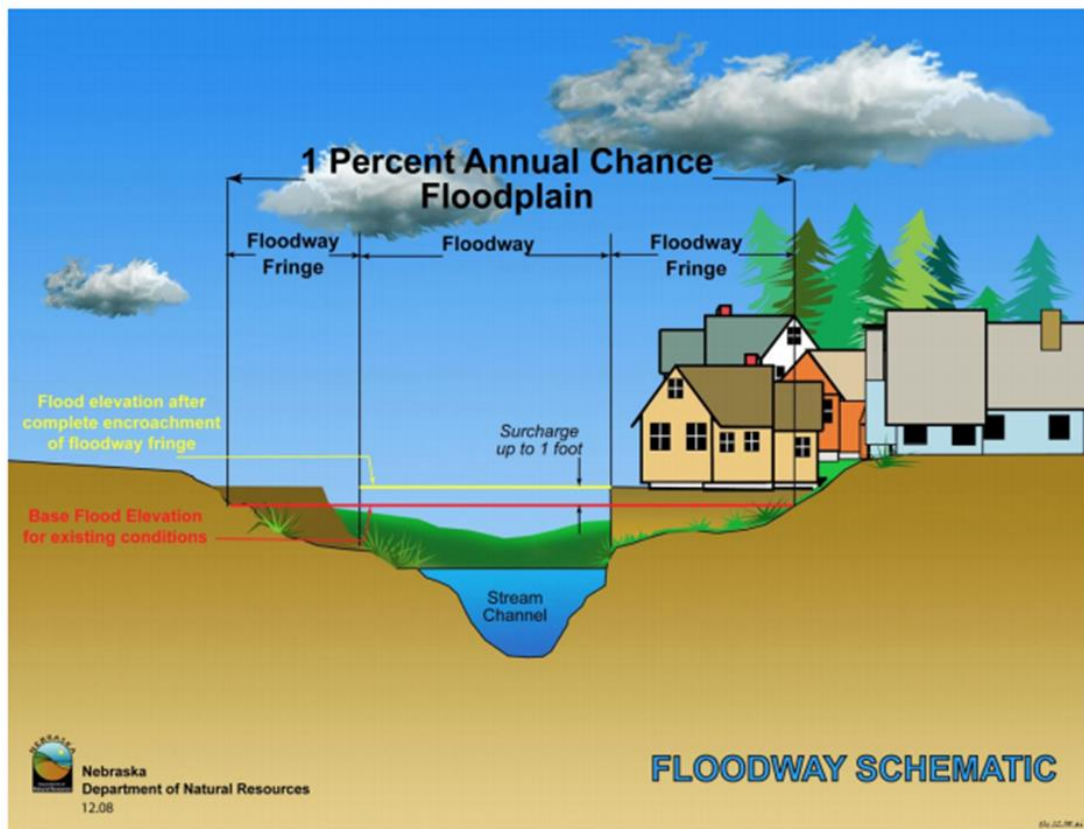
Based on stream gauge levels and precipitation forecasts, the National Weather Service (NWS) posts flood statements, watches, and warnings. The NWS issues the following weather statements with regard to flooding:

- **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 (ASFP) promotes the use of more tangible expressions of flood probability. As such, the ASFP also expresses the 100-year flood event as having a 25% chance of occurring over the life of a 30-year mortgage.

It is essential to understand that the magnitude of an X-year flood event for a particular area depends on the source of flooding and the area's location. The size of a specific flood event is defined through historic data of precipitation, flow, and discharge rates. Consequently, different 100-year flood events can have very different impacts. The 100-year flood event in two separate locations have the same likelihood to occur, but they do not necessarily have the same magnitude. For example, a 100-year event for the Mississippi River means something completely different in terms of discharge values ( $\text{ft}^3/\text{s}$ ) than for the Amite River. Not only are the magnitudes of 100-year events different between rivers, they can be different along any given river. A 100-year event upstream is different from one downstream due to the 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 2-15*.



*Figure 2-15: 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 2-15*), 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 St. Tammany Parish are provided in the table below.

*Table 2-33: Repetitive Loss Structures for St. Tammany Parish*

Jurisdiction	Number of Structures	Residential	Commercial	Government	Total Claims	Total Claims Paid	Average Claim Paid
<b>St. Tammany Parish (Unincorporated)</b>	2,032	1,971	61	0	5,924	\$244,558,986	\$41,283
<b>Abita Springs</b>	4	4	0	0	9	\$151,142	\$16,794
<b>Covington</b>	57	47	10	0	214	\$4,505,933	\$21,056
<b>Folsom</b>	1	1	0	0	2	\$21,186	\$10,593
<b>Madisonville</b>	54	47	7	0	138	\$7,731,241	\$56,023
<b>Mandeville</b>	211	196	15	0	641	\$29,457,471	\$45,955
<b>Pearl River</b>	3	3	0	0	7	\$89,870	\$12,839
<b>Slidell</b>	1,030	978	52	0	3,155	\$149,432,459	\$47,364
<b>Sun</b>	6	6	0	0	21	\$466,790	\$22,228
<b>TOTAL</b>	<b>3,398</b>	<b>3,253</b>	<b>145</b>	<b>0</b>	<b>10,111</b>	<b>\$436,415,078</b>	<b>\$43,162</b>

All 3,398 repetitive loss properties were geocoded in order to provide an overview of where the repetitive loss structures are located throughout the parish. On the next page, *Figure 2-16* shows the approximate location of the structures, while *Figure 2-17* shows where the highest concentration of repetitive loss structures are located. Through the repetitive loss map, it is clear the primary concentrated area of repetitive loss structures is focused in southern portions of St. Tammany Parish near the shoreline of Lake Pontchartrain.



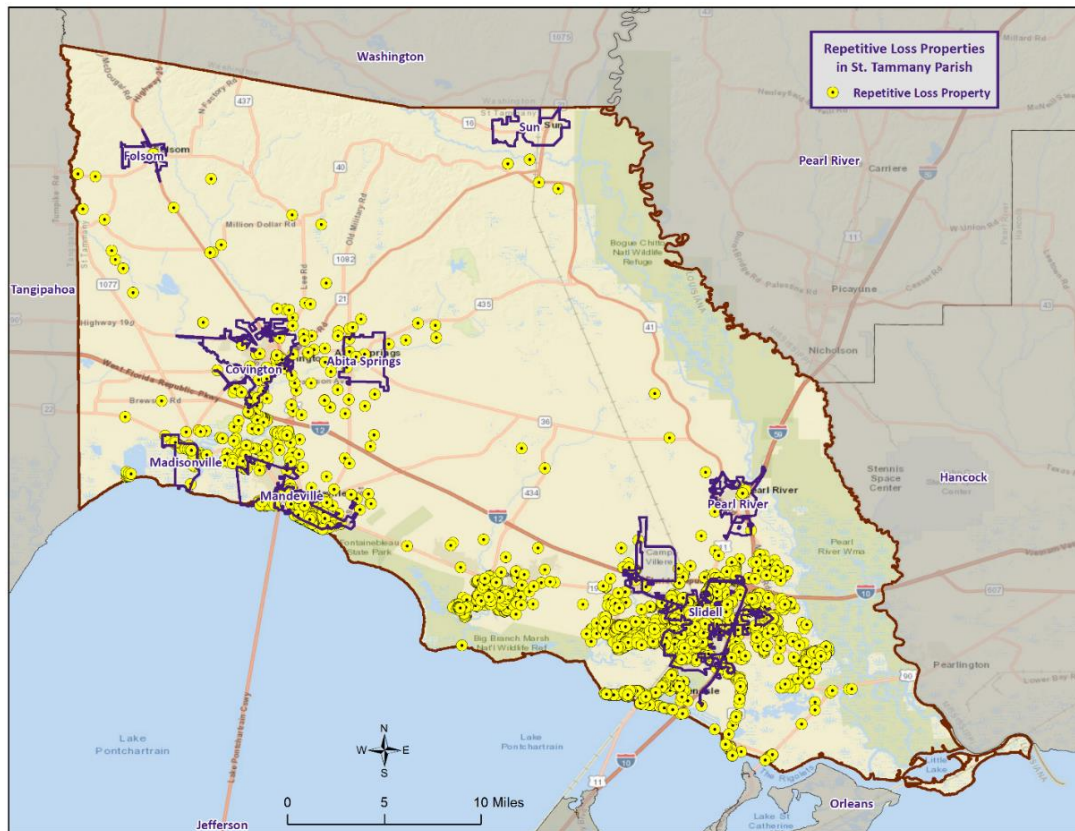


Figure 2-16: Repetitive Loss Properties in St. Tammany Parish.

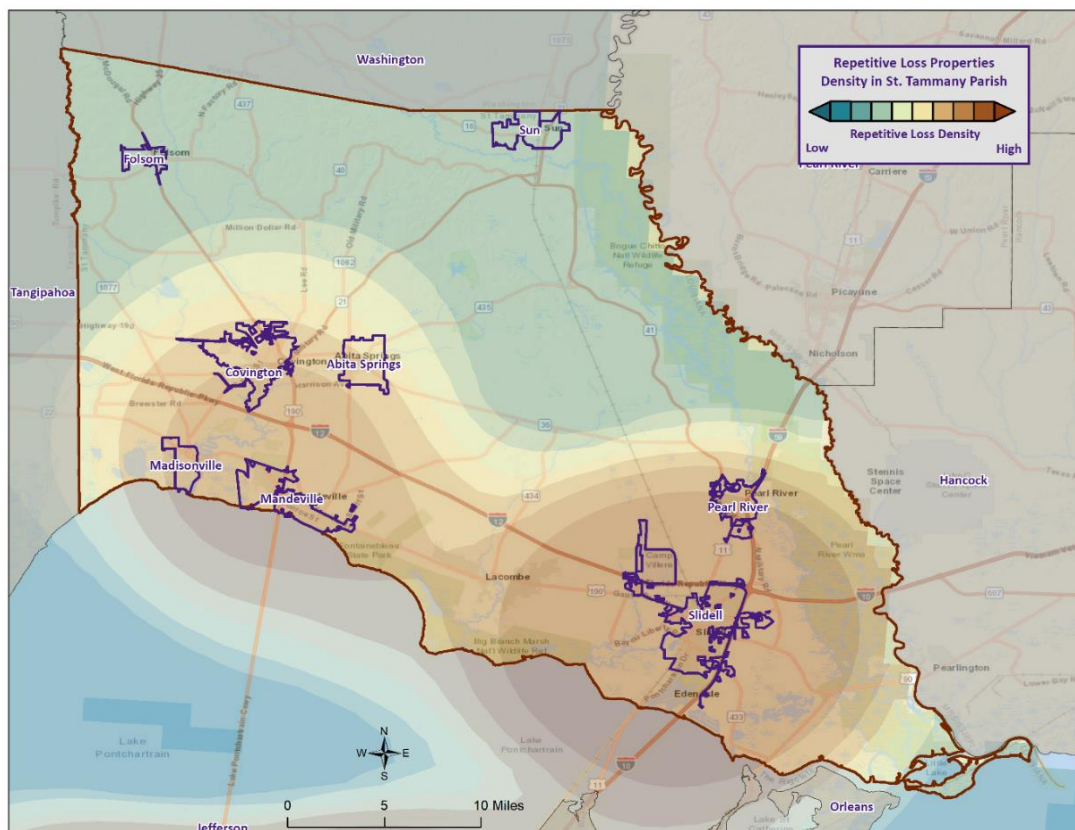


Figure 2-17: Repetitive Loss Property Densities in St. Tammany Parish.

*National Flood Insurance Program*

Flood insurance statistics indicate that St. Tammany Parish has 49,884 flood insurance policies with the NFIP, with total annual premiums of \$34,706,922. St. Tammany Parish and the jurisdictions of Abita Springs, Covington, Folsom, Madisonville, Mandeville, Pearl River, Slidell, and Sun are all participants in the NFIP. St. Tammany 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 St. Tammany Parish and its jurisdictions is provided in the tables to follow.

*Table 2-34: Summary of NFIP Policies for St. Tammany Parish.*

Location	No. of Insured Structures	Total Insurance Coverage Value	Annual Premiums Paid
St. Tammany Parish	37,915	\$11,525,201,900	\$23,565,295
Abita Springs	418	\$119,689,300	\$199,666
Covington	1,506	\$452,603,700	\$1,176,709
Folsom	12	\$3,257,000	\$6,220
Madisonville	321	\$85,426,600	\$508,898
Mandeville	3,140	\$931,254,900	\$2,248,811
Pearl River	167	\$48,345,600	\$79,397
Slidell	6,403	\$1,678,688,800	\$6,921,318
Sun	2	\$280,000	\$608
<b>Total</b>	<b>49,884</b>	<b>\$14,844,747,800</b>	<b>\$34,706,922</b>

*Table 2-35: Summary of Community Flood Maps for St. Tammany Parish.*

CID	Community Name	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Date Joined the NFIP	Tribal
225205#	St. Tammany Parish	12/31/1970	4/23/1971	4/21/1999	4/23/1971	No
220199#	Abita Springs	05/17/1974	5/17/1988	5/17/1988	5/17/1988	No
220200#	Covington	12/28/1973	11/19/1980	11/19/1980	11/19/1980	No
220285#	Folsom	7/18/1975	3/16/1982	3/16/1982 (M)	3/16/1982	No
220201#	Madisonville	3/22/1974	12/2/1980	3/16/1983	12/2/1980	No
220202#	Mandeville	6/28/1974	9/28/1979	5/16/2012	9/28/1979	No
220203#	Pearl River	5/24/1974	5/4/1988	5/4/1988	5/4/1988	No
220204#	Slidell	11/16/1973	12/16/1980	4/21/1999	12/16/1980	No
220205	Sun	8/30/1974	7/1/2013	7/1/2013 (L)	7/1/2013	No

According to the Community Rating System (CRS) list of eligible communities dated September 1, 2019, St. Tammany Parish and the jurisdictions of Covington, Mandeville, and Slidell all participate in the CRS program. The jurisdictions of Abita Springs, Madisonville, Pearl River, and Sun do not participate in the CRS program.

*Table 2-36: Summary of Community Flood Maps for St. Tammany Parish.*

CID	Community Name	CRS Entry Date	Current Effective Date	Current Class	% Discount for SFHA	% Discount for Non-SFHA	Status
225205#	St. Tammany Parish	10/1/1992	5/1/2011	7	15	5	C
220200#	Covington	10/1/2017	10/1/2017	9	5	5	C
220202#	Mandeville	10/1/1992	10/1/2018	6	20	10	C
220204#	Slidell	10/1/1992	5/1/2013	7	15	5	C

### *Threat to People*

Just as with property damage, depth and velocity are major factors in determining the threat posed to people by flooding. It takes very little depth or velocity for flood waters to become dangerous. A car will float in less than two feet of moving water, and can be swept downstream into deeper waters, trapping passengers within the vehicle. Victims of 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 St. Tammany Parish*

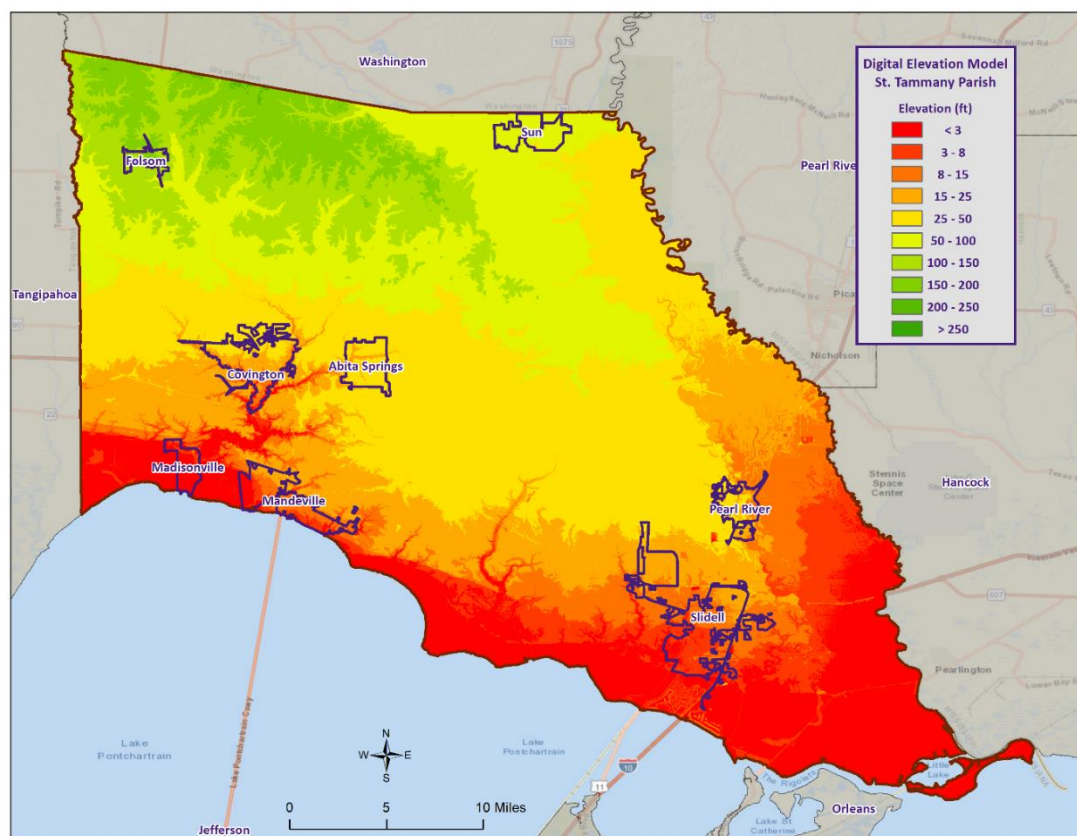
By definition, flooding is caused when an area receives more water than the drainage system can convey. The following is a synopsis of the types of flooding that St. Tammany Parish experiences.

**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 the Sabine River crests at flood stage levels, causing extensive flooding in low-lying areas.



*Figure 2-18: Elevation throughout St. Tammany Parish.*

The digital elevation model (DEM) in the figure above for St. Tammany Parish is instructive in visualizing where the low-lying and high risk areas are for the parish. The DEM shows the areas along the north shores of Lake Pontchartrain are relatively low with the elevation of all of Madisonville no greater than 3 feet (NAVD88), while large portions of Mandeville are less than 3 feet (NAVD88). The most southern portions of Slidell are 3 feet or less while the majority of Slidell sits on higher ground especially the northern portions of the city with elevations of 15 feet. The highest elevations in the parish are located in the northwestern area of the parish with elevation exceeding 200 feet just north of Folsom.

#### Location

St. Tammany Parish has experienced significant flooding in its history and can expect more in the future. St. Tammany Parish is susceptible to several different types of flooding due to its geographical location, including riverine, flash, and storm surge. Madisonville, Mandeville, and Slidell all sit on the north shore of Lake Pontchartrain making them susceptible to storm surge while areas such as Pearl River, Covington, and Madisonville are susceptible to riverine flooding as they are in close proximity to Tchefuncte River. The worst-case scenarios for the unincorporated areas of St. Tammany Parish, Slidell, Madisonville, and Mandeville are flood depths of approximately 18 feet. The interior portions of the parish including the incorporated areas of Pearl River and Covington can expect to experience flood depths of 5 to 7 feet; Abita Springs and Sun can expect flood depths of 8 to 12 feet; and Folsom flood depths of 1 to 2 feet.



The following flood zone maps display the 100- and 500-year flood zones for St. Tammany Parish:

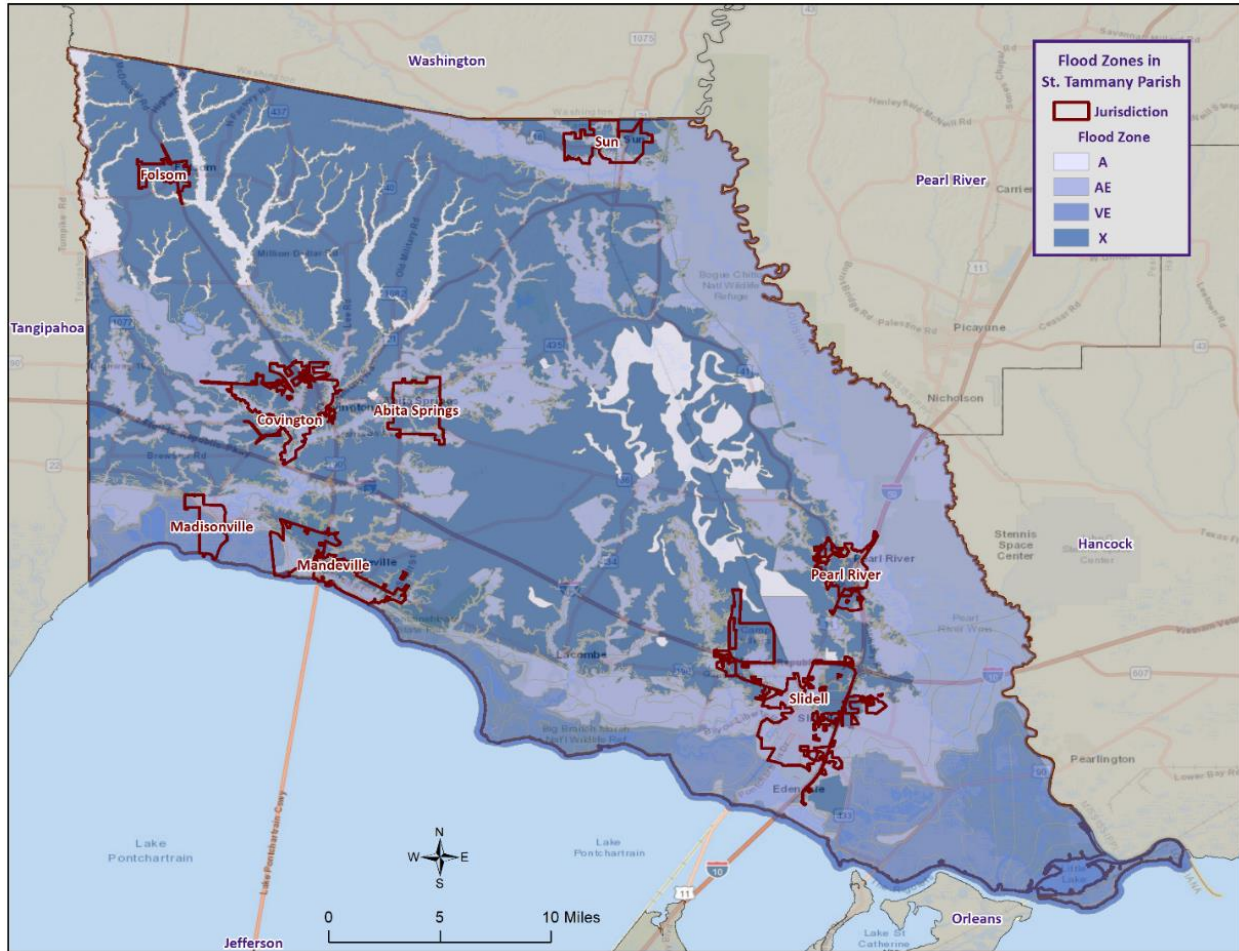
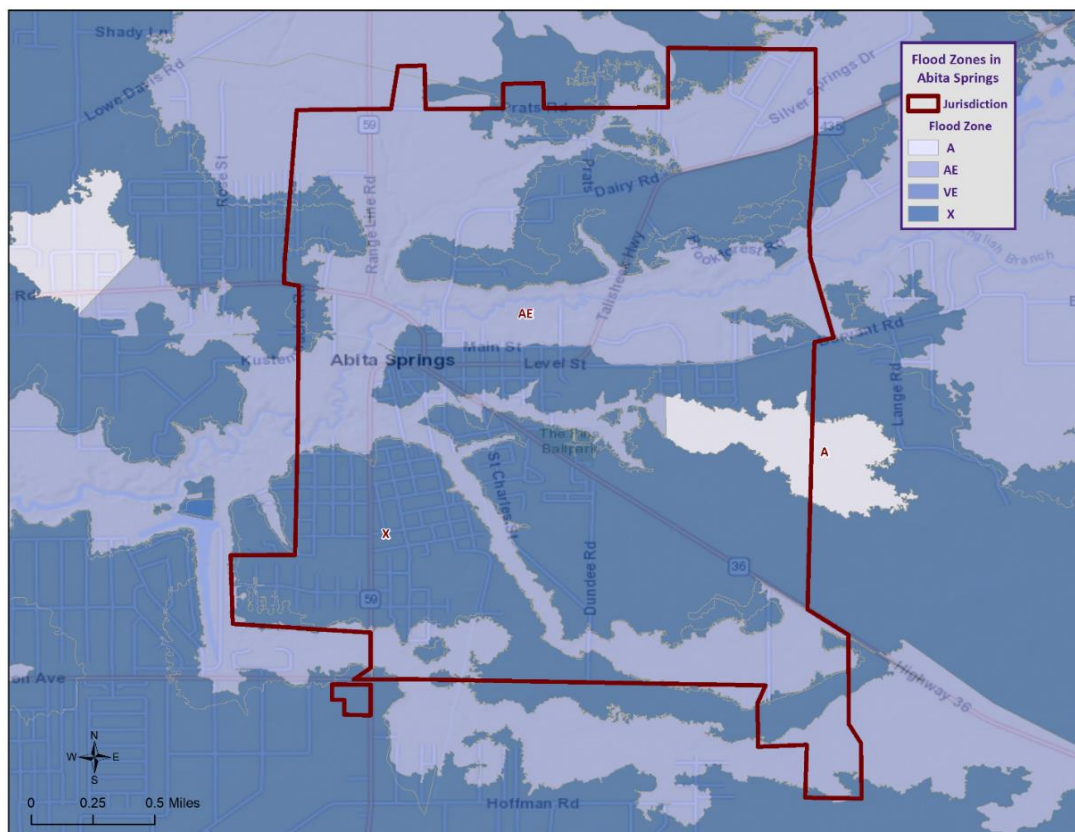
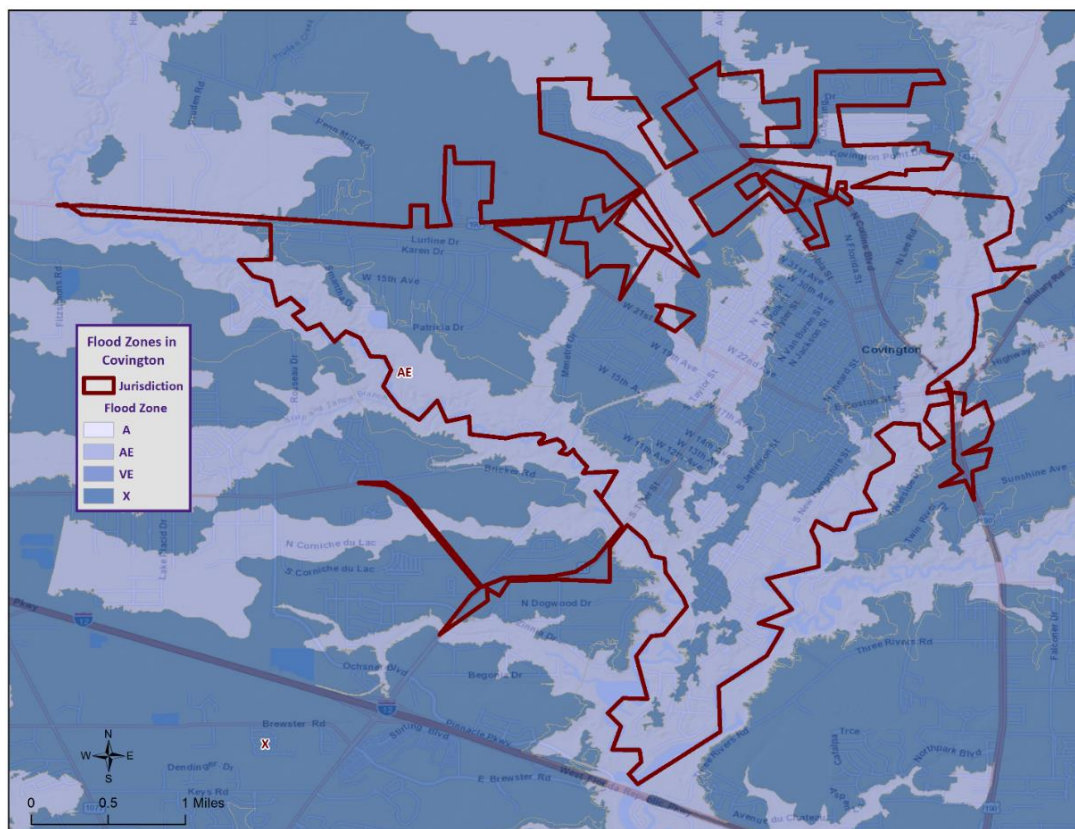


Figure 2-19: St. Tammany Parish Areas within the Flood Zones.



*Figure 2-20: Abita Springs Areas within the Flood Zones.*



*Figure 2-21: Covington Areas within the Flood Zones.*



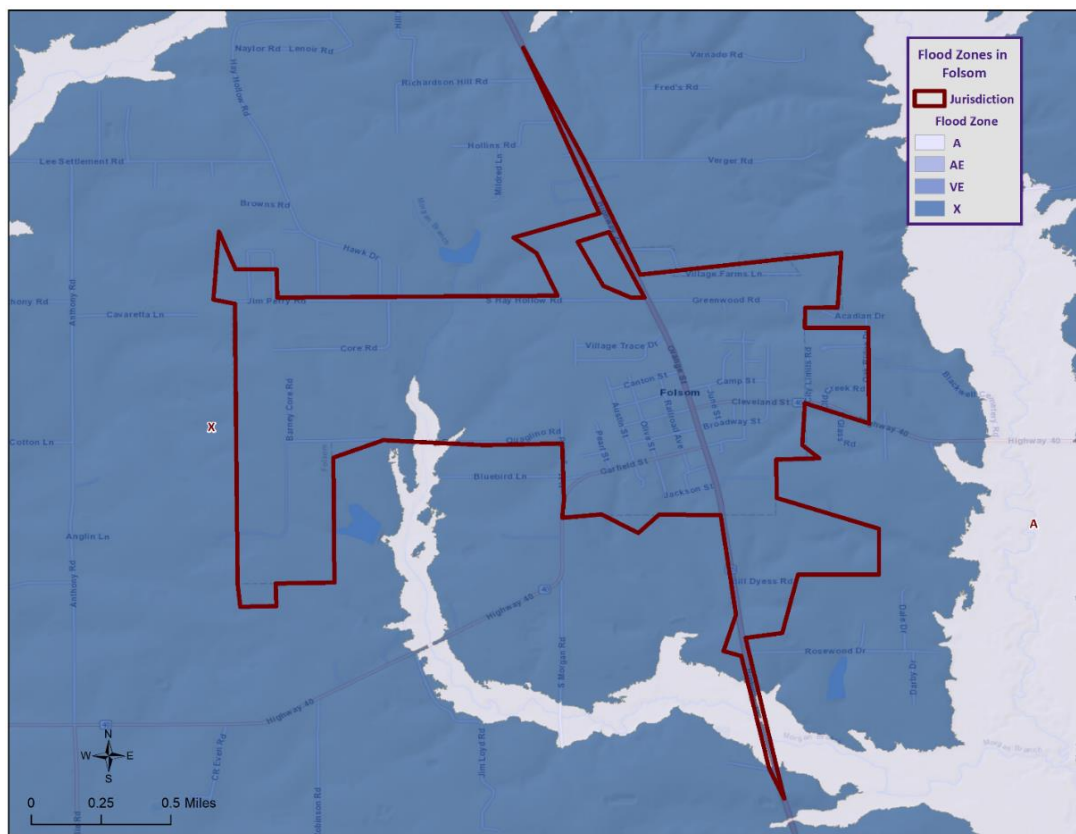


Figure 2-22: Folsom Areas within the Flood Zones.

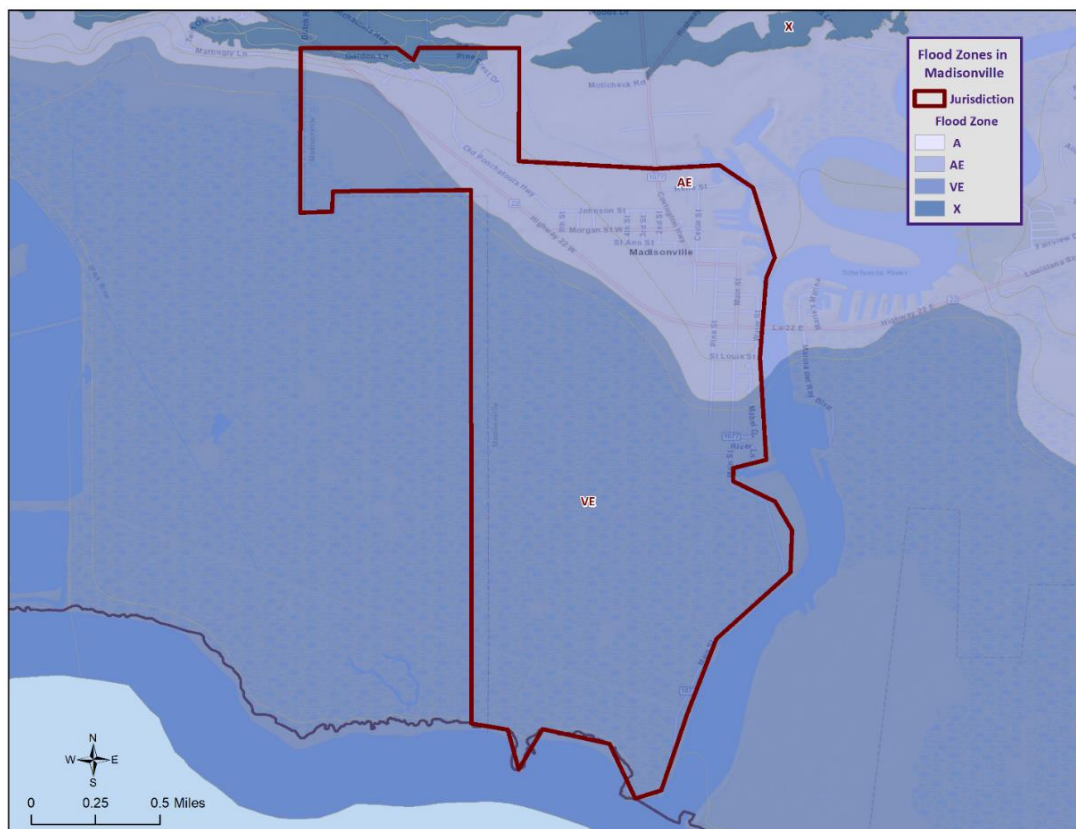


Figure 2-23: Madisonville Areas within the Flood Zones.

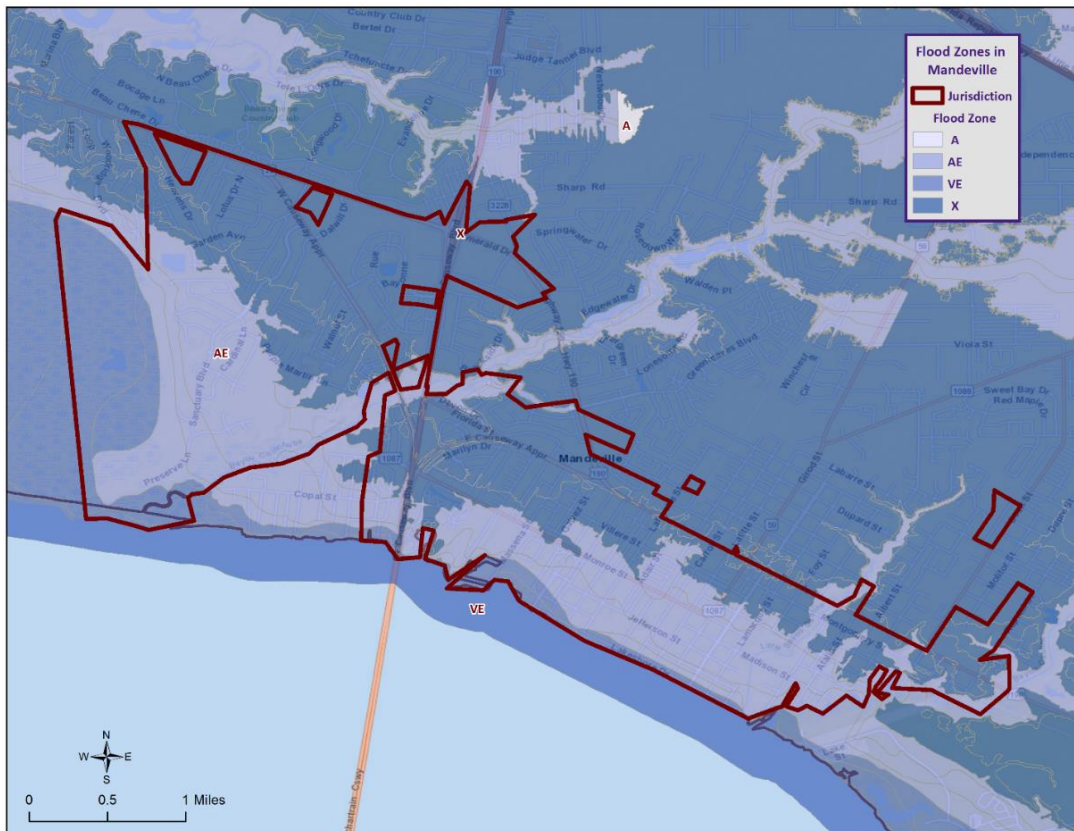


Figure 2-24: Mandeville Areas within the Flood Zones.

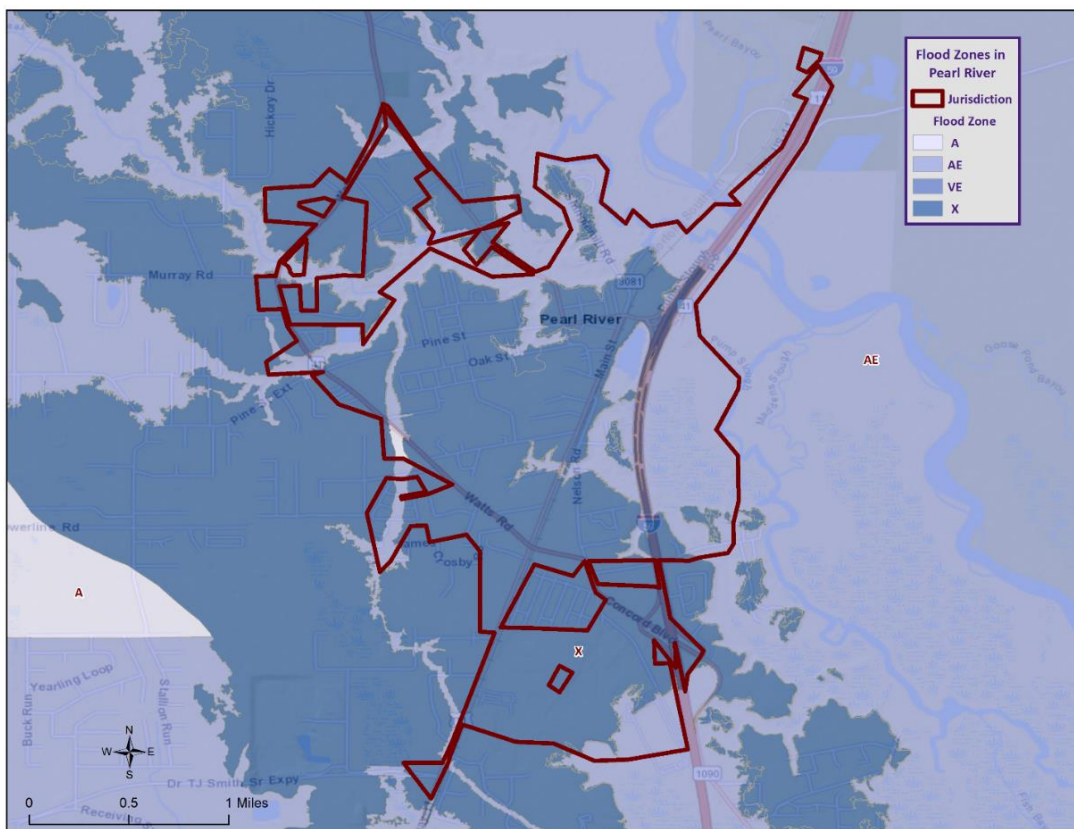


Figure 2-25: Pearl River Areas within the Flood Zones.



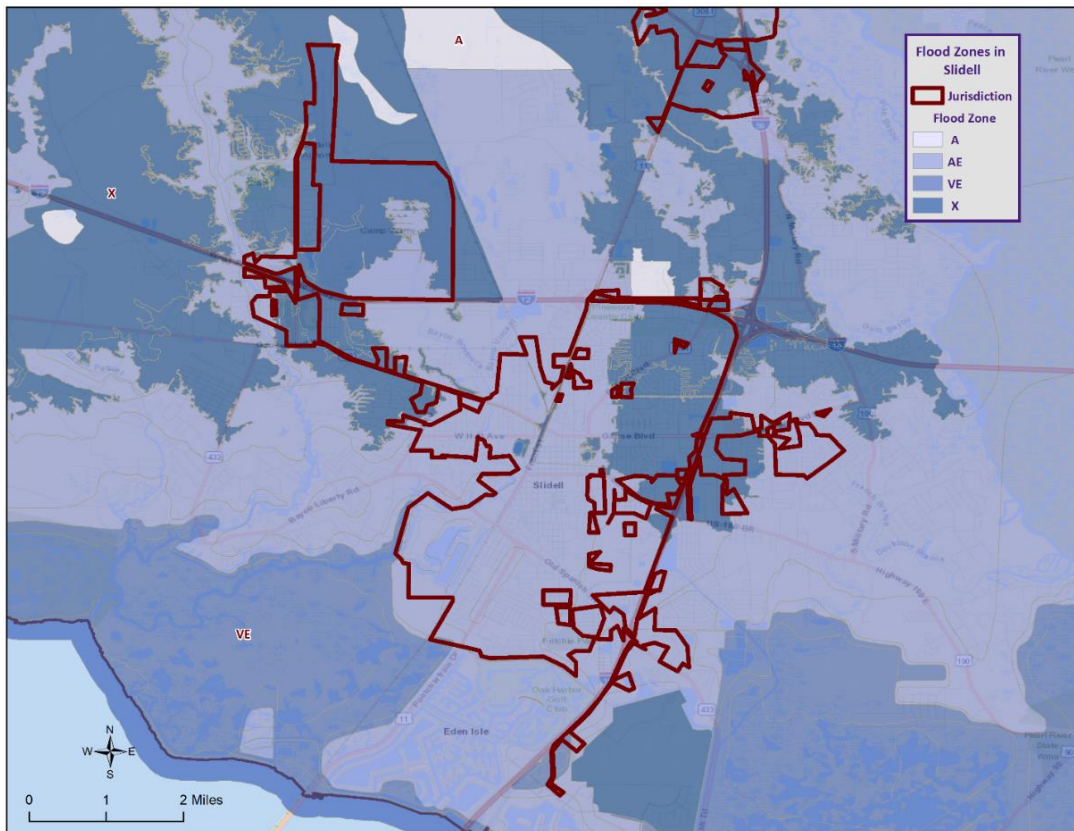


Figure 2-26: Slidell Areas within the Flood Zones.

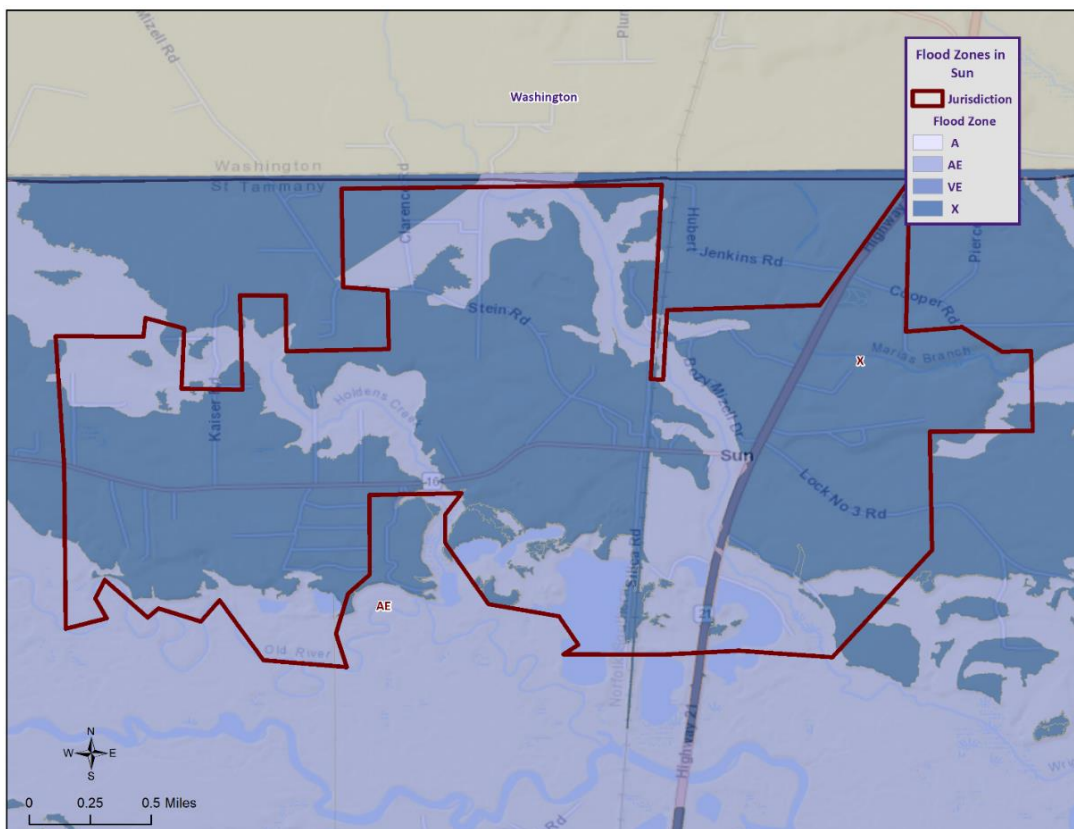


Figure 2-27: Sun Areas within the Flood Zones.

*Previous Occurrences / Extents*

Historically, there have been 74 flooding events that have caused significant flooding in St. Tammany Parish and its jurisdictions between 1989 and 2019. Below is a brief synopsis of the flooding event which occurred since the last St. Tammany Parish HMP Update in 2015.

*Table 2-37: Historical Floods in St. Tammany Parish with Locations since the 2015 St. Tammany Parish HMP Update.*

Date	Extents	Type of Flooding	Estimated Damages	Location
March 10, 2016	Widespread rainfall caused numerous road closings due to flooding. A total of 625 structures within the parish were flooded.	Flash Flood	\$4,000,000	PARISHWIDE
March 11, 2016	Water was reported entering home in the Magnolia Gardens Subdivision in Covington. Flooding related to riverine flooding from the Bogue Falaya River.	Flash Flood	\$800,00	COVINGTON
August 12, 2016	Six to 12 inches of rainfall fell in one day causing significant flooding throughout the parish. Approximately 100 homes and business suffered varying degrees of damage due to flooding.	Flood	\$3,230,000	PARISHWIDE
April 3, 2017	Numerous streets were reported impassable due to 1 to 1.5 feet of standing water from heavy rain in parts of Slidell.	Flash Flood	\$0	SLIDELL
April 30, 2017	Strong onshore flow resulted in tides rising approximately 2 feet above normal. This caused flooding across the Mandeville lake front during high tide.	Coastal Flood	\$0	MANDEVILLE
December 28, 2018	Storms caused flooding on Louisiana Highway 1077 and Brewster Road.	Flood	\$0	UNINCORPORATED AREA
August 19, 2019	Thunderstorms during the late afternoon cause significant street flooding in the city of Slidell.	Flash Flood	\$0	SLIDELL

*Frequency / Probability*

The NCEI Storm Events Database identified 74 flooding events within the St. Tammany Parish planning area since 1989. The table below shows the probability and return frequency for each jurisdiction.

*Table 2-38: Annual Flood Probabilities for St. Tammany Parish.*

Jurisdiction	Annual Probability	Return Frequency
St. Tammany Parish (Unincorporated)	100%	1 to 2 events per year
Abita Springs	3%	1 event every 30 years
Covington	10%	1 event every 10 years
Folsom	13%	1 event every 7 – 8 years
Madisonville	20%	1 event every 5 years
Mandeville	40%	1 event every 3 – 5 years
Pearl River	3%	1 event every 30 years
Slidell	83%	1 event every 1 – 2 years
Sun	3%	1 event every 30 years

Based on historical record, the overall flooding probability for the entire St. Tammany Parish Planning area is 100% with 74 events occurring over a 30-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 2-39* shows the total economic losses that would result from this occurrence.

*Table 2-39: Estimated Losses in St. Tammany Parish from a 100-year Flood Event.  
(Source: Hazus)*

Jurisdiction	Estimated Total Losses from 100-Year Flood Event
<b>St. Tammany Parish (Unincorporated Area)</b>	\$6,394,872,000
<b>Abita Springs</b>	\$26,613,000
<b>Covington</b>	\$203,110,000
<b>Folsom</b>	\$56,000
<b>Madisonville</b>	\$99,869,000
<b>Mandeville</b>	\$262,928,000
<b>Pearl River</b>	\$23,038,000
<b>Slidell</b>	\$1,143,694,000
<b>Sun</b>	\$7,458,000
<b>Total</b>	<b>\$8,161,638,000</b>

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

*Table 2-40: Estimated 100-year Flood Losses for St. Tammany Parish by Sector.*

*(Source: Hazus)*

<b>St. Tammany Parish (Unincorporated)</b>	<b>Estimated Total Losses from 100-Year Flood Event</b>
<b>Agricultural</b>	\$5,164,023,000
<b>Commercial</b>	\$832,391,000
<b>Government</b>	\$241,964,000
<b>Industrial</b>	\$14,329,000
<b>Religious / Non-Profit</b>	\$85,766,000
<b>Residential</b>	\$27,777,000
<b>Schools</b>	\$28,622,000
<b>Total</b>	<b>\$6,394,872,000</b>

*Table 2-41: Estimated 100-year Flood Losses for Abita Springs by Sector.*

*(Source: Hazus)*

<b>Abita Springs</b>	<b>Estimated Total Losses from 100-Year Flood Event</b>
<b>Agricultural</b>	\$21,340,000
<b>Commercial</b>	\$2,233,000
<b>Government</b>	\$1,900,000
<b>Industrial</b>	\$320,000
<b>Religious / Non-Profit</b>	\$345,000
<b>Residential</b>	\$475,000
<b>Schools</b>	\$0
<b>Total</b>	<b>\$26,613,000</b>

*Table 2-42: Estimated 100-year Flood Losses for Covington by Sector.*

*(Source: Hazus)*

<b>Covington</b>	<b>Estimated Total Losses from 100-Year Flood Event</b>
<b>Agricultural</b>	\$152,376,000
<b>Commercial</b>	\$37,625,000
<b>Government</b>	\$4,100,000
<b>Industrial</b>	\$610,000
<b>Religious / Non-Profit</b>	\$3,999,000
<b>Residential</b>	\$190,000
<b>Schools</b>	\$4,210,000
<b>Total</b>	<b>\$203,110,000</b>



*Table 2-43: Estimated 100-year Flood Losses for Folsom by Sector.  
(Source: Hazus)*

<b>Folsom</b>	<b>Estimated Total Losses from 100-Year Flood Event</b>
Agricultural	\$45,000
Commercial	\$0
Government	\$0
Industrial	\$0
Religious / Non-Profit	\$5,000
Residential	\$0
Schools	\$6,000
<b>Total</b>	<b>\$56,000</b>

*Table 2-44: Estimated 100-year Flood Losses for Madisonville by Sector.  
(Source: Hazus)*

<b>Madisonville</b>	<b>Estimated Total Losses from 100-Year Flood Event</b>
Agricultural	\$63,999,000
Commercial	\$23,100,000
Government	\$4,222,000
Industrial	\$0
Religious / Non-Profit	\$3,100,000
Residential	\$3,336,000
Schools	\$2,112,000
<b>Total</b>	<b>\$99,869,000</b>

*Table 2-45: Estimated 100-year Flood Losses for Mandeville by Sector.  
(Source: Hazus)*

<b>Mandeville</b>	<b>Estimated Total Losses from 100-Year Flood Event</b>
Agricultural	\$187,210,000
Commercial	\$47,768,000
Government	\$15,431,000
Industrial	\$918,000
Religious / Non-Profit	\$5,717,000
Residential	\$42,000
Schools	\$5,842,000
<b>Total</b>	<b>\$262,928,000</b>

*Table 2-46: Estimated 100-year Flood Losses for Pearl River by Sector.*  
(Source: Hazus)

Pearl River	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$16,811,000
Commercial	\$3,444,000
Government	\$1,911,000
Industrial	\$71,000
Religious / Non-Profit	\$801,000
Residential	\$0
Schools	\$0
<b>Total</b>	<b>\$23,038,000</b>

*Table 2-47: Estimated 100-year Flood Losses for Slidell by Sector.*  
(Source: Hazus)

Slidell	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$830,761,000
Commercial	\$218,642,000
Government	\$41,710,000
Industrial	\$3,162,000
Religious / Non-Profit	\$27,336,000
Residential	\$10,732,000
Schools	\$11,351,000
<b>Total</b>	<b>\$1,143,694,000</b>

*Table 2-48: Estimated 100-year Flood Losses for Sun by Sector.*  
(Source: Hazus)

Sun	Estimated Total Losses from 100-Year Flood Event
Agricultural	\$6,100,000
Commercial	\$596,000
Government	\$762,000
Industrial	\$0
Religious / Non-Profit	\$0
Residential	\$0
Schools	\$0
<b>Total</b>	<b>\$7,458,000</b>

*Threat to People*

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

*Table 2-49: 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
<b>St. Tammany Parish (Unincorporated)</b>	179,542	81,565	45.4%
<b>Abita Springs</b>	2,365	813	34.4%
<b>Covington</b>	8,765	4,619	52.7%
<b>Folsom</b>	716	119	16.6%
<b>Madisonville</b>	748	688	92.0%
<b>Mandeville</b>	11,560	5,867	50.8%
<b>Pearl River</b>	2,506	944	37.7%
<b>Slidell</b>	27,068	23,435	86.6%
<b>Sun</b>	470	132	28.1%
<b>Total</b>	<b>233,740</b>	<b>118,182</b>	<b>50.6%</b>

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

*Table 2-50: Vulnerable Populations Susceptible to a 100-year Flood Event in St. Tammany Parish.*

*(Source: Hazus)*

St. Tammany Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
<b>Number in Hazard Area</b>	81,565	45.4%
<b>Persons Under 5 Years</b>	5,318	6.5%
<b>Persons Under 18 Years</b>	15,669	19.2%
<b>Persons 65 Years and Over</b>	10,342	12.7%
<b>White</b>	68,172	83.6%
<b>Minority</b>	13,393	16.4%

*Table 2-51: Vulnerable Populations Susceptible to a 100-year Flood Event in Abita Springs.  
(Source: Hazus)*

Abita Springs		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	813	34.4%
Persons Under 5 Years	49	6.1%
Persons Under 18 Years	142	17.4%
Persons 65 Years and Over	107	13.2%
White	748	92.0%
Minority	65	8.0%

*Table 2-52: Vulnerable Populations Susceptible to a 100-year Flood Event in Covington.  
(Source: Hazus)*

Covington		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	4,619	52.7%
Persons Under 5 Years	292	6.3%
Persons Under 18 Years	812	17.6%
Persons 65 Years and Over	691	15.0%
White	3,592	77.8%
Minority	1,027	22.2%

*Table 2-53: Vulnerable Populations Susceptible to a 100-year Flood Event in Folsom.  
(Source: Hazus)*

Folsom		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	119	16.6%
Persons Under 5 Years	10	8.4%
Persons Under 18 Years	18	14.8%
Persons 65 Years and Over	15	12.4%
White	87	73.5%
Minority	32	26.5%

*Table 2-54: Vulnerable Populations Susceptible to a 100-year Flood Event in Madisonville.  
(Source: Hazus)*

Madisonville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	688	92.0%
Persons Under 5 Years	44	6.4%
Persons Under 18 Years	107	15.5%
Persons 65 Years and Over	102	14.8%
White	598	86.9%
Minority	90	13.1%

*Table 2-55: Vulnerable Populations Susceptible to a 100-year Flood Event in Mandeville.  
(Source: Hazus)*

Mandeville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	5,867	50.8%
Persons Under 5 Years	302	5.1%
Persons Under 18 Years	1,151	19.6%
Persons 65 Years and Over	948	16.2%
White	5,313	90.6%
Minority	554	9.5%

*Table 2-56: Vulnerable Populations Susceptible to a 100-year Flood Event in Pearl River.  
(Source: Hazus)*

Pearl River		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	944	37.7%
Persons Under 5 Years	67	7.1%
Persons Under 18 Years	160	16.9%
Persons 65 Years and Over	128	13.6%
White	879	93.1%
Minority	65	6.9%



*Table 2-57: Vulnerable Populations Susceptible to a 100-year Flood Event in Slidell.  
(Source: Hazus)*

Slidell		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	23,435	86.6%
Persons Under 5 Years	1,652	7.1%
Persons Under 18 Years	4,317	18.4%
Persons 65 Years and Over	3,276	14.0%
White	17,799	76.0%
Minority	5,636	24.1%

*Table 2-58: Vulnerable Populations Susceptible to a 100-year Flood Event in Sun.  
(Source: Hazus)*

Sun		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	132	28.1%
Persons Under 5 Years	6	4.5%
Persons Under 18 Years	25	19.2%
Persons 65 Years and Over	16	12.3%
White	110	83.0%
Minority	22	17.0%

#### *Vulnerability*

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

## Fog

Fog forms near the ground when water vapor condenses into tiny liquid water droplets that remain suspended in the air. Many different processes can lead to the formation of fog, but the main factor is saturated air. Two ways that air can become saturated are by cooling it to its dew point temperature or by evaporating moisture into it to increase its water vapor content. Although most fog, by itself, is not a hazard because it does not actually apply destructive forces, the interaction between humans and fog can be a dangerous situation, sometimes resulting in disastrous consequences.

Fog has consistently impacted society, and in particular the transportation sector – sometimes with deadly consequences. The primary risks from fog involve the dangers of traveling under conditions of limited visibility. Although some modes of transportation, such as aircraft, are well regulated, other modes, including simple pedestrian travel, may involve risks that have not been properly accounted for by those who are focused merely on reaching their destination as quickly as possible. Localized fog is especially dangerous, as drivers can be caught by surprise. Sinkholes are areas of ground—varying in size from a few square feet to hundreds of acres, and reaching in depth from 1 to more than 100 ft.—with no natural external surface drainage. Sinkholes are usually found in karst terrain—that is, areas where limestone, carbonate rock, salt beds, and other water-soluble rocks lie below the Earth’s surface. Karst terrain is marked by the presence of other uncommon geologic features such as springs, caves, and dry streambeds that lose water into the ground. In general, sinkholes form gradually (in the case of cover subsidence sinkholes), but they can also occur suddenly (in the case of cover-collapse sinkholes).

### *Location*

Fog, in general, is a climatological based hazard and has the same approximate probability of occurring in St. Tammany and its jurisdictions as all adjacent parishes. Because fog has a similar probability of occurring anywhere within the St. Tammany Parish planning area, all jurisdictions are equally at risk for fog. Based on previous conditions in St. Tammany Parish and its jurisdiction, the worse-case scenario is visibility less than 0.12 miles.

### *Previous Occurrences / Extent*

Historically, there has been one significant fog event that has occurred within the boundaries of St. Tammany Parish since 1989. There have been no significant fog events which have occurred within the boundaries of St. Tammany Parish or its jurisdictions since the 2015 St. Tammany Parish HMP Update.

### *Frequency / Probability*

Based on previous occurrences of one significant fog event in 30 years, the probability of significant fog event occurrence in St. Tammany Parish and its jurisdictions in any given year is calculated at 3%.

### *Estimated Potential Losses*

There have been no fog events which have occurred within the past 30 years that have caused damage to property. Additionally, there have been no fatalities and two injuries due to fog in the past 30 years. While fog does not directly impact infrastructure or cause loss of life/injuries, it does have the potential to impact movement of residents throughout the parish by reducing visibility which leads to the closure of roadways, causeways, and bridges.

### *Vulnerability*

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

### Levee Failure

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

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

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

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

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

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 St. Tammany Parish from flooding, particularly floods caused by tropical cyclones. Several communities in the southeastern portion of the parish are protected by levees. There are currently five levee alignments that exist within the parish:

- Kingspoint Ring Levees
- Oak Harbor Ring Levee
- Oak Harbor Ring System
- South Slidell at Yester Oaks
- Voters Road Levee

These levees are tested anytime a high water event such as a tropical cyclone or heavy rain storm occurs. The levees located in St. Tammany Parish are shown in the following figures.

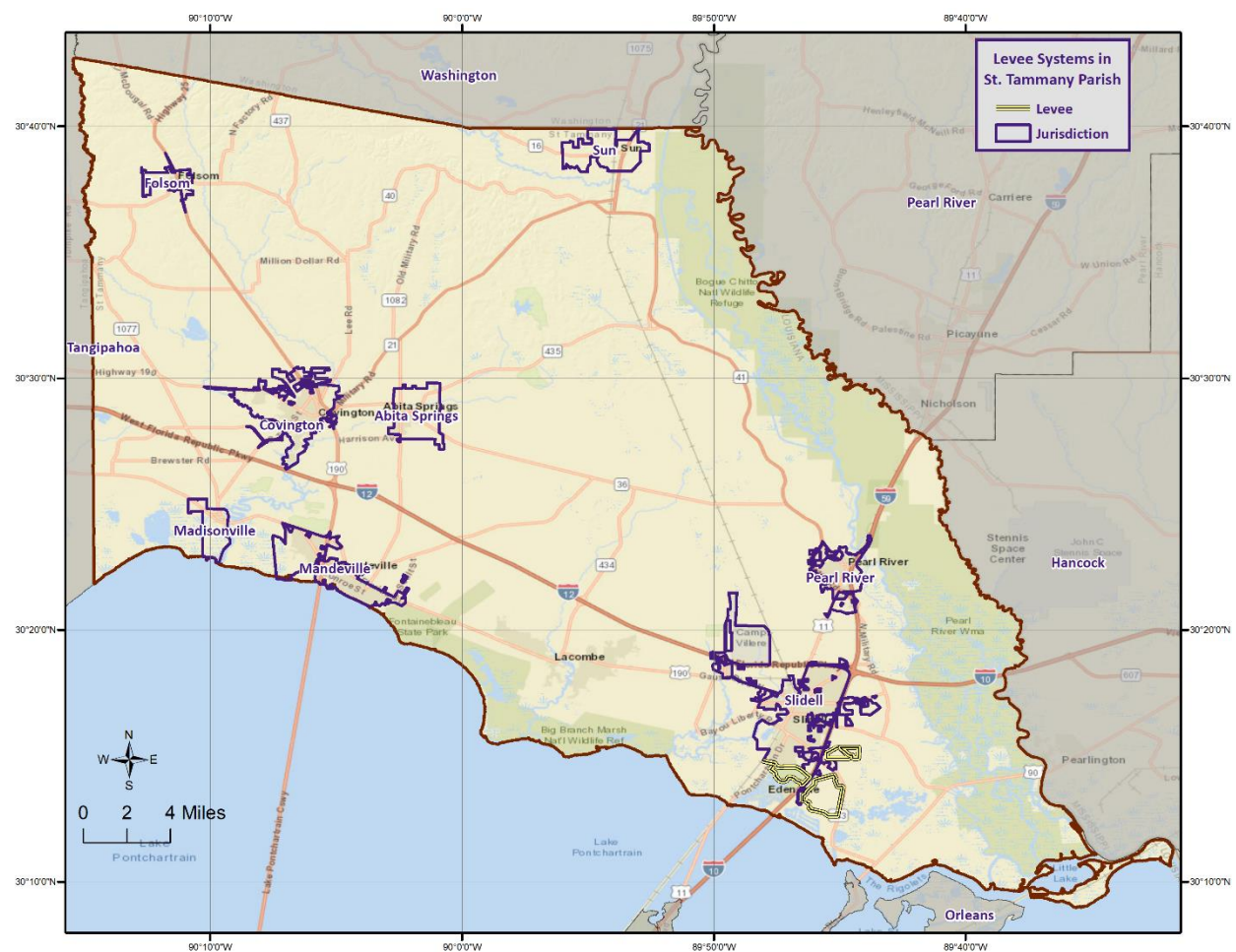


Figure 2-28: Levee Systems in St. Tammany Parish.



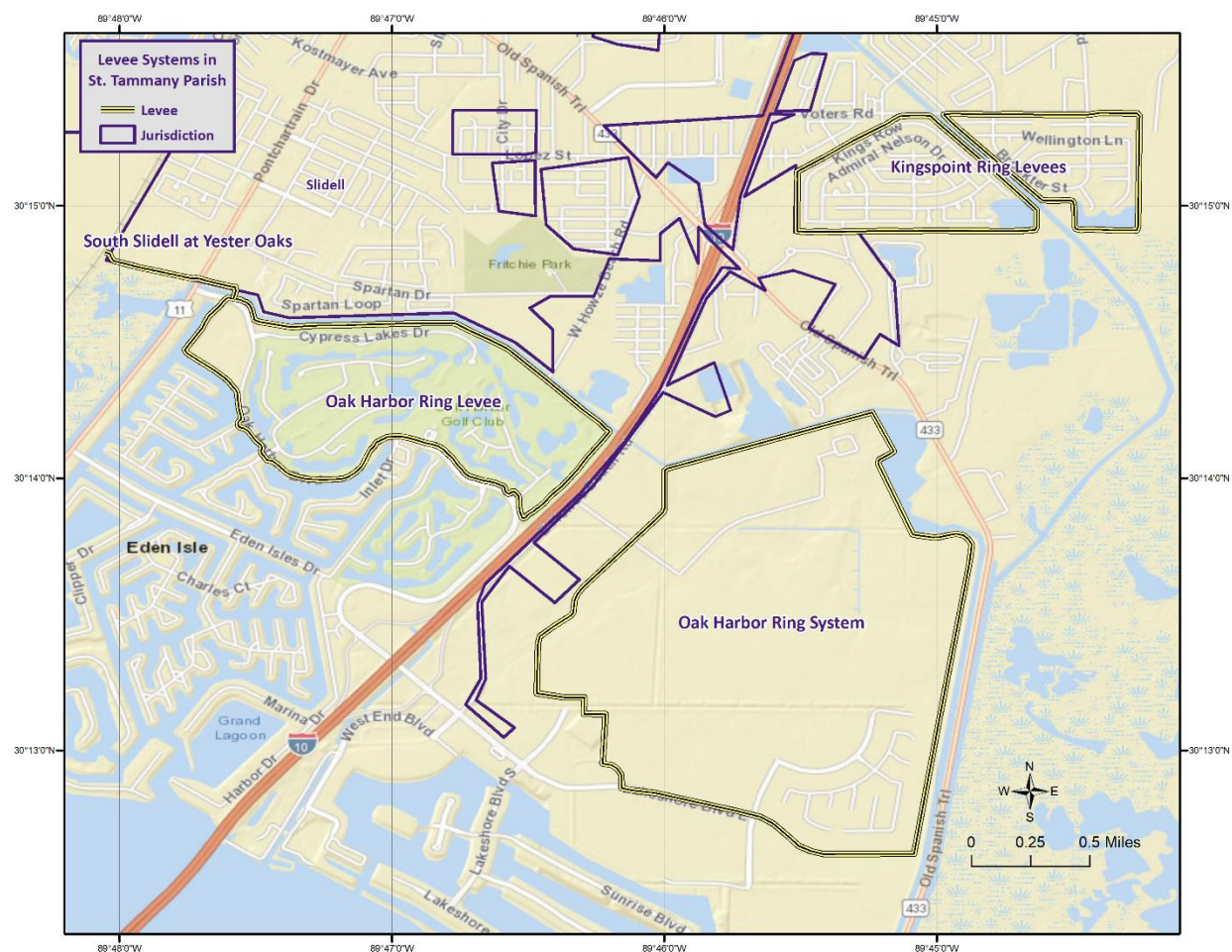


Figure 2-29: Levee Systems in the Unincorporated Areas of St. Tammany Parish.

#### 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 2015 HMP Update, there has been no flooding event due to levee failure in St. Tammany Parish. As a worst-case scenario, the unincorporated area of St. Tammany Parish could expect to experience flood depths of 10 to 20 feet in the event of a levee failure.

#### Frequency / Probability

It is nearly impossible to predict and model levee failure and its impacts on St. Tammany 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 St. Tammany Parish. No levee systems are located in or near the jurisdictions of St. Tammany Parish; therefore, there is no risk to them in the event of a levee failure.

#### Estimated Potential Losses

Determining the annualized loss as a result of levee failure is difficult in St. Tammany Parish due to availability of data on past levee failure events. The National Levee Database (NLD) was utilized to determine the levee systems within St. Tammany 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 table on the next page provides an extensive list of the levee systems in St. Tammany Parish with the risk associated with each system.



*Table 2-59: Levee Systems and Risk Associated with each System in St. Tammany Parish and Surrounding Parishes.*

*(Source: National Levee Database)*

System	Length (Miles)	People at Risk	Structures at Risk	Property Value at Risk	Overall Risk
Kingspoint Ring Levees	2.32	2,016	702	\$235M	Not Screened
Oak Harbor Ring Levee	4.22	905	276	\$145M	Not Screened
Oak Harbor Ring System	5.89	60	4	\$1.05M	Not Screened
South Slidell at Yester Oaks	0.56	2,051	739	\$360M	Not Screened
Voters Road Levee	2.17	1,298	344	\$114M	Not Screened

#### *Vulnerability*

See Appendix C for parish and municipality building exposure to levee failures.

### Termites

Termites are small pale colored insects that live off of wood and wooden structures at or near the ground. These creatures are similar to ants as they both live in colonies, they both have workers that gather and collect food, and they both have a queen that is in charge of the colony. Queen termites can lay upwards of 10,000 eggs per year and the worker termites are responsible for maintaining and caring for these eggs.

Termites tend to live close to the ground and near areas of moisture and sources of food or wood. Their role in nature is to recycle wood. They can cause significant damage to any wooden structure if the conditions are favorable for a termite colony's development. There are two types of termites that live in southeastern Louisiana: drywood termites and subterranean termites. Drywood termites live in the wood they are ingesting and do not require soil and moisture. Subterranean termites require soil and moisture to survive. They will carry the soil and moisture with them into the wood they are infesting. Mud tubes are created and lead from the colony's home to the infested wood in order to supply the area with moisture and soil.

The Formosan termite is a species of the subterranean termite that are very aggressive. They create the largest colonies of any termites in North America and can cause extensive damage in a short time. To reach food and water, Formosan termites can chew through materials such as thin sheets of soft metals, rubber, stucco, and seals on water lines.

The Formosan termite was originally introduced into the New Orleans area and other coastal areas just after World War II. By the time it was identified in 1966, the insect was firmly entrenched into the local environment. Because this termite has no natural predators in the area, it is free to breed and spread without control.

### Location

The main concentration of termites occurs in southeastern Louisiana, specifically, those areas south of Interstates 10 and 12 making the communities of Lacombe, Slidell, Madisonville, and Mandeville a high risk for termite infestations. However, termites are not contained to these areas alone and they continue to spread throughout the parish making the entire parish and its jurisdictional areas susceptible to this hazard.

### Previous Occurrences / Extents

Residential buildings comprise the majority of building stock in St. Tammany Parish making it difficult to summarize previous occurrences involving termites. Because termite treatment is handled by the homeowner, databases such as SHELDS do not track the extent of occurrences. It is important to note that Hurricane Katrina caused a massive swarming season which increased colonization of termites throughout the entire parish.

### Frequency / Probability

The entire parish is susceptible to termite infestations. Because Formosan termites are considered an invasive species with no natural predators, it is calculated that the probability of a termite occurrence in St. Tammany Parish in any given year is 100%.

### Estimated Potential Losses

Any structure can have a termite problem, even brick structures on slab foundations since all buildings have a wooden component used in construction. Therefore, every building in St. Tammany Parish is subject to termite damage. Louisiana State University's Agricultural Center reports that Formosan

termites can cause major structural damage to a home in a six-month time interval and nearly complete destruction of a home in two years if untreated. The following table presents an analysis of building exposure that are susceptible to termites by general occupancy type for St. Tammany Parish. The LSU Agricultural Center also estimates that in Louisiana termites inflict approximately \$500,000,000 in damages annually. To assess an annual cost to each jurisdiction in St. Tammany Parish, the estimated annual termite damages in Louisiana was assessed proportionally to the multiple jurisdictions in St. Tammany Parish which can be seen in the tables below. Based on Louisiana's annual losses to termite damage, the total estimated losses for St. Tammany parish is \$26, 057,311.

*Table 2-60: Building Exposure by General Occupancy Type for Termites in St. Tammany Parish.  
(Source: Hazus)*

Building Exposure by General Occupancy Type for Termites Exposure Types (\$1,000)						
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education
19,324,932	2,920,731	517,160	62,975	297,172	121,172	160,320

*Table 2-61: Estimated Annual Losses for Termites in St. Tammany Parish.*

Termite Estimated Annual Potential Losses				
Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
\$667,177	\$8,788	\$32,571	\$2,661	\$2,780

*Table 2-62: Estimated Annual Losses for Termites in St. Tammany Parish.*

Termite Estimated Annual Potential Losses			
Mandeville	Pearl River	Slidell	Sun
\$42,957	\$9,312	\$100,585	\$1,747

There have been no reported injuries or deaths as a direct result to termites in St. Tammany Parish and its jurisdictions.

#### *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 tables on the next page display the TORRO Hailstorm Intensity Scale along with a spectrum of hailstone diameters and their everyday equivalents.



Table 2-63: 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 2-64: 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 2-65*.

*Table 2-65: High Winds Categorized by Source, Frequency, and Duration.  
(Source: Making Critical Facilities Safe from High Wind, FEMA)*

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

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

*Table 2-66* 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 2-66: 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 2-67: Lightning Activity Level (LAL) Grids.*

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

## Hazard Profile

### Hailstorms

#### Location

Hailstorms are a meteorological phenomenon that can occur anywhere. Therefore, the entire planning area for St. Tammany Parish and its jurisdictions are equally at risk for hailstorms. The worst-case scenario for hailstorms is hail up to a 3" diameter.

#### Previous Occurrences / Extents

Since 1989, there have been 74 hail incidents in St. Tammany Parish. Hailstorm diameters have ranged from one inch to three inches per the National Climatic Data Center since 1950. The most frequently recorded hail sizes have been 1.75-inch in diameter. There have been seven significant hailstorm events in St. Tammany Parish since the 2015 St. Tammany Parish HMP update. Below is a brief synopsis of those events.

*Table 2-68: Previous Occurrences for Hailstorm Events since the 2015 Hazard Mitigation Plan Update.  
(Source: NCEI Storm Events Database)*

Date	Hail Size (inches)	Property Damage	Crop Damage
December 13, 2016	1	\$0	\$0
January 21, 2017	0.75	\$0	\$0
February 7, 2017	2	\$0	\$0
March 25, 2017	1.75	\$0	\$0
March 25, 2017	1.75	\$0	\$0
March 11, 2018	1	\$0	\$0
May 18, 2018	0.75	\$0	\$0

#### Frequency

Hailstorms occur frequently within St. Tammany Parish with an annual chance of occurrence calculated at 100% based on the records for the past 30 years (1989-2019). *Figure 2-30* displays the density of hail storm events in St. Tammany Parish, while *Figure 2-31* provides an overview of hailstorm size based on location.



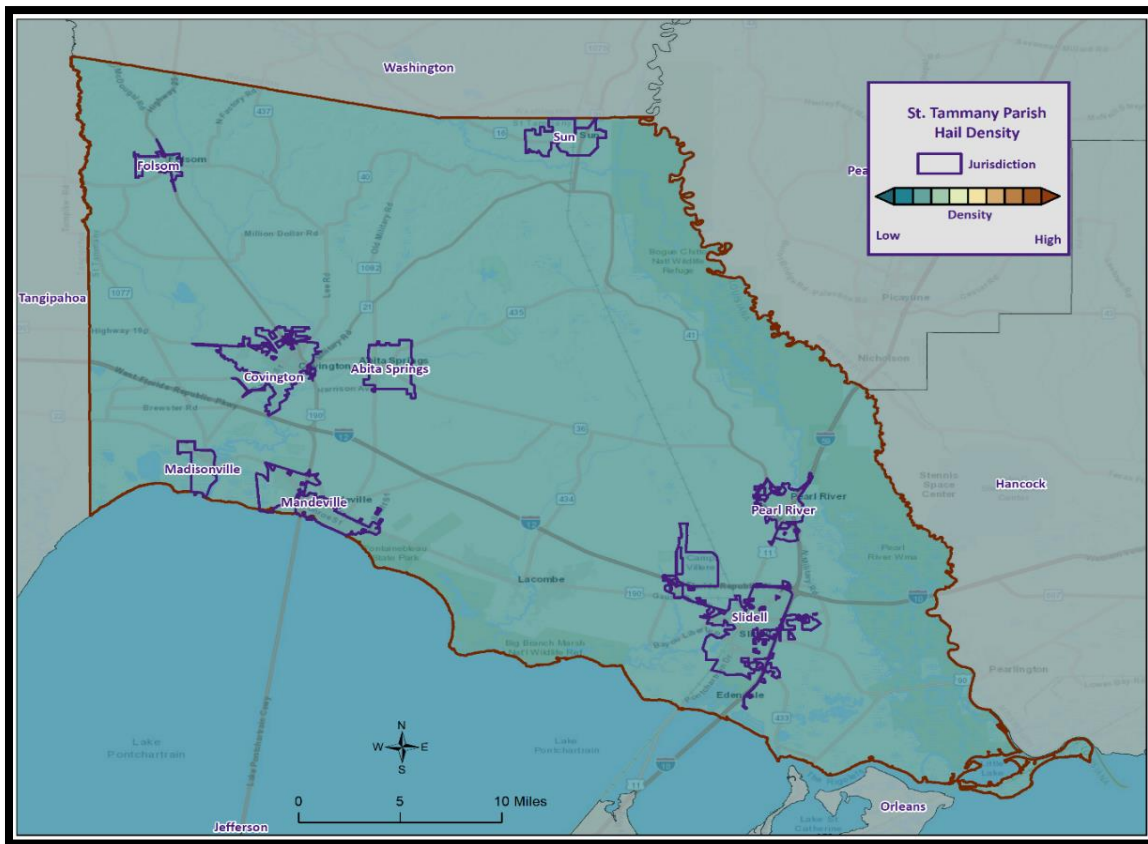


Figure 2-30: Density of Hailstorms by Diameter from 1950-2019.

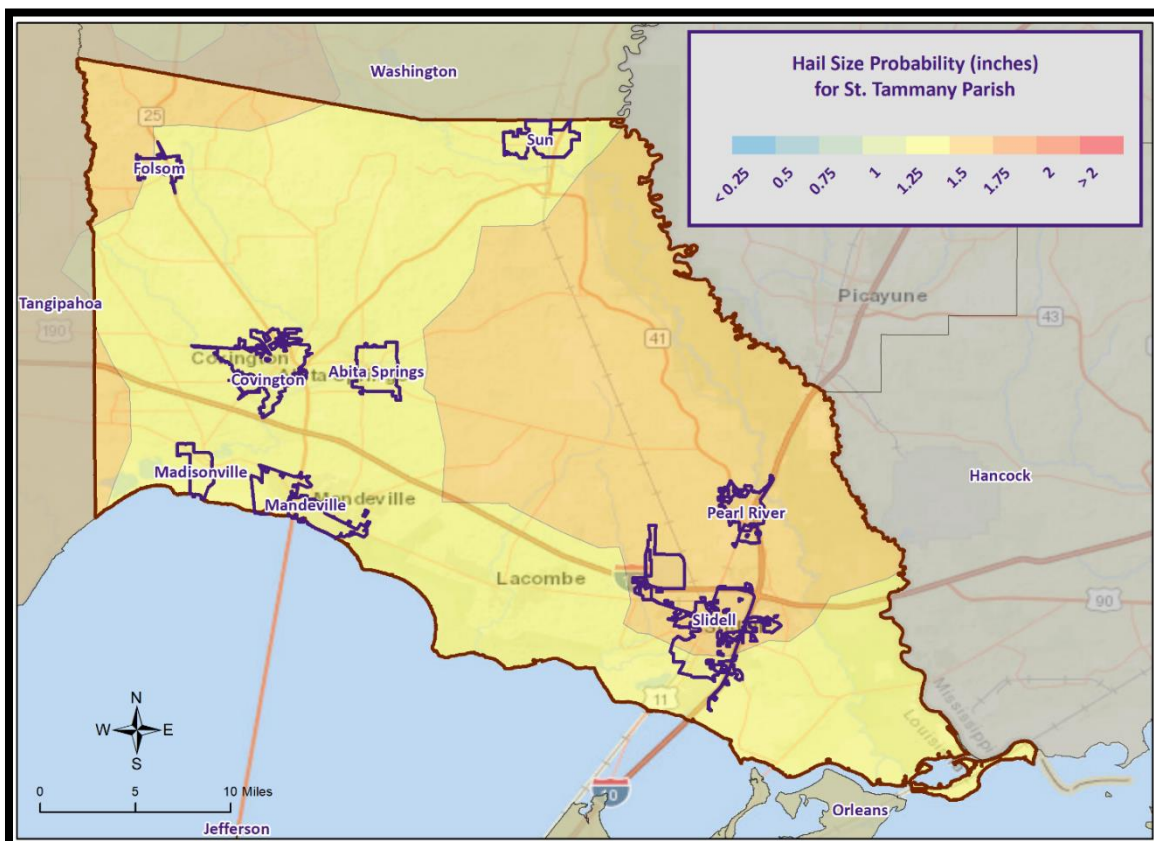


Figure 2-31: Hail Size Probability in Inches for St. Tammany Parish.

### Estimated Potential Losses

Since 1989, there have been 74 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 \$5,000. To estimate the potential losses of a hailstorm 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 (1989 - 2019). This provides an annual estimated potential loss of \$167 and \$68 per event. The following table provides an estimate of potential property losses for St. Tammany Parish.

*Table 2-69: Estimated Annual Losses St. Tammany Parish and its Jurisdictions Resulting from Hailstorms.*

Hailstorm Estimated Annual Potential Losses				
Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
\$128	\$2	\$6	\$1	\$1

*Table 2-70: Estimated Annual Losses St. Tammany Parish and its Jurisdictions Resulting from Hailstorms.*

Hailstorm Estimated Annual Potential Losses			
Mandeville	Pearl River	Slidell	Sun
\$8	\$2	\$19	\$0

There have been no reported injuries or fatalities as a result of a hail events over the 30-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 St. Tammany Parish is equally at risk from high winds. The worst-case scenario for thunderstorm high wind is wind speeds of approximately 81 mph.

### Previous Occurrences / Extents

Historically, there have been 230 thunderstorm high wind events in St. Tammany Parish. High winds have ranged from 57 mph to 81 mph per the National Climatic Data Center since 1989. The most frequently recorded high wind speed has been 57 mph. Since the last update, there has been 24 high wind events in St. Tammany Parish. *Table 2-71* provides an overview of the high wind speeds which impacted the St. Tammany Parish Planning area since the 2015 St. Tammany Parish HMP update.

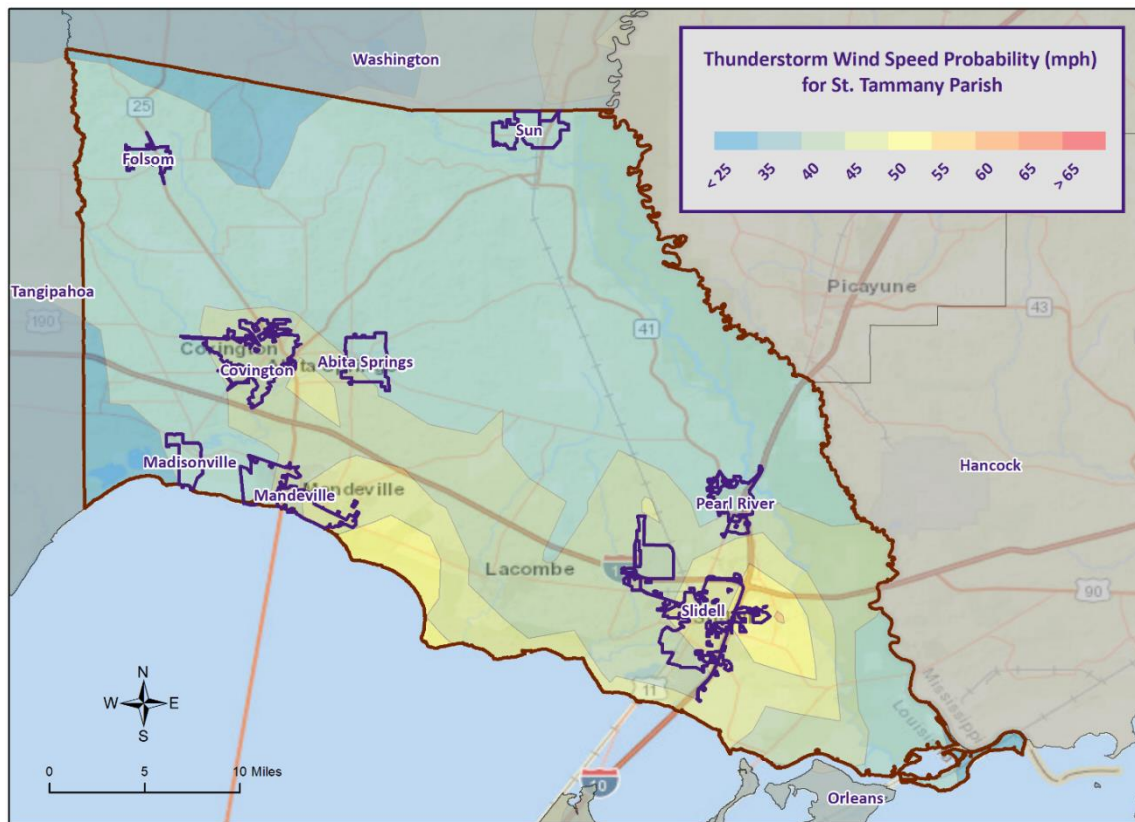
*Table 2-71: Previous Occurrences for Thunderstorm High Wind Events since the 2015 Hazard Mitigation Plan Update.*

*(Source: NCEI Storm Events Database)*

Location	Date	Recorded Wind Speeds (mph)	Property Damage	Crop Damage
MANDEVILLE	April 30, 2016	45	\$0	\$0
HOULTONVILLE	April 30, 2016	60	\$0	\$0
COVINGTON	May 19, 2016	60	\$0	\$0
COVINGTON	May 19, 2016	60	\$0	\$0
NORTH SLIDELL	May 19, 2016	55	\$0	\$0
SLIDELL ARPT	August 4, 2016	53	\$0	\$0
PEARL RIVER	August 4, 2016	55	\$0	\$0
NORTH SLIDELL	January 2, 2017	55	\$0	\$0
MC CLANE CITY	March 25, 2017	55	\$0	\$0
HOULTONVILLE	March 30, 2017	60	\$0	\$0
COVINGTON	April 3, 2017	60	\$0	\$0
COVINGTON	April 3, 2017	60	\$0	\$0
LACOMBE	April 3, 2017	55	\$0	\$0
BONFOUCA	May 3, 2017	55	\$0	\$0
ST JOE	May 3, 2017	55	\$0	\$0
MANDEVILLE	May 3, 2017	55	\$0	\$0
SLIDELL	March 11, 2018	60	\$0	\$0
CLAIBORNE	April 14, 2018	55	\$0	\$0
ABITA SPGS	November 1, 2018	55	\$0	\$0
COVINGTON	November 1, 2018	55	\$0	\$0
MANDEVILLE	November 1, 2018	55	\$0	\$0
LACOMBE	May 4, 2019	55	\$0	\$0
FLORENVILLE	May 4, 2019	60	\$0	\$0
MANDEVILLE	June 16, 2019	55	\$0	\$0

### Frequency

High winds are a common occurrence within St. Tammany Parish and its jurisdictions with an annual chance of occurrence calculated at 100% based on the records for the past 30 years (1989-2019). *Figure 2-32* displays the thunderstorm wind speed probability for St. Tammany Parish and its jurisdictions.



*Figure 2-32: Thunderstorm High Wind Speed Probability in Miles Per Hour for St. Tammany Parish.*

### Estimated Potential Losses

Since 1989, there have been 230 significant wind events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately \$1,553,250. 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 (1989 - 2019). This provides an annual estimated potential loss of \$51,775 and \$6,753 per event. The tables on the next page provide an estimate of potential property losses for St. Tammany Parish.

*Table 2-72: Estimated Annual Property Losses in St. Tammany Parish resulting from Wind Damage.*

Wind Estimated Annual Potential Losses				
Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
\$39,770	\$524	\$1,942	\$159	\$166

*Table 2-73: Estimated Annual Property Losses in St. Tammany Parish resulting from Wind Damage.*

Wind Estimated Annual Potential Losses			
Mandeville	Pearl River	Slidell	Sun
\$2,561	\$555	\$5,996	\$104

There have been three deaths and three injuries as a result of a thunderstorm high wind event over the 30-year record.

#### Vulnerability

See appendix C 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 St. Tammany 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 has been 23 lightning events in St. Tammany Parish and its jurisdictions between the years 1989 and 2019. Since the last HMP update, there has been two significant lighting events within the boundaries of St. Tammany Parish. [Table 2-74](#) provides an overview of the lightning events which impacted the St. Tammany Parish Planning area since the 2015 St. Tammany Parish HMP update.

*Table 2-74: Previous Occurrences for Lightning Events since the 2015 Hazard Mitigation Plan Update.  
(Source: NCEI Storm Events Database)*

Location	Date	Property Damage	Crop Damage
McCLANE CITY	April 27, 2016	\$0	\$0
McCLANE CITY	May 19, 2016	\$300,000	\$0

### Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in St. Tammany 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. St. Tammany Parish experienced 23 significant lightning events between the years 1989 and 2019 resulting in a 77% annual chance of occurrence.

### Estimated Potential Losses

Since 1989, there have been 23 significant lightning events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately \$649,500. To estimate the potential losses of a lightning event on an annual basis, the total damages recorded for lightning events was divided by the total number of years of available lightning data in the NCEI Storm Events Database (1989 - 2019). This provides an annual estimated potential loss of \$21,650 and \$28,239 per event. The tables on the next page provide an estimate of potential property losses for St. Tammany Parish.

*Table 2-75: Estimated Annual Property Losses in St. Tammany Parish resulting from Lightning Damage.*

Lightning Estimated Annual Potential Losses				
Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
\$16,630	\$219	\$812	\$66	\$69

*Table 2-76: Estimated Annual Property Losses in St. Tammany Parish resulting from Lightning Damage.*

Lightning Estimated Annual Potential Losses			
Mandeville	Pearl River	Slidell	Sun
\$1,071	\$232	\$2,507	\$44

Per the NCEI Storm Events Database, there has one death and 24 injuries as a result of lightning in St. Tammany Parish.

#### 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 2-77* 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 2-77: 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 2-78: 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 off 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 St. Tammany Parish with actual locations, tornadoes in general are a climatological based hazard and have the same approximate probability of occurring in St. Tammany Parish as all of its jurisdictions. Because a tornado has a similar probability of striking anywhere within the planning area for St. Tammany Parish, all areas in the parish are equally at risk for tornadoes.

#### *Previous Occurrences / Extent*

The NCEI Storm Events Database reports a total of 36 tornadoes or waterspouts occurring within the boundaries of St. Tammany Parish since 1989 ranging in extent from F0 to F2 under the Fujita Scale and EF0 to EF3 on the Enhanced Fujita Scale. St. Tammany 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 St. Tammany Parish was a F2 tornado which occurred on November 2, 1997. The tornado passed through the downtown area of Covington causing \$5,085,139 in property damage and 43 injuries. There have been no reported deaths as a result of tornadoes in St. Tammany Parish.

Since the 2015 HMP Update, eight tornadoes have occurred within the boundaries of St. Tammany Parish. Below is a list and brief description of the impact for the event.

*Table 2-79: Historical Tornadoes in St. Tammany Parish with Locations since the 2015 Update.*

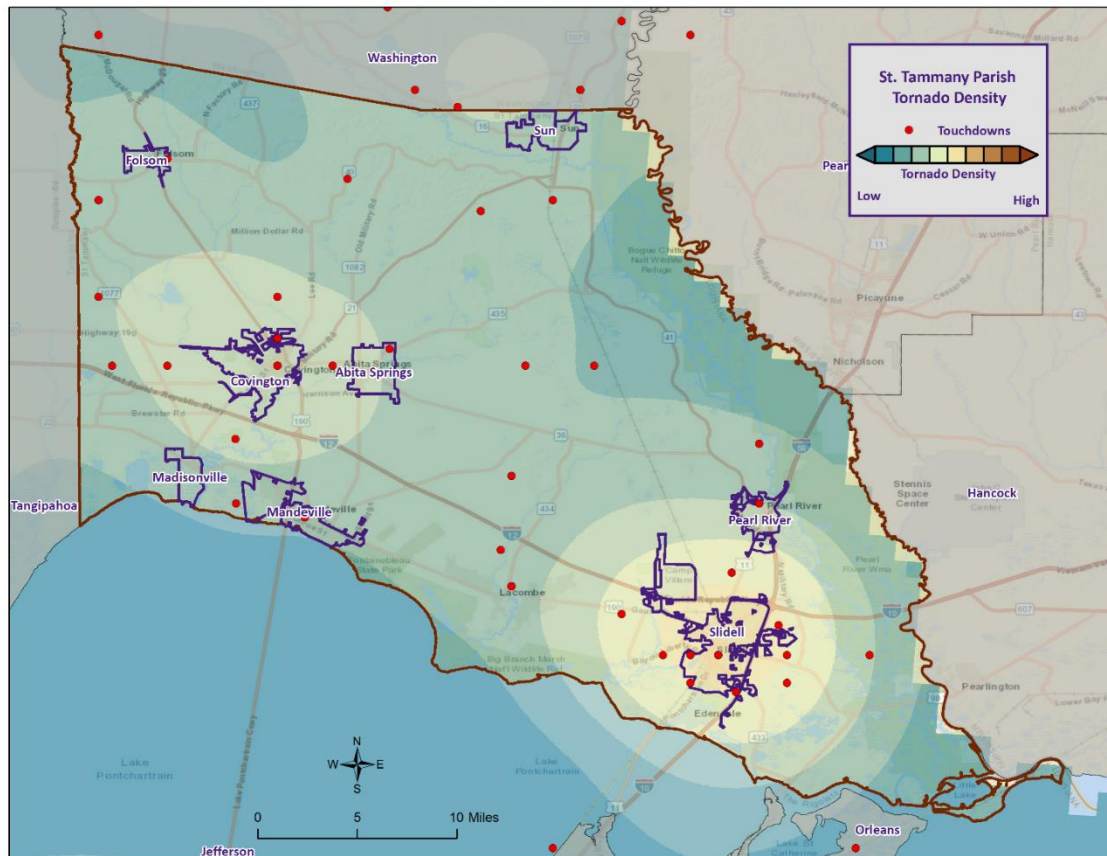
Date	Impacts	Property Damage	Location	Magnitude
February 23, 2016	A tornadic waterspout spawned from the same parent supercell as the Assumption/St. James and Akers tornadoes moved onshore from Lake Pontchartrain south of Madisonville near the end of Hwy 1077. It destroyed a metal boat shed and caused minor fascia damage to a bar. Maximum wind speeds were estimated near 65 mph.	\$0	HOULTONVILLE	EFO
February 23, 2016	A tornadic waterspout spawned from the same parent supercell as the LaPlace tornado came on shore from Lake Pontchartrain near Lacombe. Due to inaccessibility, the first damage was noted near a plant nursery at Powell Street and Pinchon St where a greenhouse was damaged. The tornado moved northeast across Hwy 190 and into a residential area. In this area, several homes suffered superficial damage to shingles, fascia, and a few broken windows. Some minor tree damage was also observed. Maximum wind speeds were estimated near 80 mph.	\$0	LACOMBE	EFO
January 2, 2017	A weak EFO tornado snapped or toppled several small trees on Hands Drive in the south part of Bush. Tornado classification was primarily based on security camera video of a short lived narrow vortex. Path length 30 yards. Path width 5 yards. Estimated maximum wind speed 65 mph.	\$0	BUSH	EFO
February 7, 2017	A tornado continued into St. Tammany Parish from Tangipahoa Parish. It moved in a generally east-northeast direction through uninhabited marsh until it reached the Guste Island area. By the time it reached this area, it had contracted from its maximum width of around 500 yards in Tangipahoa Parish back to around 350 yards. The tornado produced damage consistent with wind speeds around 125 mph as it crossed Chenier Road. It shifted a home from its concrete and rebar piers and caused extensive roof damage to the home. The tornado continued to move east-northeast and dissipated over a marshy area on the southwest side of Madisonville.	\$0	HOULTONVILLE	EF2



Date	Impacts	Property Damage	Location	Magnitude
April 3, 2017	A tornado continued into St. Tammany Parish from Tangipahoa Parish. It moved in a generally east-northeast direction through uninhabited marsh until it reached the Guste Island area. By the time it reached this area, it had contracted from its maximum width of around 500 yards in Tangipahoa Parish back to around 350 yards. The tornado produced damage consistent with wind speeds around 125 mph as it crossed Chenier Road. It shifted a home from its concrete and rebar piers and caused extensive roof damage to the home. The tornado continued to move east-northeast and dissipated over a marshy area on the southwest side of Madisonville.	\$0	HOULTONVILLE	EF1
April 3, 2017	A tornado began along Lee Road and tracked to the east across Stafford Road before lifting near the intersection of Smith Road and Old Military Road. Numerous trees were reported blown down with one tree landing on a home with minor to moderate roof damage. Maximum estimated winds 100 mph, path width 100 yards and path length approximately 1.75 miles.	\$0	BENEDICT	EF1
May 12, 2017	A weak tornado produced tree damage was reported in the vicinity of Rainford Oaks Boulevard. Large limbs were blown down and several trees were snapped midway up. A large tree fell through a home. The tornado was rated EF0 with an estimated maximum wind speed of 75 mph. Path width was about 20 yards wide with a path length approximately 0.50 miles long. Event time was estimated by radar.	\$0	GOODBEE	EFO
November 1, 2018	An EF-0 tornado touched down in the Tallow Creek subdivision, along Solomon Drive, where mostly minor tree damage occurred. It then traveled east along Cole Court and Arian Lane. Minor roof damage occurred mainly from shingles being ripped off and several trees were snapped. Multiple fences and mailboxes were also knocked down. The tornado lifted before reaching Jack Drive. Estimated peak wind was 85 mph, path length 0.29 miles, path width 30 yards.	\$0	GOODBEE	EFO

### *Frequency / Probability*

Tornadoes occur frequently within St. Tammany Parish and its jurisdictions with an annual chance of occurrence calculated at 100% based on the records for the past 30 years (1989-2019). *Figure 2-33* displays the density of tornado touchdowns in St. Tammany Parish and neighboring parishes.



*Figure 2-33: Location and Density of Tornadoes to Touchdown in St. Tammany Parish.  
(Source: NOAA/SPC Severe Weather Database)*

### *Estimated Potential Losses*

According to the NCEI Storm Events Database, there have been 36 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is approximately \$5,760,000 with an average cost of \$192,000 per tornado event. When annualizing the total cost over the 30-year record, total annual losses based on tornadoes are estimated to be \$160,000. The tables on the next page provide an annual estimate of potential losses for St. Tammany Parish.

*Table 2-80 Estimated Annual Losses for Tornadoes in St. Tammany Parish.*

Tornado Estimated Annual Potential Losses				
Unincorporated Area	Abita Springs	Covington	Folsom	Madisonville
\$147,480	\$1,943	\$7,200	\$588	\$614

*Table 2-81: Estimated Annual Losses for Tornadoes in St. Tammany Parish.*

Tornado Estimated Annual Potential Losses			
Mandeville	Pearl River	Slidell	Sun
\$9,496	\$2,058	\$22,234	\$386

*Table 2-82* presents an analysis of building exposure that are susceptible to tornadoes by general occupancy type for St. Tammany Parish along with the percentage of building stock that are mobile homes.

*Table 2-82: Building Exposure by General Occupancy Type for Tornadoes in St. Tammany Parish.*  
 (Source: Hazus)

Building Exposure by General Occupancy Type for Tornadoes Exposure Types (\$1,000)							
Residential	Commercial	Industrial	Agricultural	Religion	Government	Education	Mobile Homes (%)
19,324,932	2,920,731	517,160	62,975	297,172	121,172	160,320	14.4%

The Parish has suffered through a total of eight days in which tornadoes or waterspouts have accounted for 53 injuries and no fatalities during this 30-year period.

In accessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 14.4% of all housing in St. Tammany Parish consists of manufactured housing. Based on location data collected in a previous hazard mitigation project, there are 18 known locations where manufactured housing is concentrated. The location and density of manufactured houses can be seen in *Figure 2-34*.

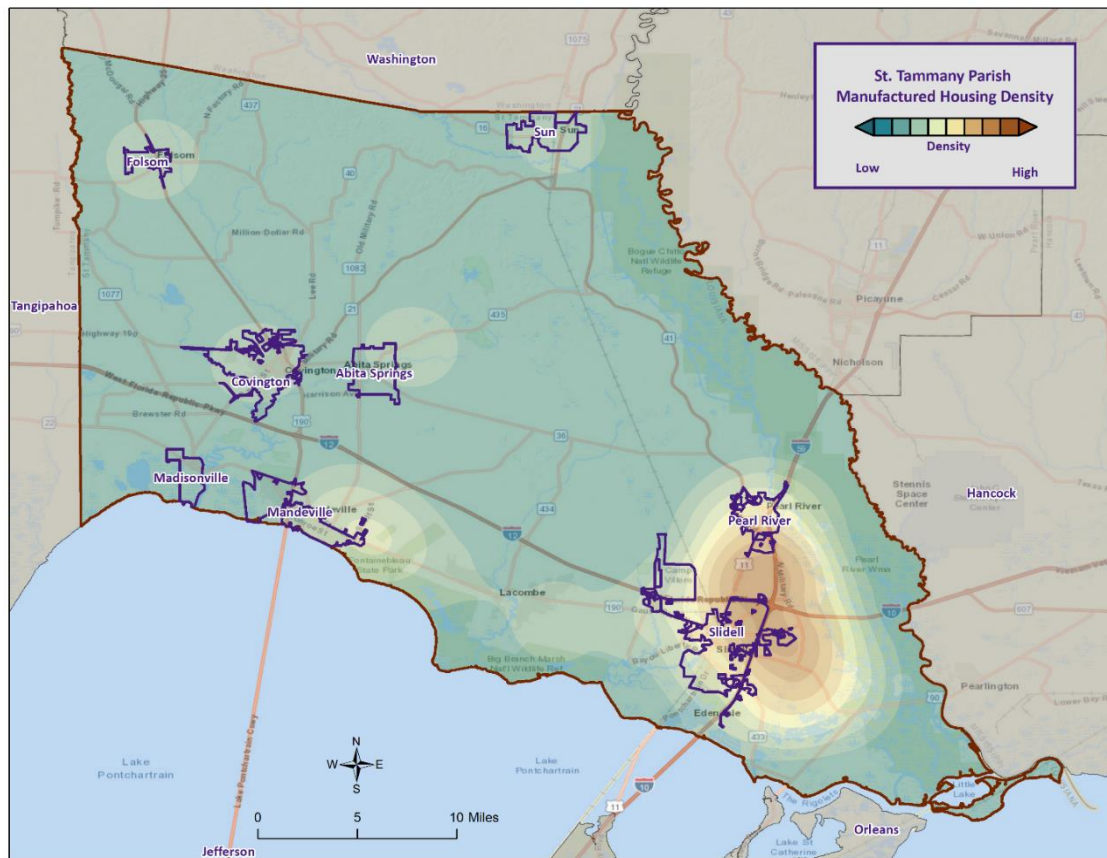


Figure 2-34: Location and Approximate Number of Units in Manufactured Housing Locations throughout St. Tammany Parish.

### 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 2-83: Saffir-Simpson Hurricane Wind Scale*

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



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

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

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

#### *Location*

Hurricanes are the single biggest threat to 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 St. Tammany Parish planning area. The worst-case scenario for a tropical cyclone event in St. Tammany Parish is a Category 5 Hurricane.

#### *Previous Occurrences / Extents*

St. Tammany Parish has experienced 18 major tropical cyclone events since 2002. Hurricane Katrina has been by far the worst hurricanes to impact St. Tammany Parish in recorded history. Katrina’s devastation was compounded with Hurricane Rita just days after. The following table provides a list of tropical cyclones which have impacted St. Tammany Parish since 2002.

*Table 2-84: Historical Tropical Cyclone Events in St. Tammany Parish from 2002 – 2019.*

Date	Name	Storm Type At Time of Impact
2002	Bertha	Tropical Storm
2002	Isidore	Tropical Storm
2002	Lili	Hurricane – Category 1
2003	Bill	Tropical Storm
2004	Jeanne	Tropical Depression
2004	Ivan	Hurricane – Category 1
2004	Matthew	Tropical Storm
2005	Cindy	Hurricane
2005	Dennis	Tropical Storm
2005	Katrina	Hurricane – Category 3
2005	Rita	Tropical Storm
2008	Fay	Tropical Depression
2008	Gustav	Hurricane – Category 1
2008	Ike	Tropical Storm
2009	Ida	Tropical Storm
2011	Lee	Tropical Storm
2012	Isaac	Tropical Storm
2019	Barry	Tropical Storm

Since the last St. Tammany Parish HMP update in 2015, there has been one tropical cyclone event which has impacted the parish. Below is a brief description of the event and the impact it had on St. Tammany Parish.

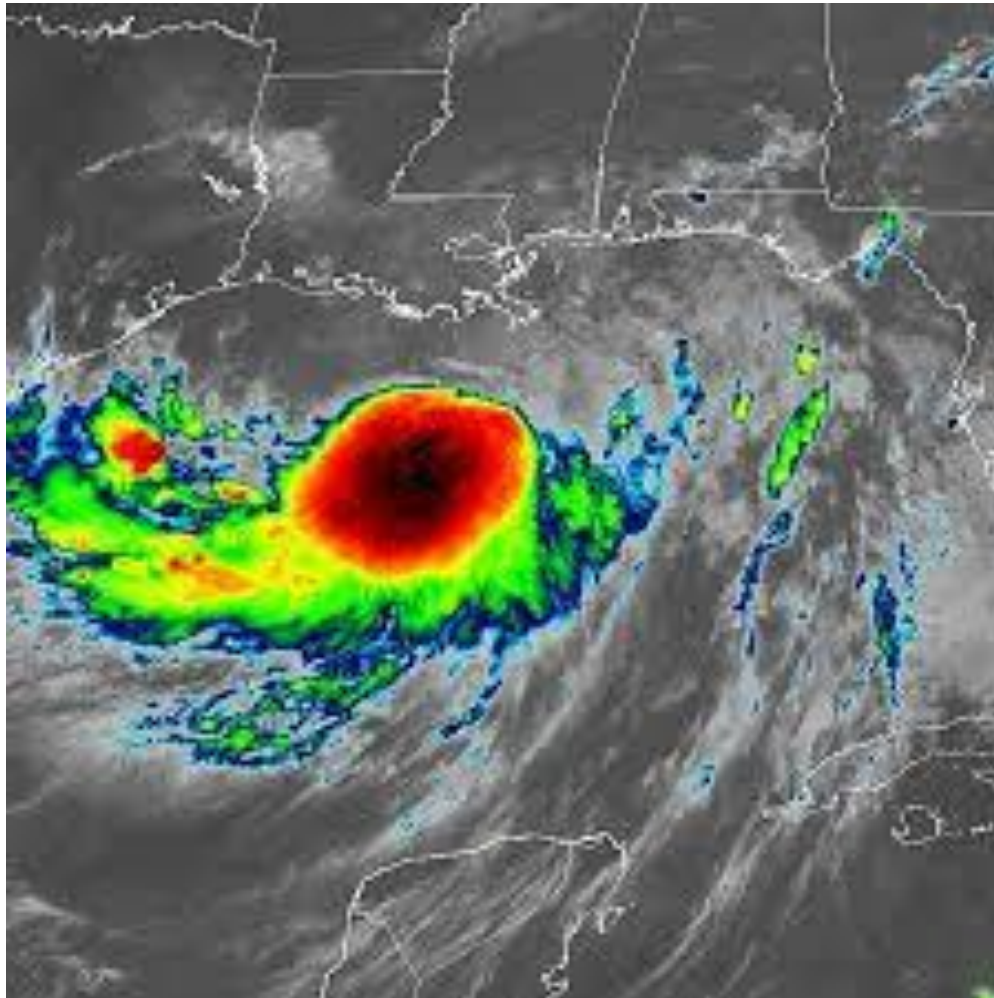
#### **Tropical Storm Barry (2019)**

Hurricane Barry initial developed from a disturbance that moved from Georgia southwest to the northeast Gulf of Mexico on July 8-9, 2019. The weak low pressure system continued to move west-southwest and strengthen, and was eventually classified as Tropical Storm Barry on the morning of July 11<sup>th</sup>, 95 miles south-southeast of the mouth of the Mississippi River. Barry continued to move slowly west then northwest and briefly reached hurricane strength on the morning of July 13<sup>th</sup> before landfall in south-central Louisiana near Intracoastal City, Louisiana in Vermillion Parish. Tropical storm force winds reached the southeast Louisiana coast by midday on Friday, July 12<sup>th</sup> and spread slowly northwest reaching the Baton Rouge area during the evening of the 12<sup>th</sup>. Tropical storm wind impacts had ended across all of southeast Louisiana by midday on July 14<sup>th</sup>. Tropical storm force winds were primarily measured in gusts across southeast Louisiana. The exception was in Terrebonne and Assumption Parishes, close to the landfall location, where sustained tropical storm force winds and frequent gusts caused more significant power line and tree damage. A few tropical storm wind gusts were recorded in the metro New Orleans area but were not very impactful. No hurricane force wind gusts were recorded in southeast Louisiana.

Mostly minor to moderate storm surge flooding occurred across coastal southeast Louisiana, including Lake Pontchartrain, and a small part of the Mississippi Coast. Terrebonne Parish had significant storm surge flooding in the lower portion of the parish with storm tides of five to eight feet, locally up to nine feet.

Several local levees were overtopped on the morning of July 13<sup>th</sup> flooding roads and a few homes. The highest storm tide reading was 9.11 feet NAVD88 at a USGS tide gauge at Caillou Lake near Dulac, Louisiana.

Storm total rainfall was generally between four and eight inches with a maximum rainfall of 8.83 inches recorded northeast of Denham Springs, Louisiana in Livingston Parish. Isolated flash flooding of streets and secondary roadways occurred on July 13<sup>th</sup> in the greater Baton Rouge area, but flash flooding was not widespread or significant. The lower Mississippi River was at unusually high stages from late August with the state at the New Orleans Carrollton gauge near 16.5 feet. The combination of storm surge entering the lower Mississippi River with very high river stages prompted concern of potential overtopping of levees along the Mississippi River in lower Plaquemines Parish prompting some evacuations of the area.



*Figure 2-35: Hurricane Barry Rain Bands in the Gulf Coast Area.  
(Source: NOAA)*

In St. Tammany Parish, occasional tropical storm force wind gusts were reported throughout the parish, causing minor tree damage with a few large branches blow down. Storm total rainfall estimates were generally in the 3 to 6 inch range, with a few locally higher amounts in a swath from Lacombe to Talisheek. The highest recorded storm total rainfall was 6.46 inches near Lacombe.

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

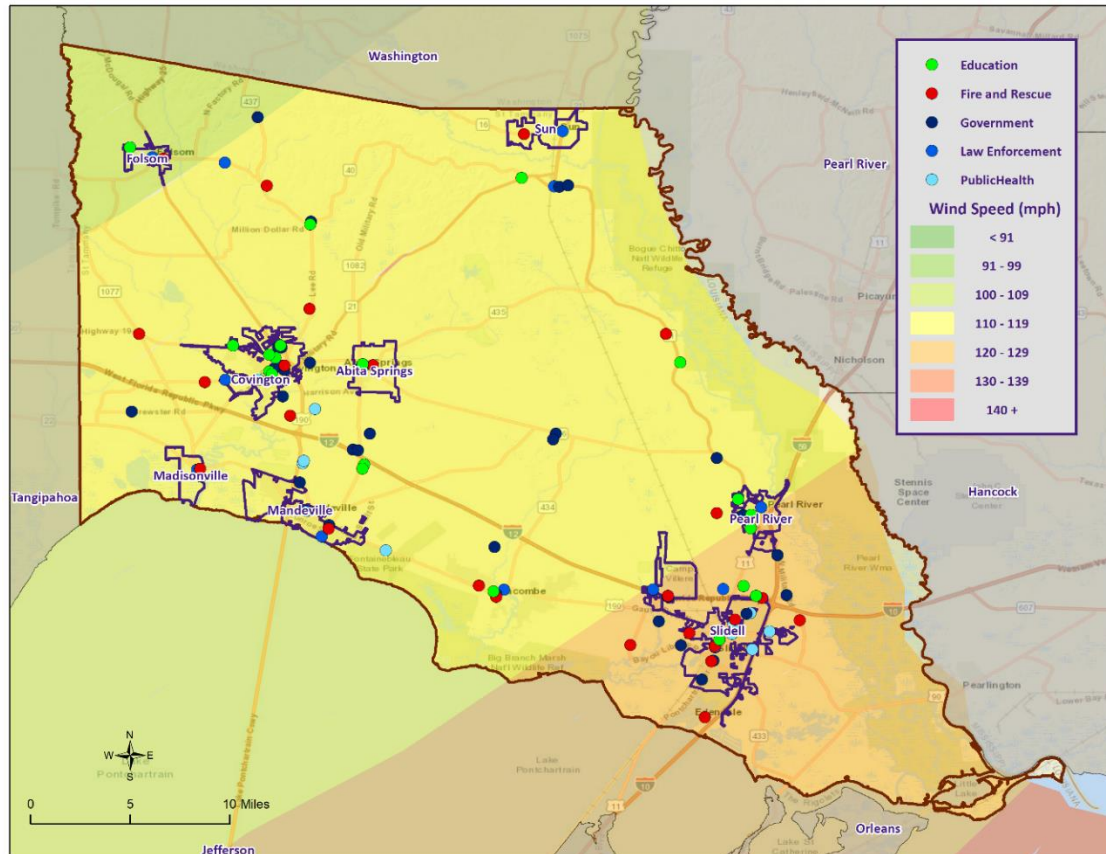


Figure 2-36: Winds Zones for St. Tammany Parish in Relation to Critical Facilities

#### Frequency / Probability

Tropical cyclones are large natural hazard events that regularly impact St. Tammany Parish. The annual chance of occurrence for a tropical cyclone is estimated at 100% for St. Tammany Parish with 18 events occurring within 17 years (2002 to 2019). 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 St. Tammany 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 2-85: Total Estimated Losses for a 100-Year Hurricane Event  
(Source: Hazus)*

Jurisdiction	Estimated Total Losses from 100-Year Hurricane Event
<b>St. Tammany Parish (Unincorporated)</b>	\$780,701,009
<b>Abita Springs</b>	\$10,283,710
<b>Covington</b>	\$38,112,778
<b>Folsom</b>	\$3,113,377
<b>Madisonville</b>	\$3,252,522
<b>Mandeville</b>	\$50,266,253
<b>Pearl River</b>	\$10,896,819
<b>Slidell</b>	\$117,699,563
<b>Sun</b>	\$2,043,697
<b>Total</b>	<b>\$1,016,369,728</b>

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

*Table 2-86: Ratio of Total Losses to Total Estimated Value of Assets for St. Tammany 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>St. Tammany Parish (Unincorporated)</b>	\$780,701,009	\$18,845,450,000	4.1%
<b>Abita Springs</b>	\$10,283,710	\$219,150,000	4.7%
<b>Covington</b>	\$38,112,778	\$968,376,000	3.9%
<b>Folsom</b>	\$3,113,377	\$61,221,000	5.1%
<b>Madisonville</b>	\$3,252,522	\$14,210,000	22.9%
<b>Mandeville</b>	\$50,266,253	\$1,128,177,000	4.5%
<b>Pearl River</b>	\$10,896,819	\$113,836,000	9.6%
<b>Slidell</b>	\$117,699,563	\$2,018,161,000	5.8%
<b>Sun</b>	\$2,043,697	\$35,881,000	5.7%

Based on the Hazus Hurricane Model, estimated total losses for St. Tammany Parish and its jurisdictions ranged from 3.9% to 22.9% of the total estimated value of all assets.

The Hazus Hurricane Model also provides a breakdown for seven primary sectors (Hazus occupancy) throughout the parish. The losses for St. Tammany Parish by sector are listed in the tables on the next page.



*Table 2-87: Estimated Losses in Unincorporated St. Tammany Parish for a 100-Year Hurricane Event  
(Source: Hazus)*

<b>St. Tammany Parish (Unincorporated)</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
<b>Agricultural</b>	\$2,275,336
<b>Commercial</b>	\$62,968,351
<b>Government</b>	\$3,017,065
<b>Industrial</b>	\$8,490,140
<b>Religious / Non-Profit</b>	\$4,653,928
<b>Residential</b>	\$881,305,893
<b>Schools</b>	\$2,149,151
<b>Total</b>	<b>\$964,859,863</b>

*Table 2-88: Estimated Losses in Abita Springs for a 100-Year Hurricane Event  
(Source: Hazus)*

<b>Abita Springs</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
<b>Agricultural</b>	\$24,251
<b>Commercial</b>	\$671,132
<b>Government</b>	\$32,157
<b>Industrial</b>	\$90,490
<b>Religious / Non-Profit</b>	\$49,603
<b>Residential</b>	\$9,393,172
<b>Schools</b>	\$22,906
<b>Total</b>	<b>\$10,283,710</b>

*Table 2-89: Estimated Losses in Covington for a 100-Year Hurricane Event  
(Source: Hazus)*

<b>Covington</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
<b>Agricultural</b>	\$89,878
<b>Commercial</b>	\$2,487,303
<b>Government</b>	\$119,177
<b>Industrial</b>	\$335,368
<b>Religious / Non-Profit</b>	\$183,834
<b>Residential</b>	\$34,812,325
<b>Schools</b>	\$84,893
<b>Total</b>	<b>\$38,112,778</b>

*Table 2-90: Estimated Losses in Folsom for a 100-Year Hurricane Event  
(Source: Hazus)*

<b>Folsom</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
Agricultural	\$7,342
Commercial	\$203,184
Government	\$9,735
Industrial	\$27,396
Religious / Non-Profit	\$15,017
Residential	\$2,843,768
Schools	\$6,935
<b>Total</b>	<b>\$3,113,377</b>

*Table 2-91: Estimated Losses in Madisonville for a 100-Year Hurricane Event  
(Source: Hazus)*

<b>Madisonville</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
Agricultural	\$7,670
Commercial	\$212,265
Government	\$10,170
Industrial	\$28,620
Religious / Non-Profit	\$15,688
Residential	\$2,970,864
Schools	\$7,245
<b>Total</b>	<b>\$3,252,522</b>

*Table 2-92: Estimated Losses in Mandeville for a 100-Year Hurricane Event  
(Source: Hazus)*

<b>Mandeville</b>	<b>Estimated Total Losses from 100-Year Hurricane Event</b>
Agricultural	\$118,538
Commercial	\$3,280,459
Government	\$157,180
Industrial	\$442,310
Religious / Non-Profit	\$242,455
Residential	\$45,913,347
Schools	\$111,964
<b>Total</b>	<b>\$50,266,253</b>

*Table 2-93: Estimated Losses in Pearl River for a 100-Year Hurricane Event  
(Source: Hazus)*

Pearl River	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$25,697
Commercial	\$711,144
Government	\$34,074
Industrial	\$95,885
Religious / Non-Profit	\$52,560
Residential	\$9,953,187
Schools	\$24,272
<b>Total</b>	<b>\$10,896,819</b>

*Table 2-94: Estimated Losses in Slidell for a 100-Year Hurricane Event  
(Source: Hazus)*

Slidell	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$277,560
Commercial	\$7,681,268
Government	\$368,040
Industrial	\$1,035,680
Religious / Non-Profit	\$567,715
Residential	\$107,507,134
Schools	\$262,167
<b>Total</b>	<b>\$117,699,563</b>

*Table 2-95: Estimated Losses in Sun for a 100-Year Hurricane Event  
(Source: Hazus)*

Sun	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$4,819
Commercial	\$133,375
Government	\$6,391
Industrial	\$17,983
Religious / Non-Profit	\$9,858
Residential	\$1,866,719
Schools	\$4,552
<b>Total</b>	<b>\$2,043,697</b>

*Threat to People*

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

*Table 2-96: Number of People Susceptible to a 100-Year Hurricane Event in St. Tammany Parish  
(Source: Hazus)*

Number of People Exposed to Hurricane Hazards			
Location	# in Community	# in Hazard Area	% in Hazard Area
<b>St. Tammany Parish (Unincorporated)</b>	179,542	179,542	100%
<b>Abita Springs</b>	2,365	2,365	100%
<b>Covington</b>	8,765	8,765	100%
<b>Folsom</b>	716	716	100%
<b>Madisonville</b>	748	748	100%
<b>Mandeville</b>	11,560	11,560	100%
<b>Pearl River</b>	2,506	2,506	100%
<b>Slidell</b>	27,068	27,068	100%
<b>Sun</b>	470	470	100%
<b>Total</b>	233,740	233,740	100%

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

*Table 2-97: Vulnerable Populations in Unincorporated St. Tammany Parish for a 100-Year Hurricane Event  
(Source: Hazus)*

St. Tammany Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
<b>Number in Hazard Area</b>	179,542	100.0%
<b>Persons Under 5 Years</b>	11,706	6.5%
<b>Persons Under 18 Years</b>	34,490	19.2%
<b>Persons 65 Years and Over</b>	22,766	12.7%
<b>White</b>	150,061	83.6%
<b>Minority</b>	29,481	16.4%

*Table 2-98: Vulnerable Populations in Abita Springs for a 100-Year Hurricane Event  
(Source: Hazus)*

Abita Springs		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,365	100.0%
Persons Under 5 Years	143	6.1%
Persons Under 18 Years	412	17.4%
Persons 65 Years and Over	311	13.2%
White	2,176	92.0%
Minority	189	8.0%

*Table 2-99: Vulnerable Populations in Covington for a 100-Year Hurricane Event  
(Source: Hazus)*

Covington		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	8,765	100.0%
Persons Under 5 Years	554	6.3%
Persons Under 18 Years	1,541	17.6%
Persons 65 Years and Over	1,311	15.0%
White	6,816	77.8%
Minority	1,949	22.2%

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

Folsom		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	716	100.0%
Persons Under 5 Years	60	8.4%
Persons Under 18 Years	106	14.8%
Persons 65 Years and Over	89	12.4%
White	526	73.5%
Minority	190	26.5%



*Table 2-101: Vulnerable Populations in Madisonville for a 100-Year Hurricane Event  
(Source: Hazus)*

Madisonville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	748	100.0%
Persons Under 5 Years	48	6.4%
Persons Under 18 Years	116	15.5%
Persons 65 Years and Over	111	14.8%
White	650	86.9%
Minority	98	13.1%

*Table 2-102: Vulnerable Populations in Mandeville for a 100-Year Hurricane Event  
(Source: Hazus)*

Mandeville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	11,560	100.0%
Persons Under 5 Years	594	5.1%
Persons Under 18 Years	2,268	19.6%
Persons 65 Years and Over	1,868	16.2%
White	10,468	90.6%
Minority	1,092	9.5%

*Table 2-103: Vulnerable Populations in Pearl River for a 100-Year Hurricane Event  
(Source: Hazus)*

Pearl River		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,506	100.0%
Persons Under 5 Years	178	7.1%
Persons Under 18 Years	424	16.9%
Persons 65 Years and Over	340	13.6%
White	2,333	93.1%
Minority	173	6.9%

*Table 2-104: Vulnerable Populations in Slidell for a 100-Year Hurricane Event  
(Source: Hazus)*

Slidell		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	27,068	100.0%
Persons Under 5 Years	1,908	7.1%
Persons Under 18 Years	4,986	18.4%
Persons 65 Years and Over	3,784	14.0%
White	20,558	76.0%
Minority	6,510	24.1%

*Table 2-105: Vulnerable Populations in Sun for a 100-Year Hurricane Event  
(Source: Hazus)*

Sun		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	470	100.0%
Persons Under 5 Years	21	4.5%
Persons Under 18 Years	90	19.2%
Persons 65 Years and Over	58	12.3%
White	390	83.0%
Minority	80	17.0%

#### *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.

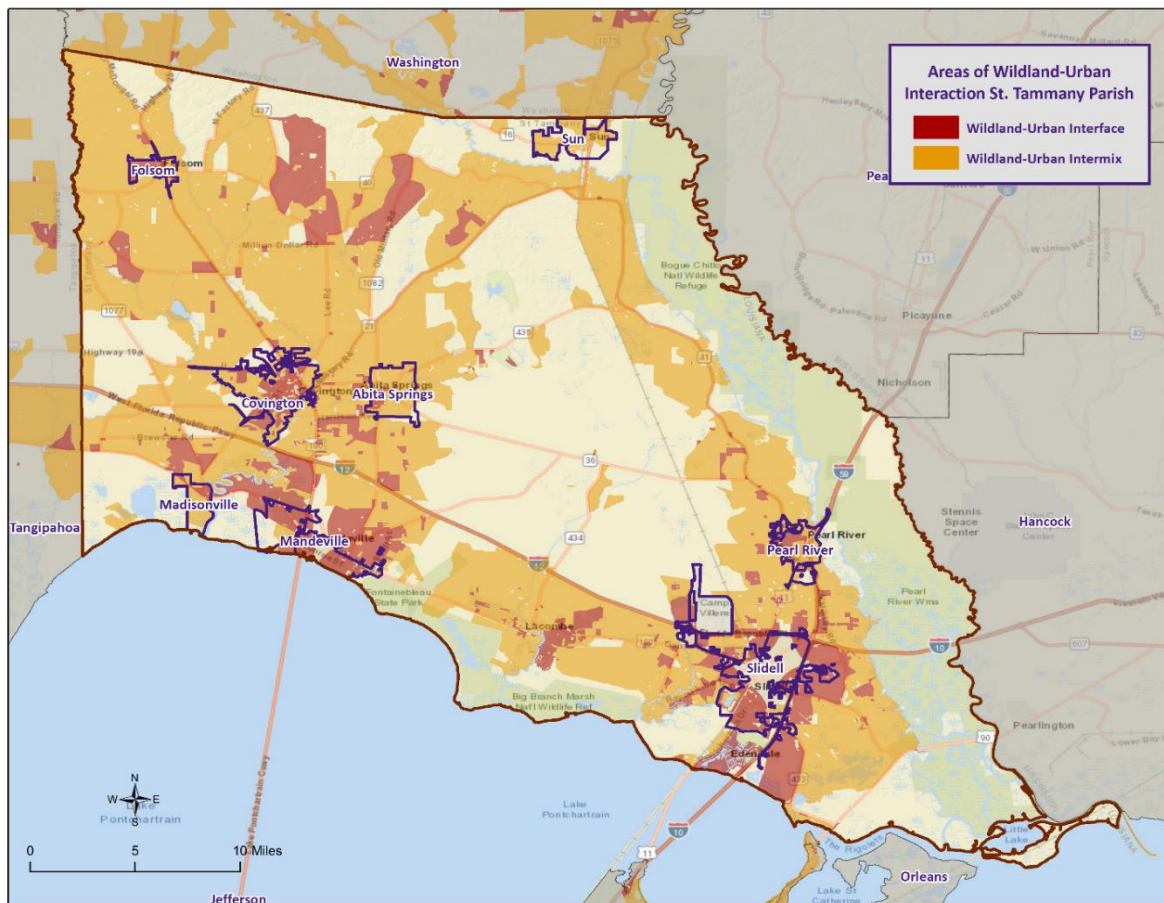
The Southern Group of State Foresters developed the Southern Wildfire Risk Assessment Portal to create awareness among the public and government sectors about the threat of wildfires in their areas. The Southern Wildfire Assessment Portal allows users to identify areas that are most prone to wildfires.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

*Table 2-106: 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 St. Tammany Parish and the jurisdictions of Abita Springs, Covington, Folsom, Madisonville, Mandeville, Pearl River, Slidell, and Sun is a level 4 on the fire intensity scale. The following figure displays the areas of wildland-urban interface and intermix in St. Tammany Parish and its jurisdictions.



*Figure 2-37: Wildland-Urban Interaction in St. Tammany Parish*

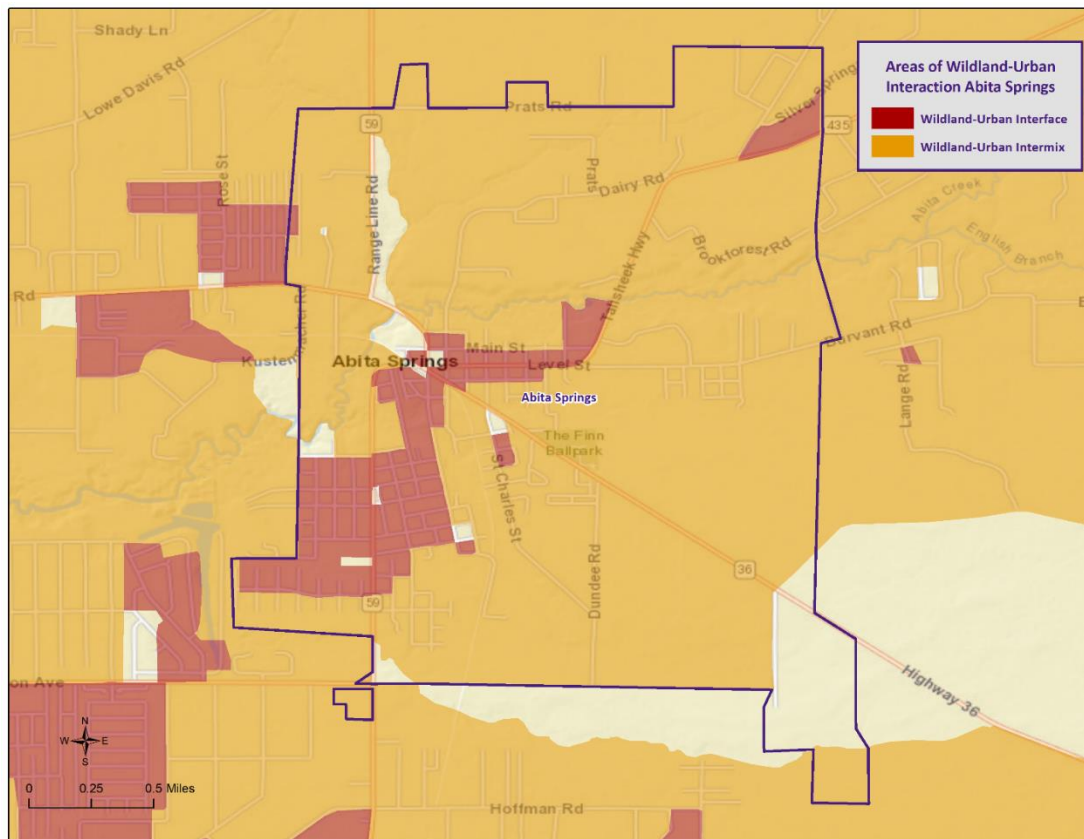


Figure 2-38: Wildland-Urban Interaction in Abita Springs

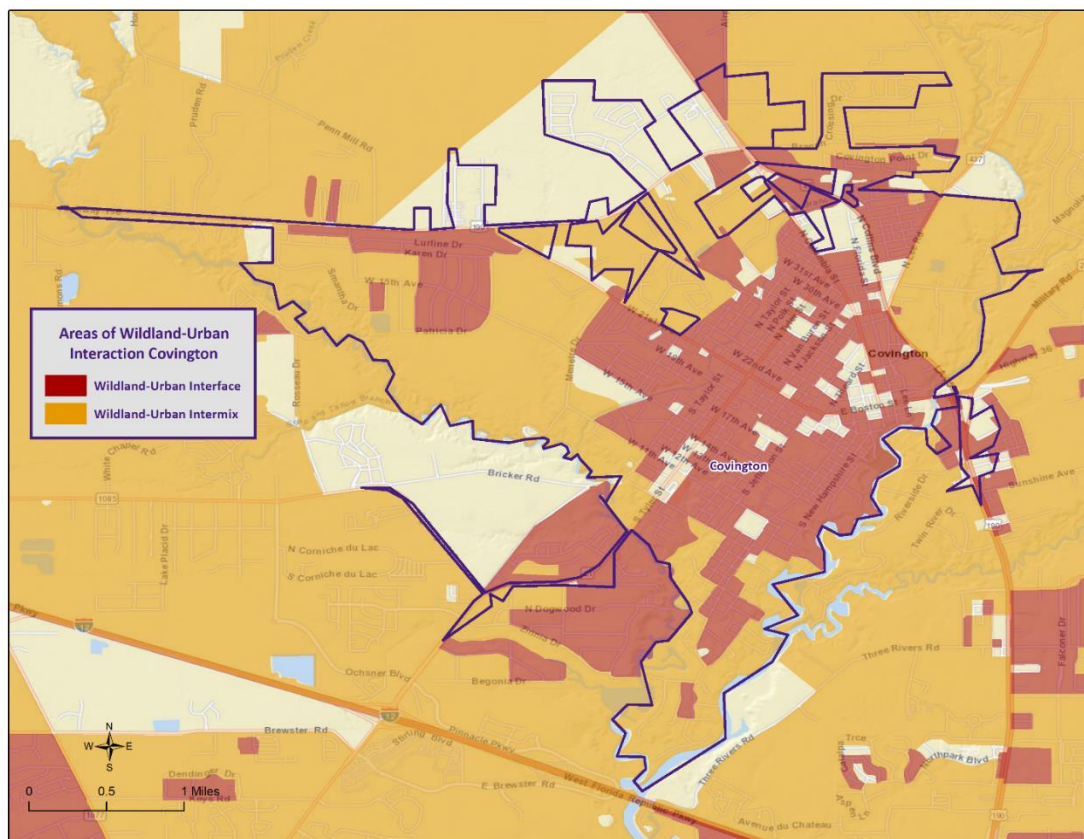


Figure 2-39: Wildland-Urban Interaction in Covington



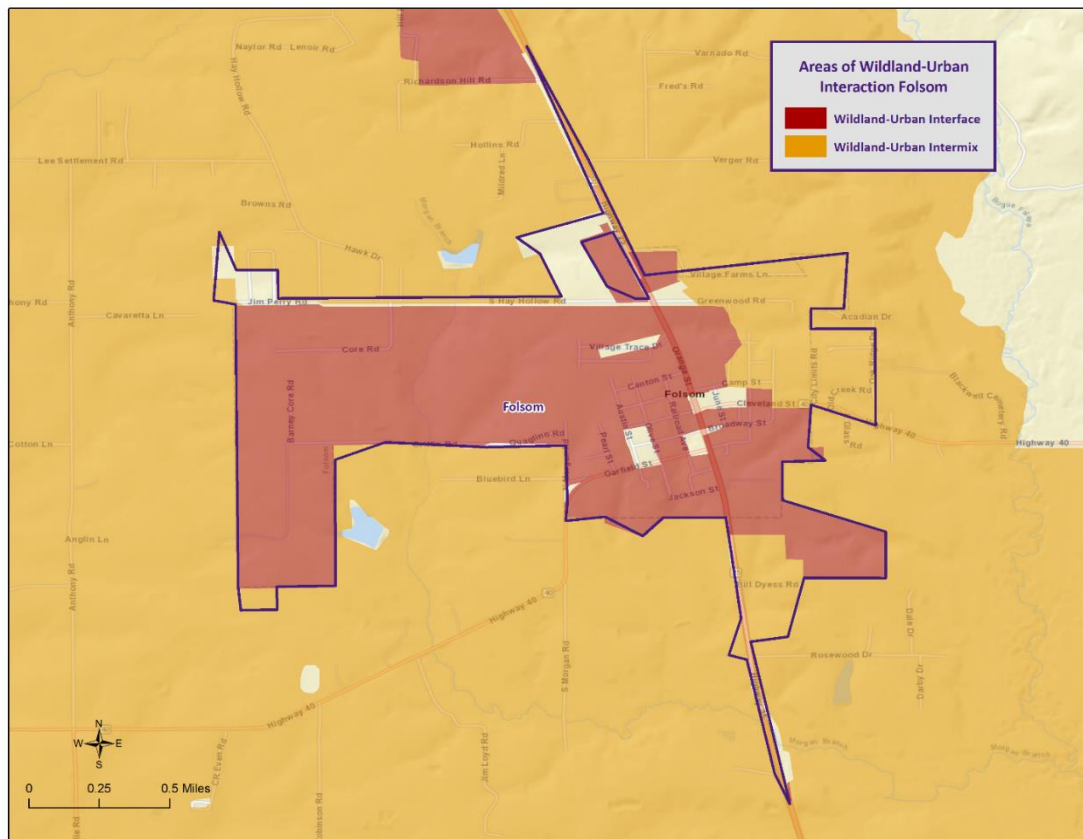


Figure 2-40: Wildland-Urban Interaction in Folsom

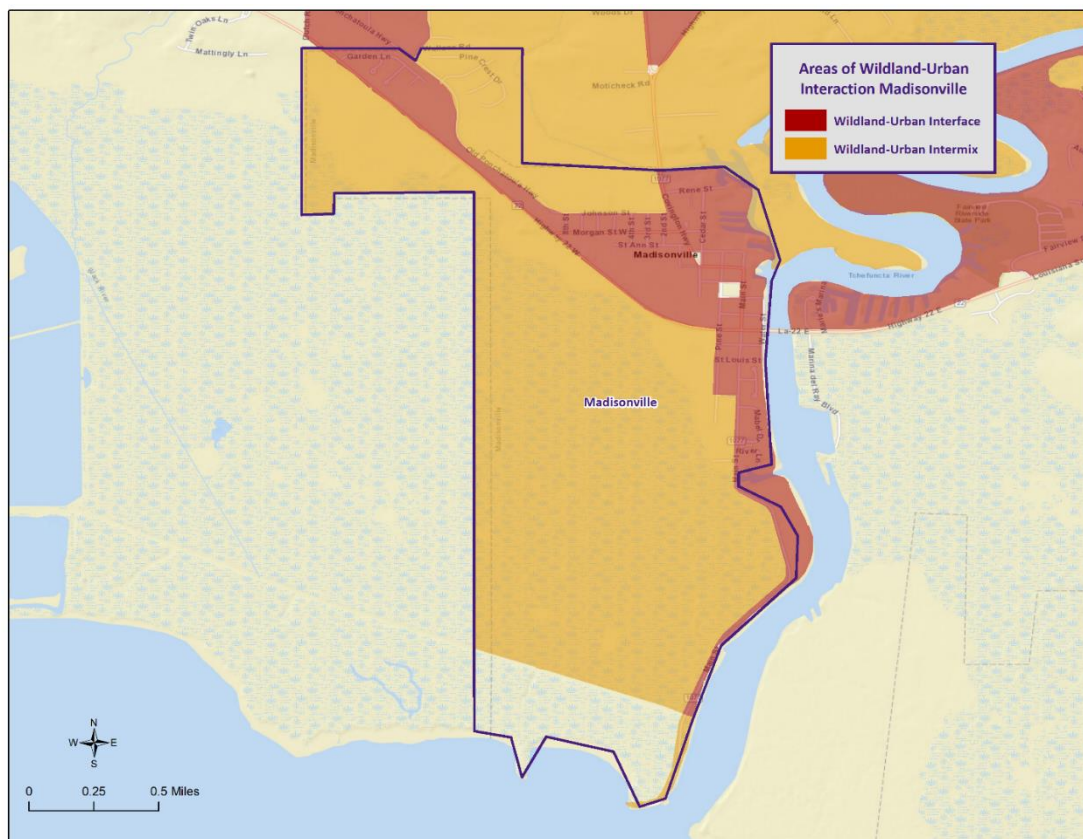


Figure 2-41: Wildland-Urban Interaction in Madisonville

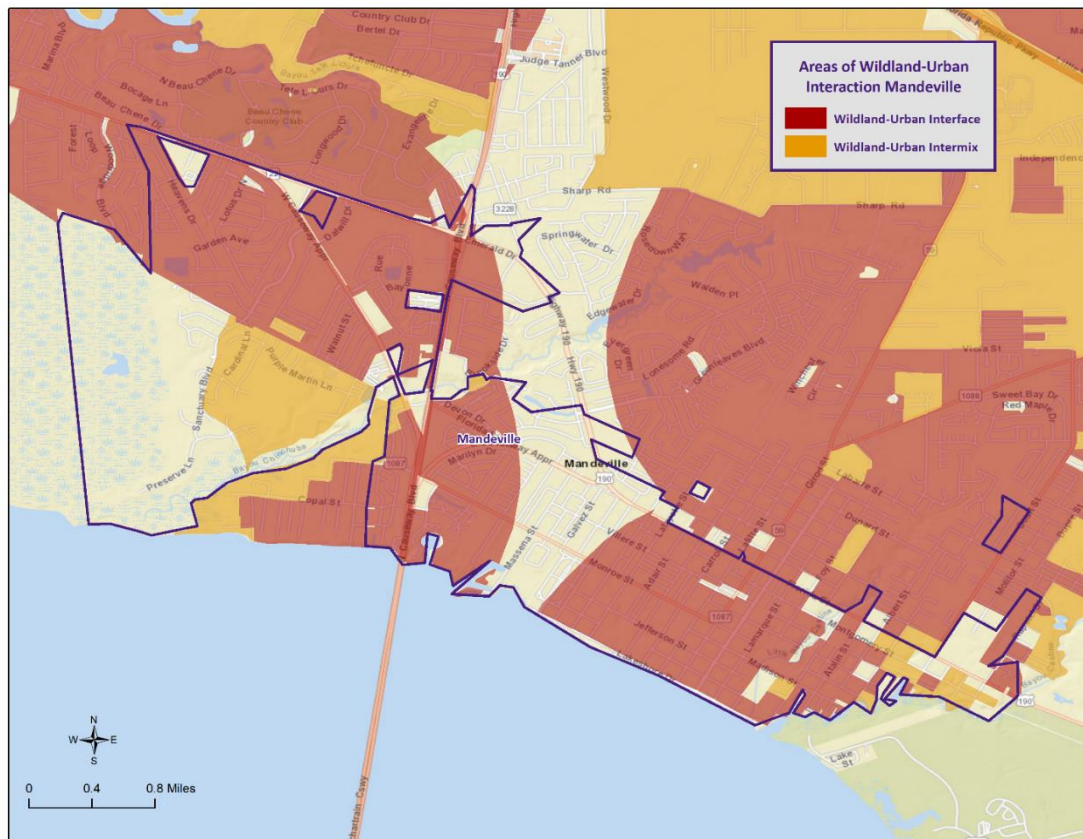


Figure 2-42: Wildland-Urban Interaction in Mandeville

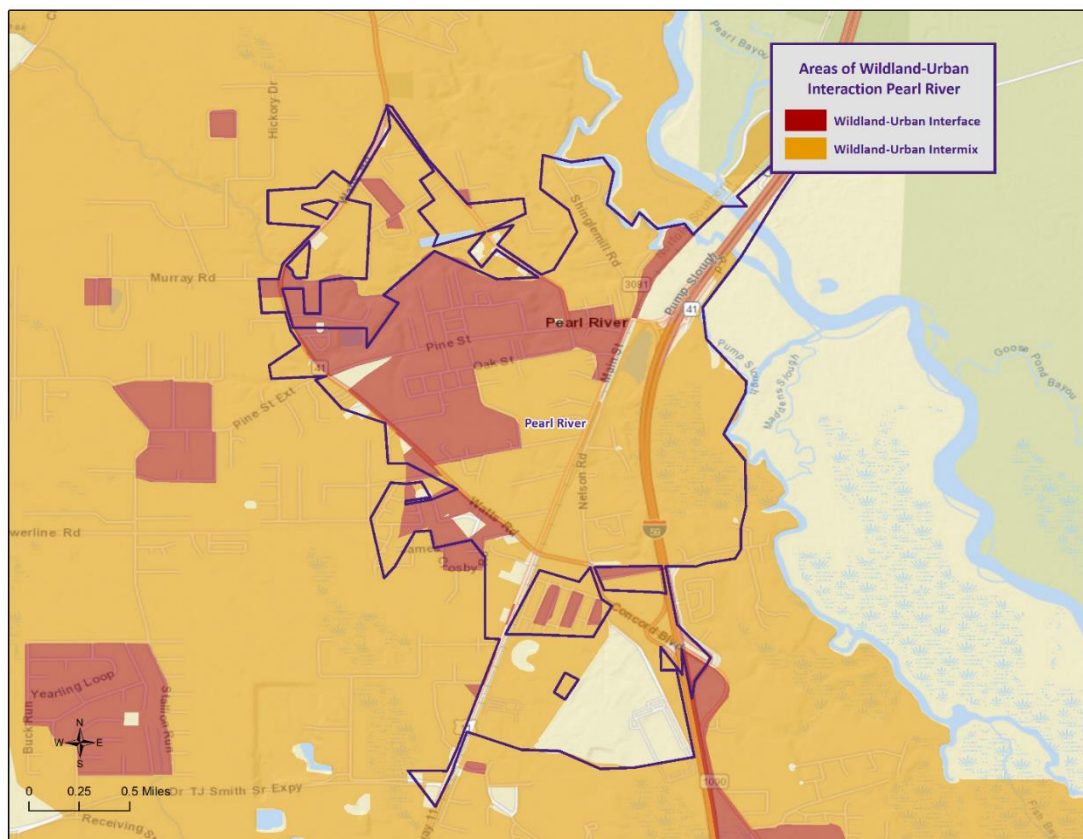


Figure 2-43: Wildland-Urban Interaction in Pearl River



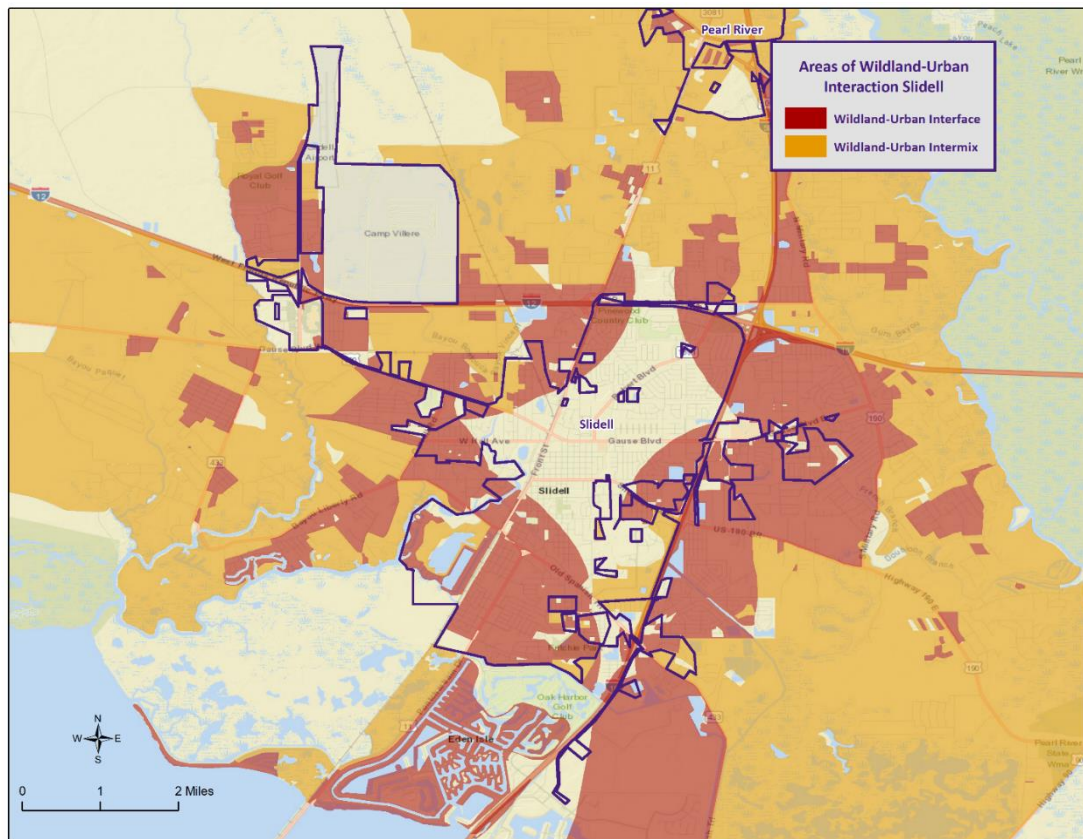


Figure 2-44: Wildland-Urban Interaction in Slidell

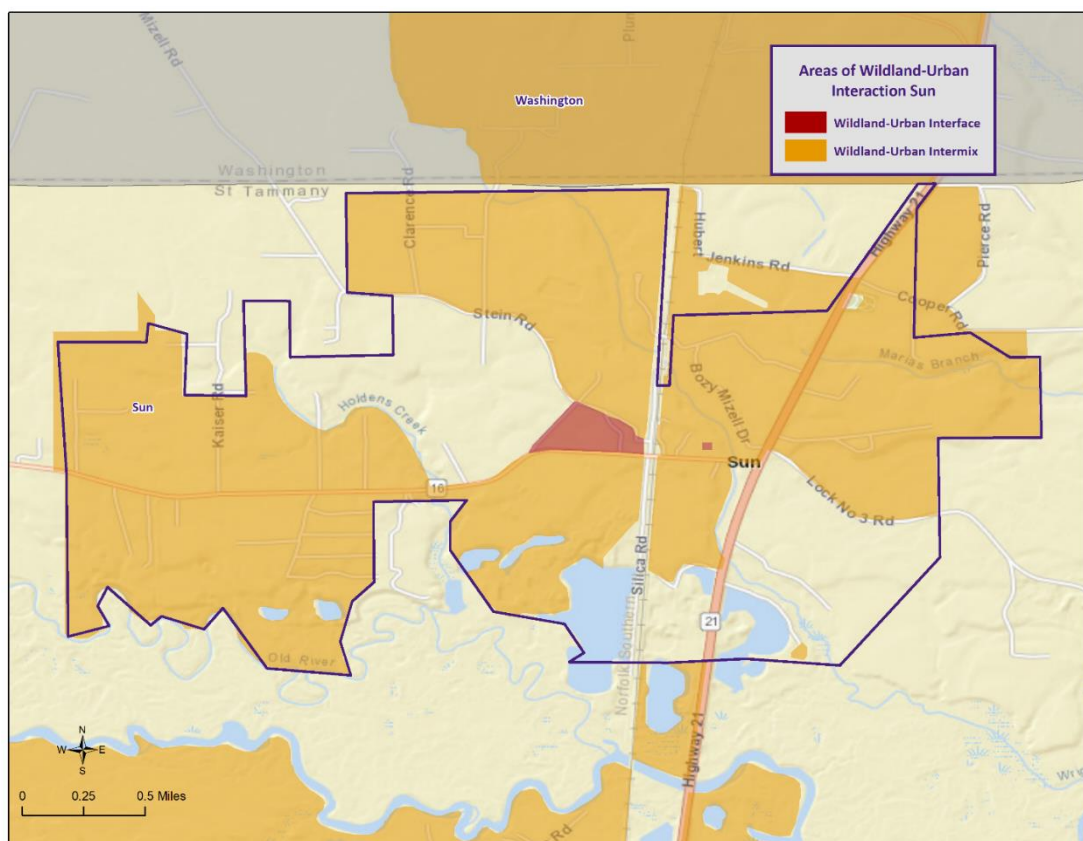


Figure 2-45: Wildland-Urban Interaction in Sun

*Previous Occurrences / Extents*

The NCEI Storm Events report no wildfire events occurring within the boundaries of St. Tammany Parish between the years 1989 and 2019.

*Frequency / Probability*

Based on historical records, there have been no significant wildfire events within the boundaries of St. Tammany and the jurisdictions of Abita Springs, Covington, Folsom, Madisonville, Mandeville, Pearl River, Slidell, and Sun; therefore, the annual chance of occurrence for wildfires is estimated at less than 1%.

*Estimated Potential Losses*

According the NCEI Storm Events database, there have been no wildfire events which have caused property damage, crop damage, injuries, or fatalities in St. Tammany 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 2-107: Total Building Exposure by Wildland-Urban Interaction Areas.*

*(Source: Hazus)*

Jurisdiction	Estimated Total Building Exposure
<b>St. Tammany Parish (Unincorporated)</b>	\$3,621,744,000
<b>Abita Springs</b>	\$13,673,000
<b>Covington</b>	\$162,185,000
<b>Folsom</b>	\$56,000
<b>Madisonville</b>	\$77,914,000
<b>Mandeville</b>	\$214,324,000
<b>Pearl River</b>	\$20,038,000
<b>Slidell</b>	\$904,675,000
<b>Sun</b>	\$7,458,000
<b>Total</b>	<b>\$5,022,067,000</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 2-108: Estimated Exposure for Unincorporated St. Tammany Parish by Sector.*  
(Source: Hazus)

St. Tammany Parish (Unincorporated)	Estimated Total Building Exposure by Sector
Agricultural	\$3,174,023,000
Commercial	\$4,666,000
Government	\$375,264,000
Industrial	\$3,729,000
Religious / Non-Profit	\$8,016,000
Residential	\$27,489,000
Schools	\$28,557,000
<b>Total</b>	<b>\$3,621,744,000</b>

*Table 2-109: Estimated Exposure for Abita Springs by Sector.*  
(Source: Hazus)

Abita Springs	Estimated Total Building Exposure by Sector
Agricultural	\$11,340,000
Commercial	\$1,233,000
Government	\$600,000
Industrial	\$20,000
Religious / Non-Profit	\$5,000
Residential	\$475,000
Schools	\$0
<b>Total</b>	<b>\$13,673,000</b>

*Table 2-110: Estimated Exposure in Covington by Sector.*  
(Source: Hazus)

Covington	Estimated Total Building Exposure by Sector
Agricultural	\$152,376,000
Commercial	\$610,000
Government	\$4,100,000
Industrial	\$610,000
Religious / Non-Profit	\$89,000
Residential	\$190,000
Schools	\$4,210,000
<b>Total</b>	<b>\$162,185,000</b>



Table 2-111: Estimated Exposure in Folsom by Sector.

(Source: Hazus)

<b>Folsom</b>	<b>Estimated Total Building Exposure by Sector</b>
Agricultural	\$45,000
Commercial	\$0
Government	\$0
Industrial	\$0
Religious / Non-Profit	\$5,000
Residential	\$0
Schools	\$6,000
<b>Total</b>	<b>\$56,000</b>

Table 2-112: Estimated Exposure in Madisonville by Sector.

(Source: Hazus)

<b>Madisonville</b>	<b>Estimated Total Building Exposure by Sector</b>
Agricultural	\$63,999,000
Commercial	\$1,145,000
Government	\$4,222,000
Industrial	\$0
Religious / Non-Profit	\$3,100,000
Residential	\$3,336,000
Schools	\$2,112,000
<b>Total</b>	<b>\$77,914,000</b>

Table 2-113: Estimated Losses in Mandeville by Sector.

(Source: Hazus)

<b>Mandeville</b>	<b>Estimated Total Building Exposure by Sector</b>
Agricultural	\$187,210,000
Commercial	\$64,000
Government	\$15,431,000
Industrial	\$18,000
Religious / Non-Profit	\$5,717,000
Residential	\$42,000
Schools	\$5,842,000
<b>Total</b>	<b>\$214,324,000</b>

Table 2-114: Estimated Exposure in Pearl River by Sector.

(Source: Hazus)

Pearl River	Estimated Total Building Exposure by Sector
Agricultural	\$16,811,000
Commercial	\$444,000
Government	\$1,911,000
Industrial	\$71,000
Religious / Non-Profit	\$801,000
Residential	\$0
Schools	\$0
<b>Total</b>	<b>\$20,038,000</b>

Table 2-115: Estimated Exposure in Slidell for a 100-Year Hurricane Event

(Source: Hazus)

Slidell	Estimated Total Building Exposure by Sector
Agricultural	\$830,761,000
Commercial	\$118,000
Government	\$41,710,000
Industrial	\$3,162,000
Religious / Non-Profit	\$27,336,000
Residential	\$132,000
Schools	\$1,456,000
<b>Total</b>	<b>\$904,675,000</b>

Table 2-116: Estimated Exposure in Sun for by Sector.

(Source: Hazus)

Sun	Estimated Total Losses from 100-Year Hurricane Event
Agricultural	\$6,100,000
Commercial	\$596,000
Government	\$762,000
Industrial	\$0
Religious / Non-Profit	\$0
Residential	\$0
Schools	\$0
<b>Total</b>	<b>\$7,458,000</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 2-117: 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>St. Tammany Parish (Unincorporated)</b>	179,542	150,720	83.9%
<b>Abita Springs</b>	2,365	2,111	89.3%
<b>Covington</b>	8,765	8,712	99.4%
<b>Folsom</b>	716	699	97.6%
<b>Madisonville</b>	748	701	93.7%
<b>Mandeville</b>	11,560	9,456	81.8%
<b>Pearl River</b>	2,506	2,100	83.8%
<b>Slidell</b>	27,068	22,444	82.9%
<b>Sun</b>	470	470	100.0%
<b>Total</b>	<b>233,740</b>	<b>197,413</b>	<b>84.5%</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 2-118: Population in Unincorporated St. Tammany Parish Located within a Wildland-Urban Interaction Area.*

*(Source: 2010 Census Data)*

St. Tammany Parish (Unincorporated)		
Category	Total Numbers	Percentage of People in Hazard Area
<b>Number in Hazard Area</b>	150,720	83.9%
<b>Persons Under 5 Years</b>	9,827	6.5%
<b>Persons Under 18 Years</b>	28,953	19.2%
<b>Persons 65 Years and Over</b>	19,111	12.7%
<b>White</b>	125,972	83.6%
<b>Minority</b>	24,748	16.4%

*Table 2-119: Population in Abita Springs Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Abita Springs		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,111	89.3%
Persons Under 5 Years	128	6.1%
Persons Under 18 Years	368	17.4%
Persons 65 Years and Over	278	13.2%
White	1,942	92.0%
Minority	169	8.0%

*Table 2-120: Population in Covington Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Covington		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	8,712	99.4%
Persons Under 5 Years	551	6.3%
Persons Under 18 Years	1,532	17.6%
Persons 65 Years and Over	1,303	15.0%
White	6,774	77.8%
Minority	1,938	22.2%

*Table 2-121: Population in Folsom Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Folsom		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	699	97.6%
Persons Under 5 Years	59	8.4%
Persons Under 18 Years	103	14.8%
Persons 65 Years and Over	87	12.4%
White	513	73.5%
Minority	186	26.5%

*Table 2-122: Population in Madisonville Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Madisonville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	701	93.7%
Persons Under 5 Years	45	6.4%
Persons Under 18 Years	109	15.5%
Persons 65 Years and Over	104	14.8%
White	609	86.9%
Minority	92	13.1%

*Table 2-123: Population in Mandeville Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Mandeville		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	9,456	81.8%
Persons Under 5 Years	486	5.1%
Persons Under 18 Years	1,855	19.6%
Persons 65 Years and Over	1,528	16.2%
White	8,562	90.6%
Minority	894	9.5%

*Table 2-124: Population in Pearl River Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Pearl River		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	2,100	83.8%
Persons Under 5 Years	149	7.1%
Persons Under 18 Years	355	16.9%
Persons 65 Years and Over	285	13.6%
White	1,955	93.1%
Minority	145	6.9%



*Table 2-125: Population in Slidell Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Slidell		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	22,444	82.9%
Persons Under 5 Years	1,582	7.1%
Persons Under 18 Years	4,134	18.4%
Persons 65 Years and Over	3,138	14.0%
White	17,046	76.0%
Minority	5,398	24.1%

*Table 2-126: Population in Sun Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)*

Sun		
Category	Total Numbers	Percentage of People in Hazard Area
Number in Hazard Area	470	100.0%
Persons Under 5 Years	21	4.5%
Persons Under 18 Years	90	19.2%
Persons 65 Years and Over	58	12.3%
White	390	83.0%
Minority	80	17.0%

#### *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.

### 3. Capability Assessment

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

Through this assessment, St. Tammany Parish and the participating 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

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

*Table 3-1: Planning and Regulatory Capabilities*

Planning and Regulatory									
Please indicate which of the following plans and regulatory capabilities your jurisdiction has in place.									
	St. Tammany Parish	Abita Springs	Covington	Folsom	Madisonville	Mandeville	Pearl River	Slidell	Sun
Plans	Yes / No								
Comprehensive / Master Plan	Yes	Yes	Yes	No	YES	Yes	No	No	No
Capital Improvements Plan	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Economic Development Plan	Yes	No	Yes	No	No	No	No	Yes	No
Local Emergency Operations Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continuity of Operations Plan	Yes	No	Yes	No	No	Yes	No	Yes	No
Transportation Plan	Yes	No	Yes	No	Yes	Yes	No	Yes	No
Stormwater Management Plan	Yes	Yes	Yes	No	No	yes	No	Yes	No
Community Wildfire Protection Plan	No	No	No	No	No	No	No	No	Yes
Other plans (redevelopment, recovery, coastal zone management)	Yes	Yes	No	No	No	Yes	No	Yes	No
Building Code, Permitting and Inspections	Yes / No								
Building Code	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	Yes	N/A	No	No	Yes	No	Yes	No
Fire Department ISO/PIAL rating	2	3	3	Yes	Yes	Yes	Yes	Yes	Yes
Site plan review requirements	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Land Use Planning and Ordinances	Yes / No								
Zoning Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Subdivision Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Floodplain Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Flood Insurance Rate Maps	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acquisition of land for open space and public recreation uses	Yes	No	Yes	No	No	Yes	No	Yes	Yes
Other	No	No	Yes	No	No	yes	No	No	No

St. Tammany Parish 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 commitment 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

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

As of the 2020 update, St. Tammany Parish and its 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 St. Tammany Parish Government is also responsible for enforcing the parish ordinances related to health and safety, property maintenance standards, and condemnation of unsafe structures.

The St. Tammany Parish Government 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, St. Tammany Parish as a whole has 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

As an entire community, St. Tammany Parish has administrative and technical capabilities in place that may be utilized in reducing hazard impacts or implementing hazard mitigation activities. Such capabilities include staff, skillset, and tools available in the community that may be accessed to implement mitigation activities and to effectively coordinate resources. The ability to access and coordinate these resources is also important. The table on the following page shows examples of resources in place in St. Tammany Parish.

Table 3-2: Administration and Technical Capabilities

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

Financial capabilities are the resources that St. Tammany Parish has 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 St. Tammany Parish:

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.									
	St. Tammany Parish	Abita Springs	Covington	Folsom	Madisonville	Mandeville	Pearl River	Slidell	Sum
Funding Resource	Yes / No								
Capital Improvements project funding	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No
Authority to levy taxes for specific purposes	Yes	No	No	No	No	Yes	No	Yes	No
Fees for water, sewer, gas, or electric services	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Impact fees for new development	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Stormwater Utility Fee	No	No	No	No	No	Yes	No	No	No
Community Development Block Grant (CDBG)	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes
Other Funding Programs	No	Yes	No	No	No	Yes	No	Yes	Yes

## 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.

St. Tammany Parish has 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.									
	St. Tammany Parish	Abita Springs	Covington	Folsom	Madisonville	Mandeville	Pearl River	Slidell	Sun
Program / Organization	Yes / No								
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No
Natural Disaster or safety related school program	Yes	Yes		No	No	No	No	No	No
Storm Ready certification	Yes	No	No	No	No	No	No	Yes	No
Firewise Communities certification	No	Yes	No	No	No	No	No	No	No
Public/Private partnership initiatives addressing disaster-related issues	Yes	No	No	No	No	Yes	No	No	No
Other	No	No	N/A	No	No	Yes	No	No	No

The communities within St. Tammany Parish rely on St. Tammany OHSEP and/or St. Tammany Parish Government agencies for the above listed planning and regulatory, administrative and technical, financial, and education and outreach capabilities.

As reflected with above existing regulatory mechanisms, programs and resources within the parish, St. Tammany Parish remains committed to expanding and improving on the existing capabilities within the parish. Communities, along with St. Tammany Parish will work together 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 all enhance and expand risk reduction for all of St. Tammany Parish.

### Flood Insurance and Community Rating System

According to the list of participating communities dated May 1, 2019, St Tammany Parish is a participant in the Community Rating System (CRS), as are the jurisdictions of Covington, Mandeville, and Slidell. Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements. Maintaining and improving the CRS rating for the Parish and participating jurisdictions is recognized as a high priority by the Hazard Mitigation Steering Committee.

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 May 2019, 317 communities in the State of Louisiana participate in the Federal Emergency Management Agency's National Flood Insurance Program (NFIP). Of these communities, 47 (or 15%) participate in the Community Rating System (CRS). Jefferson Parish leads the state with a rating of Class 5, followed by the City of Mandeville in St. Tammany Parish with a Class 6 rating. Also in St. Tammany Parish, the City of Slidell has

a Class 7 rating, as does the Parish of St. Tammany, while the City of Covington has a Class 9 rating. Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 27 participate in the CRS. The remaining 23 communities present an outreach opportunity for encouraging participation in the CRS.

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

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

communities receive fewer points for certain activities (e.g., Activity 320 Map Information Service). It is likely that some communities with marginal CRS Class 9 programs 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.

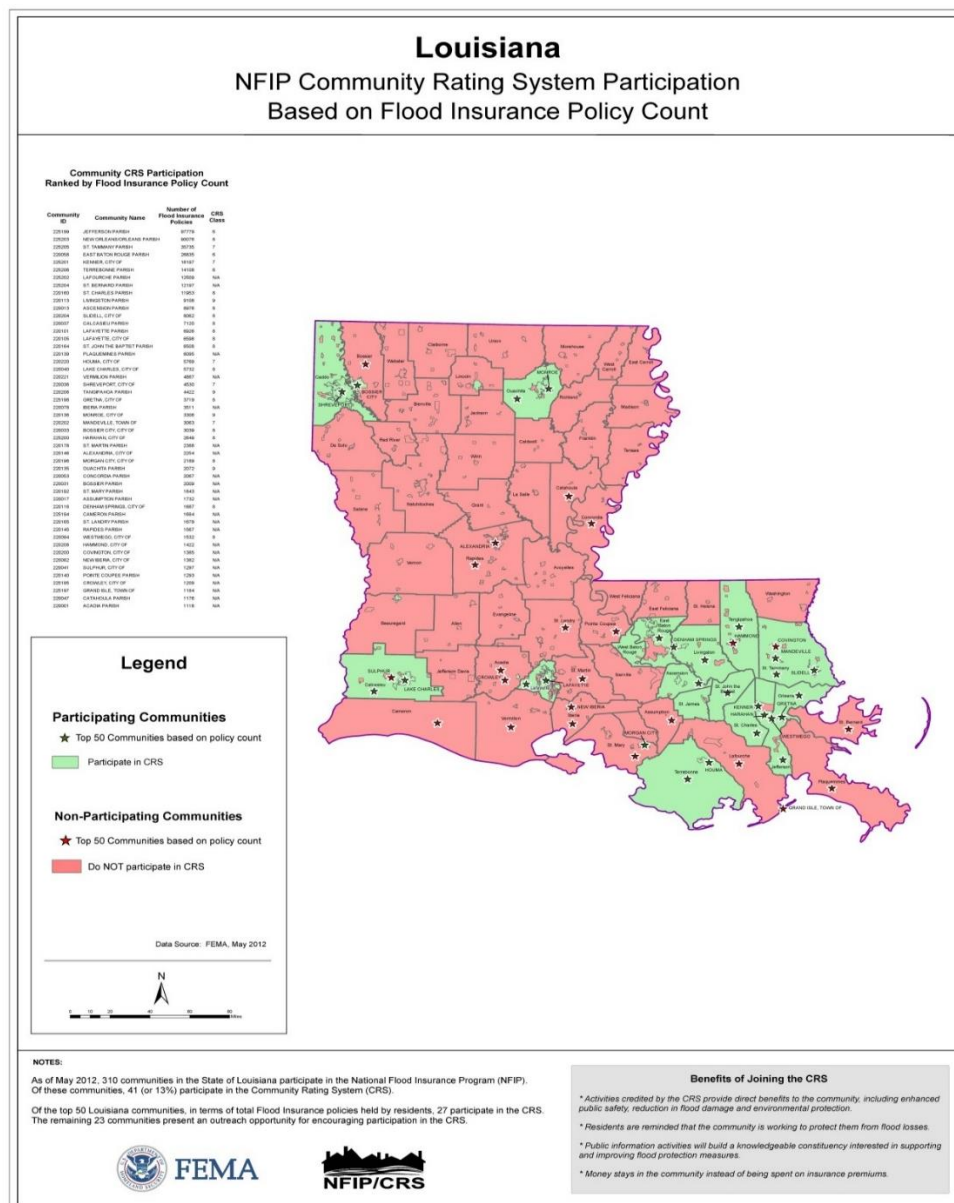


Figure 3-2: Louisiana CRS Participation  
(Source: FEMA<sup>2</sup>)

<sup>2</sup> [http://www.fema.gov/media-library-data/20130726-2128-31471-9581/ks\\_ky\\_la\\_crs\\_may\\_2012\\_508.zip](http://www.fema.gov/media-library-data/20130726-2128-31471-9581/ks_ky_la_crs_may_2012_508.zip)

In addition to the direct financial reward for participating in the Community Rating System, there are many other reasons to participate in the CRS. As FEMA staff often say, “If you are only interested in saving premium dollars, you’re in the CRS for the wrong reason.”

The other benefits that are more difficult to measure in dollars include:

1. The activities credited by the CRS provide direct benefits to residents, including:

- Enhanced public safety
- A reduction in damage to property and public infrastructure
- Avoidance of economic disruption and losses
- Reduction of human suffering
- Protection of the environment

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

3. A community can evaluate the effectiveness of its flood 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.

\*\*More information on the Community Rating System can be found at <https://www.fema.gov/national-flood-insurance-program-community-rating-system> \*\*

## NFIP Worksheets

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

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## 4. Mitigation Strategy

### Introduction

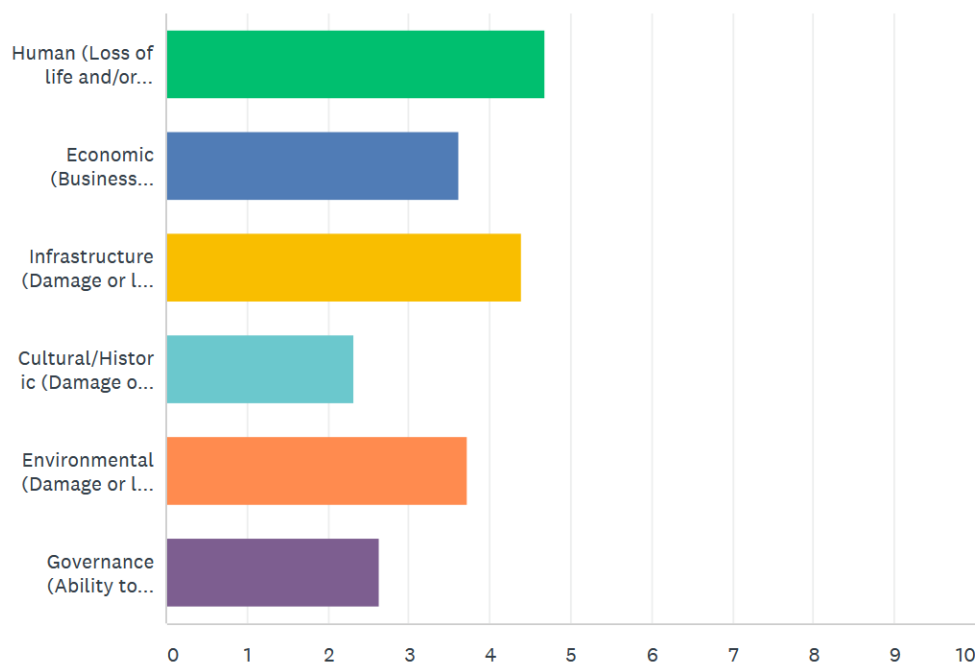
St. Tammany Parish's Hazard Mitigation Strategy has a common guiding principle and is the demonstration of the parish's commitment to reduce risks from hazards. The strategy also serves as a guide for parish and local decision makers as they commit resources to reducing the effects of hazards.

St. Tammany Parish confirmed the goals, objectives, actions and projects over the period of the hazard mitigation plan update process. The mitigation actions and projects in this 2020 HMP update are a product of analysis and review of the St. Tammany Parish Hazard Mitigation Plan Steering Committee under the coordination of the St. Tammany Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2015 plan, for review from May 2020 – July 2020.

An online public opinion survey of St. Tammany Parish residents was conducted between June and July 2020. The survey was designed to capture public perceptions and opinions regarding natural hazards in St. Tammany Parish. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

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

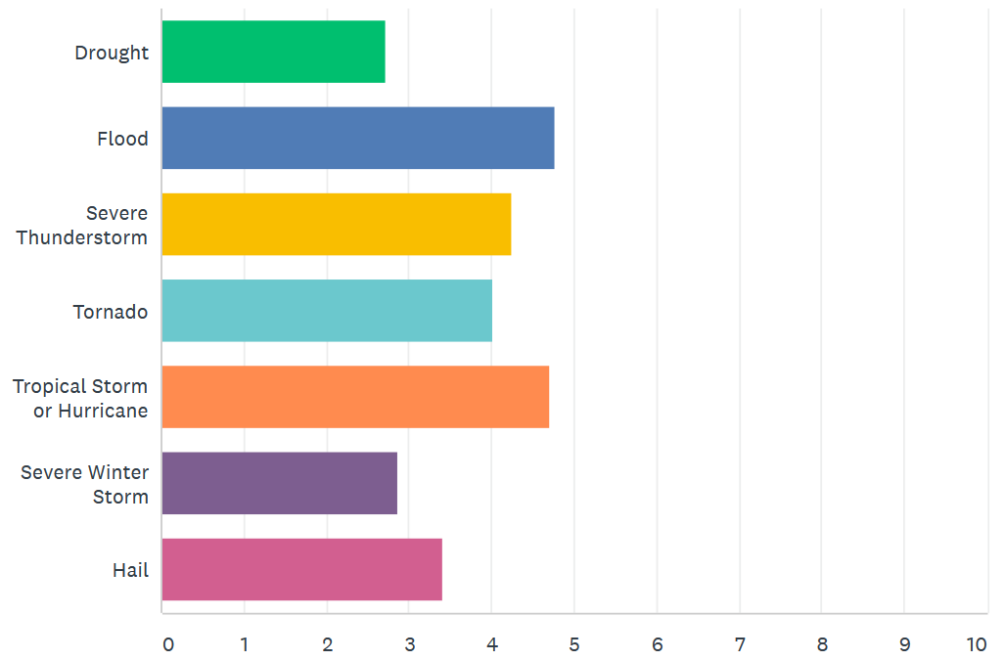
1. Human (Loss of life and/or injuries)
2. Infrastructure (Damage or loss of bridges, utilities, schools, etc.)
3. Economic (Business closures and/or job losses) and Environmental (Damage or loss of forests, pastureland, waterways etc.)

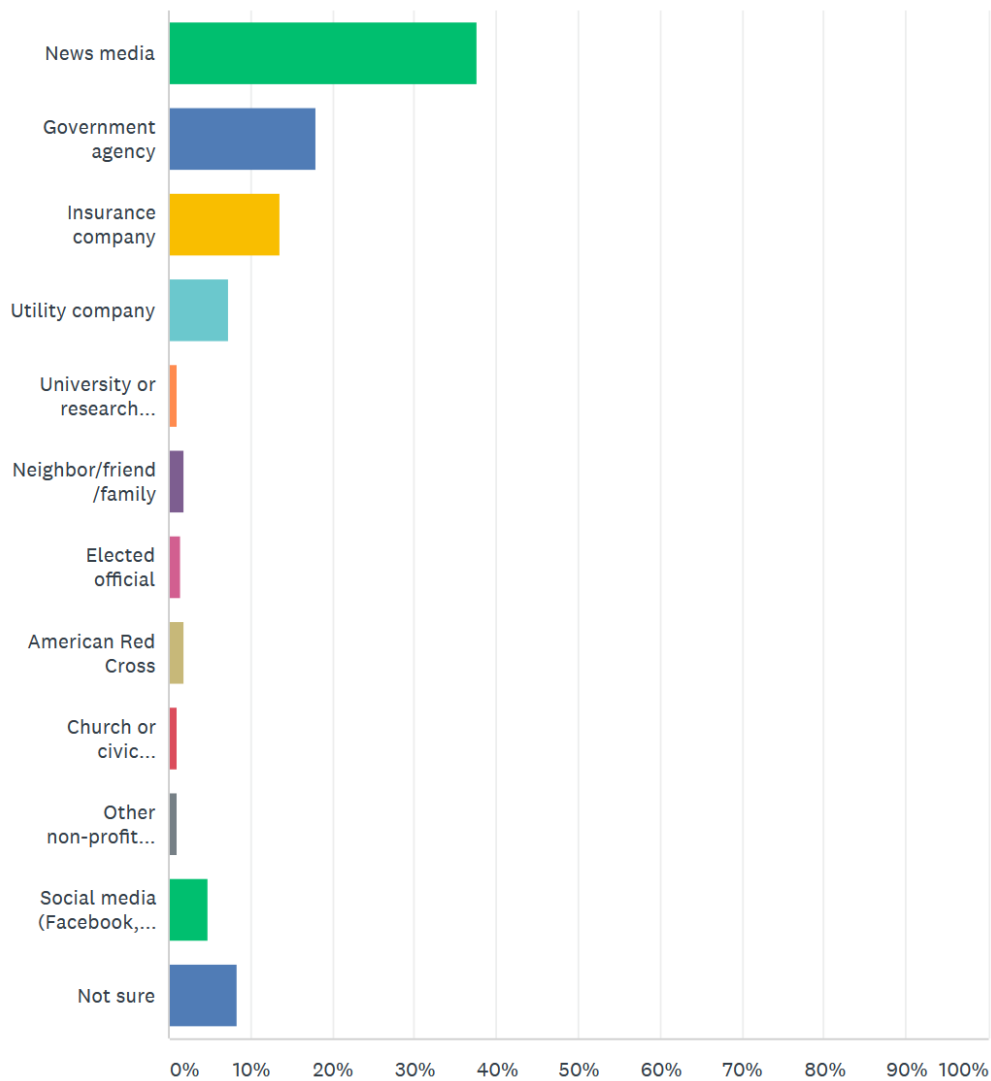




The survey results also indicated which natural disasters citizens were *most concerned* with being affected by in St. Tammany Parish. The top three natural disasters selected were:

1. Tropical Storm or Hurricane
2. Flooding
3. Severe Thunderstorm





The results shown above are related to the manner in which the general population receives information on how to make their home safer from natural disasters. These results are encouraging because it shows that the public has high confidence in the information being disseminated by news media and local government agencies. Implementation of the outreach activities put forth by parish officials and offices seem to have been executed in a successful manner

This activity confirms that the goals and action items developed by the St. Tammany Parish Hazard Mitigation Plan Steering Committee are representative of the outlook of the community at large. Full survey results can be found here:

<https://www.surveymonkey.com/results/SM-XMSFL89G7/>

## 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 St. Tammany Parish from natural 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, St. Tammany 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 St. Tammany Parish Hazard Mitigation Plan Update Steering 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. Identify and pursue preventative structural and non-structural measures that will reduce future damages.
2. Enhance public awareness and understanding of disaster preparedness.
3. Reduce repetitive flood losses in parish and municipalities.
4. Facilitate sound building practices in the parish and municipalities so as to reduce or eliminate the potential impact of hazards.
5. Improve the ability of the parish and municipalities to rapidly recover and restore facilities and services to the public.

The Mitigation Action Plan focuses on actions to be taken by St. Tammany Parish. 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 Steering 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.

## 2020 Mitigation Actions and Update on Previous Plan Actions

The St. Tammany Parish Hazard Mitigation Plan Steering Committee identified new actions that would reduce and/or prevent future damage within St. Tammany Parish and their respective communities. In that effort, the parish 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 St. Tammany 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.

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

#### St. Tammany Parish Completed Mitigation Actions

Completed Mitigation Projects in St Tammany Parish and Municipalities					
Completed Mitigation Projects in St Tammany Parish and Municipalities	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
Bayou Chinchuba Detention Pond Retrofit	Retrofitting the existing Bayou Chinchuba pond to increase water quality function.	FEMA/HMPG	St Tammany Parish/ Department of Public Works- Engineering	Tropical Cyclone, Flooding	Completed
Oak Harbor Elevation	Raise Oak Harbor Blvd where it goes over the levee near HWY 11. Currently the road height is lower than the adjacent levee and doesn't meet current USACE design standards for a road crossing a levee.	Local	St Tammany Parish Government	Flooding, Tropical Cyclone	Completed
HWY 11 Road Raising	HWY 11 will be raised from the current elevation of 9' to an elevation of 18' at the crest.	DOTD, Local	St Tammany Parish Government	Flooding, Tropical Cyclone	Completed
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish.	FEMA, HMPG	St Tammany Parish Government	Coastal Erosion, Dam Failure, Levee Failure, Flooding, wind, lightning, hail, Tornado, Tropical Cyclone, Wildfire, Termites, Fog	Completed

Completed Mitigation Projects in St Tammany Parish and Municipalities	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
Strengthening of procedures for enforcing Building codes and regulations	Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations	None. Staff time will cover.	Department of Permits and Regulatory, St Tammany OHSEP, Cultural and Governmental Affairs	Tropical Cyclone, wind, Flooding, Tornado, Dam Failure, Levee Failure, Termites	Completed
Code Replacement	Replace standard building code with new State Uniform Construction Code	None. Staff time will cover.	Department of Permits and Regulatory/St Tammany Government/Madisonville Mayor's Office	Tropical Cyclone, wind, Flooding, Tornado, Dam Failure, Levee Failure, Termites	Completed
Continued CRS Participation	Community Rating System—The Parish did not apply for a class improvement, but is expected to move from class 9 to an 8 based on the results of 2008 cycle verification visit	None. Staff time will cover.	Department of Permits and Regulations	Tropical Cyclone, Flooding,	Completed
Evaluation of at risk properties	Evaluate properties to determine if they need to be retrofitted or modified to protect them from hazards	Local Funds	St Tammany OHSEP/St Tammany Parish Government/Pearl River Mayor's Office	Tropical Cyclone, Flooding, wind, lightning, hail, Tornado	Completed
Implementation of Urban Forestry Program	Parish will implement an urban forestry program modeled on the criteria of the Tree City USA program	None. Staff time will cover.	Department of Permits and Regulatory/ St Tammany Parish Government/ Abita Springs Mayor's Office/Folsom Mayor's Office / Pearl River Mayor's Office /Madisonville Mayor's Office	Tropical Cyclone, wind, Tornado	Completed
Review of St Tammany EOP	St. Tammany Parish Multi-Hazard Emergency Operations Plan will be reviewed to determine when improvements can be made and how to maximize credit under the Community Rating System	None. Staff time will cover.	St Tammany OHSEP	Tropical Cyclone, Flooding, wind, lightning, hail	Completed
Mandeville Drainage Projects: Monroe Street Drainage	The proposed project would change the elevation of a section of roadway that is inundated by flood waters on a regular basis. Additionally, it would improve the drainage along portions of Kleber Street where there is a history of flooding including of structures.	FEMA HMPG	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed



Completed Mitigation Projects in St Tammany Parish and Municipalities	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
Mandeville Drainage Projects: Madison Street	The proposed project would close in the existing open ditches with new 36" RCP culverts, with associated catch basins and drop inlets. Madison Street from Marigny Avenue to Little Bayou Castain is approximately 1,200 linear feet. The project will help drainage in an area with a history of flooding, and where homes have received flood damage in the past.	Local, State, Federal	City of Mandeville Mayor's Office	Tropical Cyclone, Flooding	Completed
Mandeville Drainage Projects	Coffee (Villere to Jefferson); Overlay (2,300' x18') Drainage (24" RCPA to 54" RCPA)	City Budget, potential for FEMA grant	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Trace drainage (Marigny to Lamarque and Capusel to Little Bayou Castine)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Trace Drainage (Lafitte to Coffee)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Wilkinson (Extend 60" RCPA) (North of Monroe)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Carondelet (Junction Box at School)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Esquinance (Oak to City limits)Reconstruct Roadway (550' x 20') Drainage (18" RCPA)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Carroll (Hwy 190 to Monroe) Overlay (2200'x18') Drainage (18'RCPA to 24"RCPA)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Wilkinson (ravine aux Coquilles to Jefferson) (capital outlay request submitted) Overlay (1300'x18') Drainage (24"RCPA)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Lamarque (LA Hwy 190 to lakeshore) Overlay (4400'x2-' ) Drainage (18"RCPA @ roadways and drives) Water (La Hwy 190 to Livingston)	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Mandeville Drainage Projects	Sandra Lee (W. Causeway to Lovers) Concrete (800'x20')	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed

Completed Mitigation Projects in St Tammany Parish and Municipalities	Action Description	Funding Source	Responsible Party, Agency, or Department	Hazard	Status
Mandeville Drain Team Program	City has used a program called "Drain Team" to increase public awareness and involvement in keeping ditches and drainage inlets free of obstruction. Notably, the city has also prepared and initiated a sandbag distribution plan, which has been successfully deployed twice during the last few years. This is an ongoing effort that the city intends to continue	City Budget	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Completed
Slidell Flood Gates	City Barn and Floodgate and Automated Bar Screen Replacement	Local, State, FEMA	Slidell Department of Engineering	Tropical Cyclone, Flooding	Completed
Slidell W-15 Lateral Canal Re-Construction	Lateral canal reconstruction, including phase 1 study. Phase 1 study has been completed.	Local, Corps of Engineers	Slidell Department of Engineering, Corps of Engineers	Tropical Cyclone, Flooding, Levee Failure	Completed
Slidell Pump Station Improvements 1	Schneider Canal Storm water Pump Station Bar Screen Improvements	Local, State, FEMA	Slidell Department of Engineering	Tropical Cyclone, Flooding	Completed
Slidell Drain Improvements	Eastwood Storm Drain Line Improvements	Local, FEMA	Slidell Department of Engineering	Tropical Cyclone, Flooding	Completed
Slidell Pump Station Improvements 2	Dellwood Storm water Pump Station Improvements	Local, FEMA	Slidell Department of Engineering	Tropical Cyclone, Flooding	Completed
Slidell Culvert Improvements	Markham/Peachtree Box Culvert Improvements	Local, FEMA	Slidell Department of Engineering	Tropical Cyclone, Flooding	Completed
Strengthen building codes for water usage in Slidell	Passing Building Codes to Reduce Residential and Commercial Water Usage	Local, FEMA	Slidell Department of Engineering	Drought	Completed
Sun building code improvements	Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations. Permits Dept. will strengthen procedures and enforce building codes and floodplain regulations.	Staff Time	Department of Permits and Regulatory, St Tammany OHSEP, Cultural and Governmental Affairs/Sun Mayor's Office	Tropical Cyclone, Flooding, Tornado, wind, Dam Failure, Levee Failure, Termites	Completed

## St. Tammany Parish Previous and New Mitigation Actions

Unincorporated St Tammany Parish Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Schneider Canal – SELA	The proposed project includes construction of a T-wall between two existing levees (segment 2A and Oak Harbor levees) with a sluice gate for each of the existing six pumps to discharge through. This will provide greater flood protection to the pump station and its protected area.	FEMA, USACE, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Tropical Cyclone, Flooding, Levee Failure	Ongoing
FEMA/LAMP DFIRM	The STP LAMP program will collaborate with FEMA to characterize the levee reaches in the parish, gather all available data, determine additional data needs that are critical for certification, and procure data.	Federal, State, Local	1-5 Years	St Tammany Parish Government/St. Tammany Parish OHSEP	Tropical Cyclone, Flooding, Levee Failure	Ongoing
Fritchie Marsh Hydrolic Restoration W-14	"Fritchie Marsh Hydrolic Restoration (W-14)" that includes widening the W-14 from Fremaux to Daney St. Waiting on FEMA Phase 2 (construction) funding to be approved.	FEMA, USACE, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Tropical Cyclone, Flooding	In Progress
W-14 Canal - SELA	Design and construction of the Initial Robert Boulevard Detention Pond, West Diversion Detention Pond and Channel Improvements.	FEMA, USACE, State, Local	N/A	St Tammany Parish Government/ Department of Public Works- Engineering	Tropical Cyclone, Flooding	Deleted
Hardening of Critical Facilities	Installed window screens at EOC & Tyler; generators at all shelters. Need additional funding for generators at new EOC/Safe Room.	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Department of Public Works	Tropical Cyclone, Wind, Hail, Tornadoes	Ongoing
Acquisition	Give special attention to repetitively flooded areas or areas susceptible to other hazards by Identification and acquisition of land and/or properties to mitigate against future damages, lives and property lost.	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ St. Tammany Parish OHSEP	Coastal Erosion, Dam Failure, Levee Failure, Flooding, Tropical Cyclone, Wildfire, Termites	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Storm Water Detention Ponds	Ponds will remove a portion of the storm water runoff from the channels, thus reducing peak flows. Locations: Tenet pond - completed 12/3/19. Ben Thomas pond is bundled with the Eddins Canal project, so we are waiting on FEMA to approve Ph2. Then Ben Thomas will be ready to bid. The Venchy Branch - Bogue Falaya project application to be submitted for Round 1 LWI funding. Raiford Oaks project, which will increase conveyance at the outfall by upgrading the receiving stream; thereby, reducing flooding downstream of the Raiford Oaks subdivision's detention pond. Plans are in design for that one now and should be finished by 12/31/2020, so completion projected in 2021.	FEMA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works	Tropical Cyclone, Flooding	In Progress
Wastewater Subdivision Project	285 unsewered neighborhoods throughout the Parish (by drainage basin). Requires Installation of a gravity sewer collection system and pump station in each neighborhood	FEMA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Flooding	Ongoing
Cloverland Drainage	Improve drainage of Tag-a-long Creek in the Cloverland Acres Subdivision area. Will require acquisition and clearing of land to develop an overflow canal.	FEMA/HMP G	N/A	St Tammany Parish Government/ Department of Public Works- Engineering	Tropical Cyclone, Flooding	Deleted
Eddins Canal	Improve and existing pond and storm water conveyance in Eddins Canal, improving subsurface conveyance within the subdivision to Eddins Canal and adding an outfall at Heather Drive to the W15 Channel. Currently waiting to start Phase 2.	FEMA/HMP G	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Flooding, Tropical Cyclone	In Progress
Safe Room Project	The project will include design and construction for Multi-use Facility and Safe Room. Plans are >90% complete, NOAA will also be embedded at the EOC and need 12,000 ft2. Plans are on-hold until NOAA's team is finalized. Need additional funding for plan revisions/review and construction.	FEMA/HMP G	1-5 Years	St Tammany Parish Government/ Facilities Management	Tornadoes, Wind	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Currently (2/28/2019) there are 3,508 properties listed on FEMA's SRL/RL list for the entire Parish. Properties to be mitigated will be prioritized based on the SRL / RL. There are 2,221 in unincorporated STP. Of these, 473 have been mitigated, 75 are in the grant process and funded for elevation, leaving 1673 yet to be mitigated..	FEMA HMPG	1-5 Years	St Tammany Parish Government/ Grants Department	Tropical Cyclone, Flooding	Ongoing
South Slidell Levee System Projects	STP6: Segment 1L, STP7: Segment 05, STP8: Segment 06, STP9: Segment 07, STP10: Segment 08, STP11: Segment 09, STP12: Segment 10, STP13: Segment 11, STP14: Segment 12, STP15: Segment 13, STP16: Segment 14, STP17: Segment 15. The benefit is to provide 100 year flood protection for a large portion of the Parish and Slidell area, greatly reducing property flood loss as well as injuries and deaths.	Federal, State, Local, Capital Outlay	2025	St Tammany Parish Government/ Department of Public Works	Tropical Cyclone, Flooding, Levee Failure	In Progress
Lower W15 Area Drainage	Provide localized improvements by improving channel conveyance and widening of the existing W-15 main canal and placing storage within the Basin to lower the tail water condition placed on the Lower W15 subdivisions. The 54 acre Tenet pond was completed 12/3/19. Widening of W-15 along French Branch Estates will bid in 2020. The Diversion Canal connecting the W-15 to the new Tenet pond directly is awaiting FEMA funding,	FEMA/HMPG	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Flooding	In Progress
Coastal MP St Tammany Shore	The West St. Tammany Shoreline Protection project is a 24,773 linear foot project. The goal of this project is the restoration of 15,677 feet of shoreline and the protection of 9106 feet shoreline. Project starting soon.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress
Coastal MP St Tammany Shore	The West St. Tammany Shoreline Protection project is a 24,773 linear foot project. The goal of this project is the restoration of 15,677 feet of shoreline and the protection of 9106 feet shoreline.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress



Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Coastal MP Guste Isle	Guste Island Marsh Creation project is a 685 acre marsh creation project. The goal of this project is the restoration of 651 acres of marsh as well as the nourishment of 34 acres of stressed marsh land.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress
Coastal MP Bayou Cane	The Bayou Cane Marsh Creation project is a 4,117 acre marsh creation project. The goal of this project is the restoration of 850 acres of low salinity marsh as well as the nourishment of 3,293 acres of stressed marsh land.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress
Coastal MP Faciane Canal	The Faciane Canal Marsh Creation project is a 2,853 acre marsh creation project. The goal of this project is the restoration of 1,997 acres of low salinity marsh as well as the nourishment of 630 acres of stressed marsh land.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress
Coastal MP Bayou Lacombe	The Bayou Lacombe Marsh Creation project is a 3,114 acre marsh creation project. The goal of this project is the restoration of 623 acres of low salinity marsh as well as the nourishment of 2,336 acres of stressed marsh land.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress
Coastal MP Fritchie	The Fritchie North Marsh Creation project is a 4,395 acre marsh creation. The goal of this project is the restoration of 2,417 acres of marsh as well as the nourishment of 1,997 acres of stressed marsh land.	FEMA, CPRA, EPA, State, Local	1-5 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Coastal Erosion	In Progress
Riverwood Drainage Study	Construction of a parallel drainage line with additional catch basins along Laurelwood Drive, Magnolia Lane and Crapemyrtle Road in Riverwood Subdivision. Phase 1 done, Phase 2 bids were opened 1/3/20 and the parish is in contracting with the lowest responsive bidder.	Statewide Flood Control	1-3 Years	St Tammany Parish Government/ Department of Public Works- Engineering	Flooding	In Progress
Reconstruct Fire Station #11	Raise the living quarters, offices, operations room, and equipment rooms above St. Tammany Parish's DFE while leaving the fire trucks and vehicles at grade level but indoors to protect them from high wind and windblown debris	FEMA, HMPG	1-3 Years	St Tammany Fire Protection District No. 1	Tropical Cyclone, Wind, Flooding	In Progress

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Fritchie Marsh Hydrolic Restoration	Widening approximately 5650 ft. of the W-14 canal from the south side of Gause Blvd to Daney St. Canal would be de-snagged and cleared of vegetation and debris. Construction of a ~31acrea detention pond	HMGP; STPG	1-5 Years	St Tammany Parish Government; Department of Public Works Sterling Properties	Flooding	In Progress
Little Bayou Castine	This project involves channel improvements to Little Bayou Castine, culvert improvements to efficiently convey water to Little Bayou Castine, and a pond at the end of Nelson Street. The intent is to reduce the risk of house flooding for the Woodlands Subdivision, Woodlands Terrace Subdivision, Marigny Trace Subdivision, Trailwoods Subdivision, Casa Bella Subdivision, Grand Terre Subdivision, Emerald Pines Court, Thrush Drive, and Eola Street.	HMGP	1-5 Years	St Tammany Parish Government/ Department of Public Works	Flooding	In Progress
HMPG Lift Stations Upgrades and Elevations	Elevation of 10 electrical control panel boxes located in flood prone areas to prevent disruption of operation due to inundation.	FEMA/ HMPG	N/A	St Tammany Parish Government/ Department of Public Works- Engineering	Flooding, Tropical Cyclone	Deleted
East St Tammany Storm Protection	Project will mitigate the damage caused by the construction of the south Slidell Schneider Canal Levee; it will extend storm surge protection to the communities south of the Schneider Canal levee including the community of Eden Isle with over 7,000 residents.	FEMA HMPG, Other Federal Funds	Projected 2025	St Tammany Parish Government/ Department of Public Works	Coastal Hazards, Tropical Cyclone, Flooding	Carried Over – Yet To Begin
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system for the Parish. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ St. Tammany Parish OHSEP	Dam Failure, Levee Failure, Flooding, Tropical Cyclone, Wildfire, Fog, Thunderstorms, Tornadoes	New
Enhanced Public Awareness Campaigns for All-Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ St. Tammany Parish OHSEP	Coastal Hazards, Dam Failure, Drought, Levee Failure, Flooding, Tropical Cyclone, Wildfire, Termites, Fog, Thunderstorms, Tornadoes	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government	Drought	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Potable Water Supplies to Critical Facilities	Create redundancy of potable water supply to critical facilities, especially hospitals in the parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations in the unincorporated areas	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ St. Tammany Parish OHSEP	Coastal Erosion, Dam Failure, Drought, Levee Failure, Flooding, Tropical Cyclone	New
Flood Proofing of Critical Facilities	Flood-proof critical structures within the parish unincorporated areas to help promote continuation of critical services during a storm event	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Department of Public Works	Flooding, Levee Failure, Dam Failure, Tropical Cyclones	New
Education and Outreach for NFIP	Continue to promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the NFIP. This 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.	HMGP, Federal	1-5 years	St Tammany Parish Government/ St. Tammany Parish OHSEP	Flooding, Tropical Cyclone	New
Pump Station Enhancement and Elevations	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Department of Public Works	Flooding, Tropical Cyclone, Levee Failure, Dam Failure	New
Dam/Levee Failure Data Analysis	Seek out and apply for grant funding for the gathering and analysis of data related to a dam and/or levee failure.	HMGP, Federal	1-5 years	St Tammany Parish Government/ St. Tammany Parish OHSEP	Flooding, Tropical Cyclone, Levee Failure	New
Floodwall and Flood Control Construction Projects	Install and/or upgrade minor flood control structures including erms and floodwalls to protect critical facilities	HMGP, Federal	1-5 years	St Tammany Parish Government/ Department of Public Works	Flooding, Tropical Cyclone, Levee Failure	New
Levee Protection Expansion	Expand existing levee protection to ensure levees do not fail during a storm event.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Department of Public Works	Flooding, Tropical Cyclone, Levee Failure	New
Drainage Improvement	Continue to identify areas of concern through studies or consistent drainage problem areas. Work with local and parish personnel to develop specific drainage projects for the Parish	HMGP, Federal	1-5 years	St Tammany Parish Government/ Department of Public Works	Flooding, Tropical Cyclone, Levee Failure	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Department of Public Works	Flooding, Tropical Cyclone, Levee Failure, Dam Failure, Termites, Tornadoes, Thunderstorms, Wildfires	New

## Abita Springs Previous and New Mitigation Actions

Town of Abita Springs Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Safe Room Project	The project will include design and construction for Multi-use Facility and Safe Room.	FEMA HMPG	1-5 Years	St Tammany Parish Government/ Abita Springs Mayor's Office	Tornado, Wind	Carried Over
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Currently there are 3,213 properties listed on FEMA's SRL/RL list Properties will be prioritized based on the SRL / RL. Town of Abita Springs has 4 structures on the RL/SRL list. One of these has been mitigated, the remaining 3 remain to be mitigated.	FEMA HMPG	1-5 Years	St Tammany Parish Government/ Grant Department/ Abita Springs Mayor's Office	Tropical Cyclone, Flooding	Carried Over
FEMA/LAMP DFIRM	The STP LAMP program will collaborate with FEMA to characterize the levee reaches in the parish, gather all available data, determine additional data needs that are critical for certification, and procure data.	Federal, State, Local	1-5 Years	St Tammany Parish Government/ Abita Springs Mayor's Office	Tropical Cyclone, Flooding	Carried Over
Hardening of Critical Facilities	Identify and harden Critical Facilities within Abita Springs	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Abita Springs Mayor's Office	Tropical Cyclone, Wind, Hail, Tornado	Carried Over
Acquisition	Give special attention to repetitively flooded areas or areas susceptible to other hazards by Identification and acquisition of land and/or properties to mitigate against future damages, lives and property lost.	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone, Wildfire, Termites	Carried Over
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Fog, wind, hail, lightning, Tornado, Tropical Cyclone, Wildfire	Carried Over
Strengthening of procedures for codes and regulations	Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations	Staff Time	1-5 Years	Department of Permits and Regulatory, St Tammany OHSEP, Cultural and Governmental Affairs/ Abita Springs Mayor's Office	Tropical Cyclone, wind, Flooding, Tornado, Termites	In progress

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Code Replacement	Replace standard building code with new State Uniform Construction Code	Staff Time	1-5 Years	Department of Permits and Regulatory/Abita Springs Mayor's Office	Tropical Cyclone, Wind, Flooding, Tornado, Termites	In progress
Flood Plain Management	Continue to promote and provide floodplain management to Abita Springs. Town of Abita Springs to sign a CEA with the Parish for FPM and reviewing all FPM ordinances and Storm water Runoff ordinances in 2020.	Staff Time	1-5 Years	Department of Permits and Regulatory/Abita Springs Mayor's Office	Tropical Cyclone, Flooding	Carried Over
Urban Forestry Initiative	Parish will implement an urban forestry program modeled on the criteria of the Tree City USA program	Staff Time	1-5 Years	Department of Permits and Regulatory /Abita Springs Mayor's Office	Tropical Cyclone, Wind, Tornado	Carried Over
Establish local EOC	Update all town facilities to have technological capabilities to function remotely in the case of emergency. Update the town Museum building to accommodate use as a remote EOC if needed.	Staff Time, FEMA, GRANTS	1-5 Years	Abita Springs Mayor's Office	Tropical Cyclone, Tornado, Flooding, Thunderstorms, Wildfires	Carried Over – Yet To Begin
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system for the Parish. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone, Wildfire, Fog, Thunderstorms, Tornadoes	New
Enhanced Public Awareness and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Drought, Flooding, Tropical Cyclone, Wildfire, Termites, Fog, Thunderstorms, Tornadoes	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Potable Water Supplies to Critical Facilities	Create redundancy of potable water supply to critical facilities, especially hospitals in the parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations in the unincorporated areas	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone, Wildfire, Termites, Drought	New
Flood Proofing of Critical Facilities	Flood-proof critical structures within the parish unincorporated areas to help promote continuation of critical services during a storm event	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Thunderstorms, Tropical Cyclones	New
Education and Outreach for NFIP	Continue to promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the NFIP. This 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.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone	New
Pump Station Enhancement and Elevations	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone	New
Floodwall and Flood Control Construction Projects	Install and/or upgrade minor flood control structures including erms and floodwalls to protect critical facilities	HMGP, Federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone	New
Drainage Improvement	Continue to identify areas of concern through studies or consistent drainage problem areas. Work with local and parish personnel to develop specific drainage projects for Abita Springs.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government/ Abita Springs Mayor's Office	Drought	New



## Covington Previous and New Mitigation Actions

City of Covington Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Mile Branch Drainage Improvements	The proposed project involves stabilization of existing channel banks due to damage from erosion of existing banks. The purpose of the project is to reduce potential structure damage due to erosion along the channel.	Local, FEMA HMPG	24 months from start	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Tropical Cyclone	Carried Over
Simpson Creek Drainage Improvements	The proposed project involves increase flow capacities in major drainage channel to mitigate flood risk to area. Simpson Creek drains a large developed portion of the City of Covington. Improvements would be made to reduce flood risk to structures located along the drainage way.	Local, FEMA HMPG	18 months from start	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Tropical Cyclone	Carried Over
Poole Creek Drainage Improvements	The proposed project involves increase flow capacities in major drainage channel. Poole Creek drains a large developed portion of the City of Covington. Improvements would be made to reduce flood risk to structures located along the drainage way.	Local, FEMA HMPG	18 months from start	City of Covington Mayor's Office	Flooding, Tropical Cyclone	Carried Over
Safe room Construction at Critical City Facilities	The project would include the installation of safe rooms at all critical City of Covington facilities. Safe room availability will allow first responders to be on the scene of hazard situations therefore preventing losses during the hazardous event and after the hazard has passed.	Local, FEMA HMPG	1-5 Years	City of Covington Mayor's Office	Tropical Cyclone, Wind, Tornado, Wildfire	Ongoing
Covington Police Station Hardening	The project includes hardening the building with impact-resistant window coverings and doors and installing roof straps. The Covington Police Department at 609 N. Columbia Street serves as a staging area for the Covington Police. The purpose of the building hardening is to ensure its continued use as a staging area by strengthening the building components to withstand the forces of high winds and minimize damage and avoid building failure by envelope.	Local, FEMA HMPG	12 months from start	City of Covington Mayor's Office	Flooding, Tropical Cyclone, Wind, Hail, Tornado	Carried Over
Covington Public Works Facilities Hardening	The project includes hardening of several buildings located on the Public Works campus with impact-resistant window coverings and doors and installing roof straps. The Public Works Buildings at 1700 W. 27th Avenue serve as a staging area for the Covington Public Works operations and treatment of wastewater for the entire city. The purpose of the building hardening is to ensure its continued use as a staging area by strengthening the building components to withstand the forces of high winds and minimize damage.	Local, FEMA HMPG	12 months from start	City of Covington Mayor's Office	Flooding, Tropical Cyclone, Hail, Wind, Tornado	Carried Over

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Covington Fire Station Hardening	The proposed project includes hardening the building with impact-resistant window coverings and doors and installing roof straps. The Covington Fire Department at 525 N. Jefferson Street and serves as a staging area for the City's fire response. The purpose of the building hardening is to ensure its continued use as a staging area by strengthening the building components to withstand the forces of high winds and minimize damage and avoid building failure by envelope.	Local, FEMA HMPG	12 months from start	City of Covington Mayor's Office	Flooding, Tropical Cyclone, Wind, Hail, Tornado	Carried Over
Switches for power supply and generators	Add automatic turn on switches to back up power supply/ generators at water system wells at River Forest Subdivision, Theard Street, and Industry Lane within the city.	City, Grants	1-5 Years	Fire Chief, Public Works Director	Flooding, Tropical Cyclone, Wind, Lightning, Tornado	Ongoing
Generator procurement	Add generators to all sewer lift stations and critical facilities.	City Budget and Grants	1-5 Years	Public Works Director	Flooding, Tropical Cyclone, Wind, Lightning, Tornado	Ongoing
Add Supervisory Control and Data Acquisition (SCADA) to sewer and water system components	A computer system for gathering and analyzing real time data. SCADA system is used to monitor and control a plant or equipment in utility systems such as water and waste water systems.	City Budget and Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Blue Swamp Creek desnagging and cleaning	The proposed project involves increase flow capacities in major drainage channel to mitigate flood risk to area. Blue Swamp Creek drains a large developed portion of the City of Covington as well as unincorporated sections of St. Tammany Parish. Improvements would be made to reduce flood risk to structures located along the drainage way.	City Budget and Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Columbia Street Bridge Replacement on Mile Branch	The bridge would be replaced and elevated to remove a potential obstruction to a natural drainage feature	City Budget and Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Emergency Public Outreach	Create a new hazard page on the city's website to increase public awareness of hazards, hazardous areas and storm preparation. Distribute public awareness information regarding flood hazards, SFHA's and potential mitigation measures using the local newspapers.	City Budget, Business and industry	1-5 Years	City of Covington Mayor's Office, Chief of Police, Director of Admin	Tropical Cyclone, Flooding, Tornado, Wind, Lightning, Hail	Ongoing
Flooding guidelines strengthening	Develop additional subdivision guidelines that would help reduce flooding, such as requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas and low impact development	City Budget	1-5 Years	Planning Director, Planning Consultant	Flooding, Tropical Cyclone	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Downtown Drainage Improvements	The proposed project involves increase flow capacities in major drainage channel to mitigate flood risk to area. Downtown drainage is a combination of both open and subsurface drainage that was installed in the early 20th century. Improvements would be made to reduce flood risk to structures located along the drainage way.	City Budget and Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Electrical System Component Elevation at all Sewer Lift Stations	The proposed project would elevate the electrical components of the sewer lift stations to a minimum of 1' above the base flood elevation and provide for a resilient return to normal operation following a flood event.	City Budget and Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Hardening of critical facilities	Harden critical facilities and facilities housing sensitive populations including the construction of safe rooms to protect critical personnel during hazard events	City, Grants	1-5 Years	Public Works Director, Police, Fire, Director of Admin.	Flooding, Tropical Cyclone, Wind, Hail, Tornado	Ongoing
Drainage capacity improvement	Improve drainage capacity to reduce flooding hazards within the City of Covington	City, Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Drainage improvements near RL areas	Investigate and implement a localized interior drainage projects in repetitive loss areas to reduce damages from flooding.	CDBG, FMA, HMPG, SBA Funds, Capital Outlay, USARCA	In progress	Parish and City Floodplain Managers, Public Works Director	Flooding, Tropical Cyclone	In Progress
Continued CRS Participation	Participate in the CRS. Improve record keeping of localized flooding events and public works work orders	City Budget	1-5 Years	Parish and city floodplain managers	Flooding, Tropical Cyclone	Ongoing
Pursue elevation/Acquisition /flood proofing/Pilot Reconstruction projects	Pursue elevation/Acquisition /flood proofing/Pilot Reconstruction projects and structural solutions to flooding by pursuing funding opportunities for at risk structures including but not limited to repetitive loss and severe repetitive loss structures. City of Covington has 47 structures on the RL/SRL list for 2018. of these, 4 have been mitigated, 1 is in the grant process and 42 are unmitigated.	City, Grants, HMPG	1-5 Years	Building Permit Director, City Emergency Manager, St Tammany Parish	Flooding, Tropical Cyclone,	In Progress
Schech Drive Acquisition and Drainage Improvements	The proposed project would seek to acquire and demolish 6 homes that are either repetitive loss, severe repetitive loss, or at risk as well as realign a major natural drainage feature to reduce flooding.	City Budget and Grants	1-5 Years	City Engineer/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system for the Sheriff's Department. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMPG, Local, regional, and federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Tropical Cyclone, Wildfire, Fog, Thunderstorms, Tornadoes	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Enhanced Public Awareness and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Local, regional, and federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Coastal Hazards, Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Fog, Termites, Wildfires	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ City of Covington Mayor's Office	Coastal Hazards, Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New
Potable Water Supplies to Critical Facilities	Create redundancy of potable water supply to critical facilities, especially hospitals in the parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HMGP, Local, regional, and federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Flood Proofing of Critical Facilities	Flood-proof critical structures within the parish to help promote continuation of critical services during a storm event.	HMGP, Local, regional, and federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Thunderstorms, Tropical Cyclones	New
Development of Interoperable Communications Plan	Develop an interoperability/communications plan identifying resources and equipment needed to establish a single, interagency, mobile incident and communications command post.	HMGP, Local, regional, and federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Education and Outreach for NFIP	Continue to promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the NFIP. This 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.	HMGP, Federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Tropical Cyclone	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Pump Station Enhancement and Elevations	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater.	HMGP, Local, regional, and federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Tropical Cyclone, Coastal Hazards,	New
Floodwall and Flood Control Construction Projects	Install and/or upgrade minor flood control structures including erms and floodwalls to protect critical facilities.	HMGP, Federal	1-5 years	City of Covington Mayor's Office/St Tammany Parish Government	Flooding, Tropical Cyclone, Coastal Hazards	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government/ City of Covington Mayor's Office	Drought	New
Wildfire Vegetation Management	Identify and implement wildfire vegetation management strategies	HMGP, Local	1-5 years	St Tammany Parish Government/ City of Covington Mayor's Office	Wildfires	New

## Folsom Previous and New Mitigation Actions

Village of Folsom Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Safe Room Project	The project will include design and construction for Multi-use Facility and Safe Room.	FEMA/HMPG	1-5 Years	St Tammany Parish Government/ Folsom Mayor's Office	Tornado, Wind	Ongoing
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Currently (2/28/2019) there are 3,213 properties listed on FEMA's SRL/RL list Properties will be prioritized based on the SRL/RL. Village of Folsom has 2 structures on the RL/SRL list, both of which remain unmitigated.	FEMA HMPG	1-5 Years	St Tammany Parish/ Grant Department/Folsom Mayor's Office	Tropical Cyclone, Flooding	Ongoing
FEMA/LAMP DFIRM	The STP LAMP program will collaborate with FEMA to characterize the levee reaches in the parish, gather all available data, determine additional data needs that are critical for certification, and procure data.	Federal, State, Local	1-5 Years	St Tammany Parish Government/ Folsom Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Hardening of Critical Facilities	Identify and hardening of Critical Facilities	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Folsom Mayor's Office	Tropical Cyclone, Wind, Hail	Ongoing
Acquisitions	Give special attention to repetitively flooded areas by Identification and acquisition of land and/or properties to mitigate against future damages, lives and property lost.	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Tropical Cyclone, Wildfire	Ongoing
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Fog, Wind, Hail, Lightning, Tornado, Tropical Cyclone, Wildfire, Termites	Ongoing
Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations	Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations	Staff Time	In progress	Department of Permits and Regulatory, St Tammany OHSEP, Cultural and Governmental Affairs/Folsom	Tropical Cyclone, Wind, Flooding, Tornado, Termites	In progress
Replace standard building code with new State Uniform Construction Code	Replace standard building code with new State Uniform Construction Code	Staff Time	In progress	Department of Permits and Regulatory/Folsom	Tropical Cyclone, Wind, Flooding, Tornado, Termites	In progress
Flood Plain Management	Continue Flood Plain Management initiatives throughout Folsom	Staff Time	Ongoing	Department of Permits and Regulatory/Folsom	Tropical Cyclone, Flooding	Ongoing



Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Drainage Improvement Projects	Implementation of drainage improvement/flood mitigation projects to 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.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system for the Sheriff's Department. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	Folsom Mayor's Office/St Tammany Parish Government	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Fog, Wildfires	New
Enhanced Mitigation Outreach and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Fog, Termites, Drought	New
Potable Water	Create redundancy of potable water supply to critical facilities, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Flood Proofing Projects	Flood-proof critical structures within the City to help promote continuation of critical services during a storm event	HMGP, Federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Tropical Cyclones	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Road Elevation	Elevate roads in vulnerable locations prone to flooding and drainage problems.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Tropical Cyclones	New
Pumping Station Projects	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Tropical Cyclones	New
Flood Ordinances	Adopt new regulations reducing development density in floodplains.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Flooding, Tropical Cyclones	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government/ Folsom Mayor's Office	Drought	New

## Madisonville Previous and New Mitigation Actions

Madisonville Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Parish will implement an urban forestry program	Parish will implement an urban forestry program modeled on the criteria of the Tree City USA program. Program is detailed in the Mitigation Master Plan that was recently completed. The Municipality is already planting trees.	Staff Time	Completed and carried over	Department of Permits and Regulatory / Madisonville Mayor's Office	Tropical Cyclone, Wind, Tornado	Carried over
Safe Room Project	The project will include design and construction for Multi-use Facility and Safe Room.	FEMA/HMPG	1-5 Years	St Tammany Parish Government/ Madisonville Mayor's Office	Tornado, Wind	Ongoing
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Currently (2/28/2019) there are 3,213 properties listed on FEMA's SRL/RL list. Properties will be prioritized based on the SRL/RL. Town of Madisonville has 71 properties on the RL/SRL list; 16 have been mitigated, 2 are in the grant process and 53 have not been mitigated.	FEMA HMPG	1-5 Years	St Tammany Parish Government/ Grant Department/Madisonville Mayor's Office	Tropical Cyclone, Flooding	Ongoing
FEMA/LAMP DFIRM	The STP LAMP program will collaborate with FEMA to characterize the levee reaches in the parish, gather all available data, determine additional data needs that are critical for certification, and procure data.	Federal, State, Local	1-5 Years	St Tammany Parish Government/ Madisonville Mayor's Office	Tropical Cyclone, Flooding,	Ongoing
Hardening of Critical Facilities	Identify and hardening of Critical Facilities. Mitigation Master Plan was recently completed & approved by Planning & Zoning; will go before Council for adoption. The Plan specifies hardening needs of critical facilities.	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Madisonville Mayor's Office	Tropical Cyclone, Wind, hail	Ongoing
Acquisitions	Give special attention to repetitively flooded areas by Identification and acquisition of land and/or properties to mitigate against future damages, lives and property lost.	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Madisonville Mayor's Office	Coastal Erosion, Flooding, Tropical Cyclone, Wildfire	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Madisonville Mayor's Office	Coastal Erosion, Flooding, Fog, wind, hail, lightning, Tornado, Tropical Cyclone, Wildfire, Termites	Ongoing
Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations	Based on BCEGS findings, the Permits Department will strengthen procedures for enforcing building code and floodplain regulations	Staff Time	In progress	St Tammany Parish Government/ Madisonville Mayor's Office	Tropical Cyclone, Wind, Flooding, Tornado	In progress
Replace standard building code with new State Uniform Construction Code	Replace standard building code with new State Uniform Construction Code	Staff Time	In progress	St Tammany Parish Government/ Madisonville Mayor's Office	Tropical Cyclone, Wind, Flooding, Tornado, Termites	In progress
Flood Plain Management	Continue Flood Plain Management initiatives throughout Madisonville	Staff Time	Ongoing	St Tammany Parish Government/ Madisonville Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Drainage Improvement Projects	Implementation of drainage improvement/flood mitigation projects to 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.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Tornadoes, Tropical Cyclones	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Coastal Hazards, Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Drought	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Enhanced Mitigation Outreach and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Fog, Termites, Wildfires, Drought, Coastal Hazards	New
Potable Water	Create redundancy of potable water supply to critical facilities, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones,	New
Flood Proofing Projects	Flood-proof critical structures within Madisonville to help promote continuation of critical services during a storm event	HMGP, Federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Tropical Cyclones	New
Road Elevation	Elevate roads in vulnerable locations prone to flooding and drainage problems.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Tropical Cyclones	New
Pumping Station Projects	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Tropical Cyclones	New
Flood Ordinances	Adopt new regulations reducing development density in floodplains.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Tropical Cyclones	New
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Madisonville Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Fog	New

## Mandeville Previous and New Mitigation Actions

City of Mandeville Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Elevation of Severe Repetitive Loss, Repetitive Loss and structures below BFE	Currently there are 59 properties listed on FEMA's SRL/RL list. Properties will be prioritized based on the SRL / RL. The City elevates properties as funding is made available while developing strategies for coastal and flood control protection and mitigation.	FEMA HMPG and FMA	Ongoing	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Ongoing
Sewerage Treatment Plant Flood Mitigation	The proposed project would include the construction of either an earthen berm or I-wall surrounding a portion of the sewerage treatment plant to prevent the inundation of flood waters from storm surge. The project will also include the elevation of Ultraviolet lights used in the final stage of sewerage treatment.	FEMA HMPG	1-5 Years	City of Mandeville Mayor's Office	Flooding, Tropical Cyclone	Ongoing
Wind Retrofit of Mandeville Police Department Headquarters	Mandeville Police Department Headquarters will be retrofitted to provide protection from high winds. The Scope of Work includes but is not limited to hardening windows, doors, and mechanical equipment. This retrofit will exceed the International Building Code wind load requirements for this location.	Local, State, Federal	1-5 years	City of Mandeville Mayor's Office	Tropical Cyclone, Wind, Hail, Tornado	Ongoing
Wind Retrofit of Mandeville Community Center	Mandeville Community Center will be retrofitted to provide protection from high winds. Includes but is not limited to hardening windows, doors, and mechanical equipment. This retrofit will exceed the International Building Code wind load requirements for this location.	Local, State, Federal	1-5 years	City of Mandeville Mayor's Office	Tropical Cyclone, Wind, Hail, Tornado	Ongoing
Flood mitigation and Wind Retrofit of Mandeville Public Works Department Facilities	Mandeville Public Works Department Facilities will be retrofitted to provide protection from high winds and mitigated from flood waters. The Scope of Work includes but is not limited to hardening windows, doors, and mechanical equipment. The wind retrofit will exceed the International Building Code wind load requirements for this location.	FEMA HMPG	1-5 years	City of Mandeville Mayor's Office	Tropical Cyclone, Wind, Hail, Tornado	Ongoing



Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Wind Retrofit of Mandeville City Hall	Mandeville City Hall will be retrofitted to provide protection from high winds. The Scope of Work includes but is not limited to hardening windows, doors, and mechanical equipment. This retrofit will exceed the International Building Code wind load requirements for this location.	FEMA HMPG	1-5 Years	City of Mandeville Mayor's Office	Tropical Cyclone, Wind, Hail, Tornado	Ongoing
Cypress Swamp/Green Fund Coastal Restoration and Armoring	The proposed project would construct a berm of a yet to be determined type in Lake Pontchartrain in front of an endangered cypress swamp along the shoreline of the City of Mandeville. The berm would armor the identified section of shoreline against continued coastal erosion as well as reduce the velocity of storm runoff thereby allowing suspended sediments to rebuild land.	FEMA HMPG	1-5 Years	City of Mandeville Mayor's Office	Tropical Cyclone, Coastal Hazards, Flooding	Ongoing
Expand and enhance canals, culverts and flow capacity.	Upgrade the flow capacity of storm water along Lake Shore Drive; in Golden Glen Subdivision; and along Bayou Chinchuba, Bayou Castine, and Little Bayou Castine by expanding and sloping the canals and replacing any inferior culverts along the major drainage laterals	City budget and Grants	1-5 years	Street Supervisor/Public Works Director	Flooding, Tropical Cyclone	Ongoing
Backup power for Critical Facilities	Add Back up power supply/generators at critical locations such as sewer lift stations.	City Budget, Grant, Fire budget	estimated 2025 completion	Public Works and Wastewater Supervisor	Flooding, Tropical Cyclone, Wind, Lightning, Tornado	Ongoing
Little Bayou Castain Drainage	Madison (Marigny to Little Bayou Castain); Overlay (1,200' x 18') Drainage (36" RCPA)	City Budget, potential for FEMA grant	1-5 years	City Engineer and or Department of Public Works	Flooding, Storm Surge	Ongoing
Continued Community Education	The city continues to provide hazard education to the public through public service advertising, meetings with schools and neighborhood organizations, and distribution of materials at retailers, the library, and city hall	City Budget and grants	1-5 Years	Mayor's Office and Public Works Director	Flooding, Tropical Cyclone, Wind, Hail, Lightning	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Participation in FEMA grant programs	The city continues active participation in various FEMA grant programs, in particular the HMGP and FMA which has funded multiple elevation projects in Mandeville.	City Budget and grants	1-5 years	City Building Official; Planning Director and City Floodplain manager	Flooding, Tropical Cyclone	Ongoing
Seawall Improvements	Improve seawall along lakeshore drive by increasing its size to better protect structures from Tropical Cyclone and tropical storm induced tidal flooding. (Public opposition to this proposal probably means that it will not be initiated). – Corps of Engineers is currently doing an economic feasibility study	City Budget and Grants	Ongoing - 1-5 years	Public Works Department	Flooding, Tropical Cyclone, Storm Surge	Ongoing
Continued Community Rating System Participation and Associated Activities	On October 1, 2018 the city improved from a CRS class 7 to a class 6. This improvement qualifies residents for an additional 5% discount on flood insurance premiums. The city will continue its activities to improve the CRS rating.	City Budget	1-5 Years	City Floodplain Manager	Flooding, Tropical Cyclone, Wind, Lightning, Storm Surge	Ongoing
Continued Enforcement of regulations/building code standards	Continue enforcement of floodplain regulations, subdivision regulations, engineering standards, and building code to ensure that all future development is implemented in such a way that risk from natural hazards is minimized	City Budget	1-5 Years	Floodplain manager/building Official/Public Works Department/City Engineer	Flooding, Tropical Cyclone, Wind, Storm Surge	Ongoing
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.	City Budget	1-5 Years	City Engineer and or Department of Public Works	Flooding, Tropical Cyclone	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Mandeville Mayor's Office	Coastal Hazards, Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Enhanced Mitigation Outreach and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Federal	1-5 years	City of Mandeville Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Coastal Hazards, Drought, Fog, Termites, Wildfires, Coastal Hazards	New
Potable Water	Create redundancy of potable water supply to critical facilities, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HMGP, Federal	1-5 years	City of Mandeville Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Flood Proofing Projects	Flood-proof critical structures within Mandeville to help promote continuation of critical services during a storm event	HMGP, Federal	1-5 years	City of Mandeville Mayor's Office	Flooding, Tropical Cyclones	New
Road Elevation	Elevate roads in vulnerable locations prone to flooding and drainage problems.	HMGP, Federal	1-5 years	City of Mandeville Mayor's Office	Flooding, Tropical Cyclones	New
Pumping Station Projects	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Federal	1-5 years	City of Mandeville Mayor's Office	Flooding, Tropical Cyclones	New
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	City of Mandeville Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Fog	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government/ Mandeville Mayor's Office	Drought	New

## Pearl River Previous and New Mitigation Actions

Town of Pearl River Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Safe Room Project	The project will include design and construction for Multi-use Facility and Safe Room.	FEMA/HMPG	1-5 Years	St Tammany Parish Government/ Pearl River Mayor's Office	Tornado, Thunderstorm	Carried Over
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Currently there are 3,213 properties listed on FEMA's SRL/RL list. Properties will be prioritized based on the SRL / RL. Town of Pearl River has 4 structures on the RL/SRL list. One of these has been mitigated, the remaining 3 remain to be mitigated.	FEMA HMPG	1-5 Years	St Tammany Parish/ Grant Department/ Pearl River Mayor's Office	Tropical Cyclone, Flooding	Carried Over
FEMA/LAMP DFIRM	The STP LAMP program will collaborate with FEMA to characterize the levee reaches in the parish, gather all available data, determine additional data needs that are critical for certification, and procure data.	Federal, State, Local	1-5 Years	St Tammany Parish Government/ Pearl River Mayor's Office	Tropical Cyclone, Flooding	Carried Over
Hardening of Critical Facilities	Identify and hardening of Critical Facilities	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Tropical Cyclone, Wind, Hail	Carried Over
Acquisition	Give special attention to repetitively flooded areas or areas susceptible to other hazards by Identification and acquisition of land and/or properties to mitigate against future damages, lives and property lost.	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone, Wildfire	Carried Over
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish	FEMA, HMPG	1-5 Years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Fog, Wind, Lightning, Hail, Tornado, Tropical Cyclone, Wildfire, Termites	Carried Over

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Implement new State Uniform Building Code	Replace standard building code with new State Uniform Construction Code	Staff Time	1-5 years	Department of Permits and Regulatory/ Pearl River	Tropical Cyclone, Wind, Flooding, Tornado, Termites	In progress
Retrofits for properties	Evaluate properties to determine if they need to be retrofitted or modified to protect them from hazards	Local	COMPLETED and carried over	St Tammany OHSEP/Pearl River Mayor's Office	Tropical Cyclone, Flooding, Wind, Hail, Tornado	Carried Over
Flood Plain Management	Continue Flood Plain Management initiatives throughout Pearl River	Staff Time	1-5 Years	Department of Permits and Regulatory/ Pearl River Mayor's Office	Tropical Cyclone, Flooding	Carried Over
Urban Forestry Program Initiative	Parish will implement an urban forestry program modeled on the criteria of the Tree City USA program	Staff Time	COMPLETED and carried over	Department of Permits and Regulatory Pearl River Mayor's Office	Tropical Cyclone, Tornado	Carried Over
Establish local EOC	Update all town facilities to have technological capabilities to function remotely in the case of emergency. Update the town Museum building to accommodate use as a remote EOC if needed.	Staff Time, FEMA, GRANTS	1-5 Years	St Tammany Parish Government/ Pearl River Mayor's Office	Tropical Cyclone, Wind, Tornado, Termites	Carried Over
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system for the Parish. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone, Wildfire, Fog, Tornadoes, Thunderstorms	New
Enhanced Public Awareness and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone, Wildfire, Termites, Fog, Drought, Wildfires, Thunderstorms, Tornadoes	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Potable Water Supplies to Critical Facilities	Create redundancy of potable water supply to critical facilities, especially hospitals in the parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations in the unincorporated areas	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone, Wildfire	New
Flood Proofing of Critical Facilities	Flood-proof critical structures within the parish unincorporated areas to help promote continuation of critical services during a storm event	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclones	New
Education and Outreach for NFIP	Continue to promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the NFIP. This 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.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone	New
Pump Station Enhancement and Elevations	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone	New
Dam/Levee Failure Data Analysis	Seek out and apply for grant funding for the gathering and analysis of data related to a dam and/or levee failure.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone	New
Floodwall and Flood Control Construction Projects	Install and/or upgrade minor flood control structures including erms and floodwalls to protect critical facilities	HMGP, Federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone	New
Drainage Improvement	Continue to identify areas of concern through studies or consistent drainage problem areas. Work with local and parish personnel to develop specific drainage projects for Pearl River.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Pearl River Mayor's Office	Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New



## Slidell Previous and New Mitigation Actions

City of Slidell Mitigation Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
W-14 Pumping Station Construction	Construct a pumping station at the mouth/terminus of the W-14 Drainage Canal. A pump at the mouth of the W-14 would allow water to continue to be pumped out of the city even when the Lake is full and will impede back flooding.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
City Waste Treatment Elevation	Continuing waste water treatment during and after a storm event is critical to residents' health and safety and to protect the environment. The City's Waste Water Treatment Plant's Motor Control Center is below Base Flood Elevation (BFE). Elevating the Motor Control Center would enable the City to continue to treat waste water during and after a storm event.	Federal, State, Local	To Be Removed	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Deleted
Levee Protection Project	Construct a Levee or Flood Wall paralleling the Norfolk-Southern railroad tracks from its intersection with the Schneider Canal Levee to Gause Blvd. US HWY 11 Segment has been completed.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding, Levee Failure	Ongoing/ Partially Completed
Bayou Patassat Improvements	Bayou Patassat Drainage Canal needs to be reshaped. The channel needs to be reshaped and smoothed so the water is effectively and efficiently conveyed to the pumps upgraded from the last hazard mitigation plan and discharged into Bayou Bonfouca. Additionally, the subsurface section of the channel should be removed and upgraded to match the increase in capacity for the reshaped sections.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Homes outside levee protection need to be elevated above the City of Slidell's Design Flood Elevation (DFE). The majority of the City's residences were built pre-FIRM. Approximately 973 repetitive loss homes have not yet been elevated.	Federal	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Pontchartrain Drive Drainage Improvements	Pontchartrain Drive is an older commercial corridor. Drainage along the corridor was constructed and modified in a piecemeal fashion spanning decades. These factors have combined to create a drainage system that struggles to handle heavy rain events because the system's slope is not uniform, the channel is not straight, and the water has a long way to travel until it is safely discharged into Lake Pontchartrain. During events the system becomes overwhelmed and adjacent properties are flooded.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Audubon Ditch Drainage Improvements	Improving the shape and slope of the Audubon ditch and removing debris and other obstructions would allow storm water to move quicker and more efficiently from the neighborhoods and out of the city, thereby reducing the threat of flooding during storm events	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Breckenridge Ditch Improvements	The Breckenridge ditch discharges first into a detention pond then into the W-15. Improving the Breckenridge ditch design and removing debris and other obstructions would allow storm water to move quicker and more efficiently from the neighborhoods and out of the city, thereby reducing the threat of flooding during storm events.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Carollo Drive Drainage Improvements	Improving the Carollo Drainage, especially the detention pond, would allow for the capture and controlled release of storm and flood water during storm events, thereby reducing the threat of flooding.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Rue Miramon Drainage Improvements	Improving the Rue Miramon drainage system is key to removing storm water from the Bon Village subdivision and reducing flooding on Gause Blvd.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Lindeberg Dr Drainage Improvements	This project would redesign and improve the affected sections of these drainage canals, especially where they converge.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
W-14 / W-15 Detention Pond	Failure of this node has led to overtopping of the canal and ditch and flooding of nearby homes and businesses. Creation of a detention pond and controlled release of storm/floodwaters at this point in City's drainage system would provide for temporary relief during a storm or flood event.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish	FEMA, HMPG	Ongoing	City of Slidell Mayor's Office	Flooding, Wind, Hail, Lightning, Tornado, Tropical Cyclone, Wildfire, Termites, Fog	Ongoing
Pump Station Improvements	Dellwood Storm water Pump Station Improvements	Local, FEMA	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Sewer System Improvements	Hermadel Subdivision Storm Sewer System	Local, FEMA	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Safe Room	Construct safe room for City of Slidell to utilize during major tornado and wind events	Local	1-5 Years	City of Slidell Mayor's Office	Tornado, Wind	In progress
Drainage Improvements	Gause Boulevard and Robert Road Intersection Drainage Improvements	Local, LADOTD	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Road Elevation	North Boulevard Roadway Elevation	Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Drainage Improvements	Beechwood Street/Walnut Street Drainage Improvements	Local, FEMA	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Canal Improvements	W-15 Canal Improvements	Local, STP	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Wind Retrofits of selected facilities	Wind Retrofits Evaluation and Installation	Local, State, FEMA	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Wind, Tornado	Deleted
Storm water master plan	Development of a Comprehensive Storm water Master Plan	Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Ordinance improvements	Review and Update of Storm water Ordinances and Design Manual	Local, FEMA	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Continuous
Generator Procurement/ Installation	Purchase and Installation of Emergency Generators at Key Facilities	Local, State, FEMA	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding, Wind, Lightning, Tornado	Ongoing
Drought education program development	Development of a Public Education Outreach on Water Conservation Measures	Local, FEMA	Ongoing	City of Slidell Mayor's Office	Drought	Continuous
Lightning Education	Development of a Public Education Outreach on Lightning Dangers	Local	Ongoing	City of Slidell Mayor's Office	Tropical Cyclone, Lightning	Continuous

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Lightning mitigation	Identification of Critical Infrastructure Vulnerable to Lightning and Installation of Lightning Rods	Local, FEMA	Ongoing	City of Slidell Mayor's Office	Tropical Cyclone, Lightning	Ongoing
Bayou improvements	De Snag and clean Bayou Vincent. The portion from Hwy 190/Gause BLVD West northward to I-12 still needs to be cleaned	N/A	Ongoing	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Flood mitigation	Elevate the low spot near Palm Lake on Bonfouca Drive	N/A	Ongoing	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Dellwood Pump Station Hardening	Construct Bar Screen and Rakes	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Lee St Pump Station Hardening	Construct Bar Screen and Rakes	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Residential Buyout and Canal Widening (W-14)	Purchase properties along W-14 canal and widen canal.	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Detention Pond Improvements	Modify weir and pond to help conveyance of water into the pond	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Culvert Replacement	Replace bridge to all for better conveyance in the W-14 canal	Federal, State, Local	1-5 Years	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Culvert Upgrade	Upgrade the culvert on Bonfouca Drive near Palm Lake	N/A	Ongoing	City of Slidell Mayor's Office	Tropical Cyclone, Flooding	Ongoing
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.	City Budget	Ongoing	City of Slidell Mayor's Office	Flooding, Tropical Cyclone	New

Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Enhanced Mitigation Outreach and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate emergency preparedness and mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Federal	1-5 years	City of Slidell Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Coastal Hazards, Drought, Fog, Termites, Wildfires	New
Potable Water	Create redundancy of potable water supply to critical facilities, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HMGP, Federal	1-5 years	City of Slidell Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Flood Proofing Projects	Flood-proof critical structures within Slidell to help promote continuation of critical services during a storm event	HMGP, Federal	1-5 years	City of Slidell Mayor's Office	Flooding, Tropical Cyclones	New
Road Elevation	Elevate roads in vulnerable locations prone to flooding and drainage problems.	HMGP, Federal	1-5 years	City of Slidell Mayor's Office	Flooding, Tropical Cyclones	New
Pumping Station Projects	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Federal	1-5 years	City of Slidell Mayor's Office	Flooding, Tropical Cyclones	New
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	City of Slidell Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire, Fog	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government / Slidell Mayor's Office	Coastal Hazards, Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government / Slidell Mayor's Office	Drought	New

## Sun Previous and New Mitigation Actions

Village of Sun Action Update						
Jurisdiction-Specific Action	Action Description	Funding Source	Timeframe	Responsible Party, Agency, or Department	Hazard	Status
Safe Room Project	The project will include design and construction for Multi-use Facility and Safe Room	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Tornado, Wind	Ongoing
Elevation of Severe Repetitive Loss and Repetitive Loss Structures	Currently (2/28/2019) there are 3,213 properties listed on FEMA's SRL/RL list. Properties will be prioritized based on the SRL/RL list. Village of Sun has 6 structures on the RL/SRL list. One of these has been mitigated, 5 remain to be mitigated.	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Grant Department/ Sun Mayor's Office	Tropical Cyclone, Flooding	Ongoing
FEMA/LAMP DFIRM	The STP LAMP program will collaborate with FEMA to characterize the levee reaches in the parish, gather all available data, determine additional data needs that are critical for certification, and procure data.	Federal, State, Local	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Tropical Cyclone, Flooding	Ongoing
Hardening of Critical Facilities	Identify and hardening of Critical Facilities	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Tropical Cyclone, Wind, Hail, Flooding	Ongoing
Acquisition	Give special attention to repetitively flooded areas by Identification and acquisition of land and/or properties to mitigate against future damages, lives and property lost.	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Flooding, Tropical Cyclone, Wildfire	Ongoing
Mitigation Public Outreach Program	Enhance the public outreach programs for the parish and all jurisdictions by increasing awareness of risks and safety as well as providing information on high risk areas. Educating citizens on proper mitigation efforts will create resiliency within the parish	FEMA, HMPG	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Flooding, Fog, Wind, Hail, Lightning, Tornado, Tropical Cyclone, Wildfire, Termites	Ongoing
Town Hall Improvements	Sun Town Hall Roof Repair	FEMA, HMPG	1-5 years	Sun Mayor's Office	Tornado, Wind	In progress
Flood Plain Management	Continue to provide floodplain management guidance and compliance to Village of Sun	Staff Time	1-5 years	Department of Permits and Regulatory/ Sun Mayor's Office	Tropical Cyclone, Flooding	In progress



Replace standard building code with new State Uniform Construction Code	N/AAS OER PERMIT OFFICE THEY USE LSU	Staff Time	1-5 years	Department of Permits and Regulatory/Sun Mayor's Office	Tropical Cyclone, Wind, Hail, Flooding, Tornado, Termites	In progress
Drainage Improvement Projects	Implementation of drainage improvement/flood mitigation projects to 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.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/Sun Mayor's Office	Flooding, Tropical Cyclones	New
Enhanced Mitigation Outreach and Education for All Hazards	Increase public awareness of hazards and hazardous areas. Actions may include distribution of public awareness information regarding all hazards and potential mitigation measures; implementation of educational program for children and merchants; Integrate disaster preparedness/mitigation into the public school curriculum, providing public education on the importance of maintaining the ditches, promotion of the purchase of flood insurance for public. Sponsor a "Multi-Hazard Awareness Week", to educate the public on all hazards	HMGP, Federal	1-5 years	St Tammany Parish Government/Sun Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Drought, Fog, Termites, Wildfires	New
Potable Water	Create redundancy of potable water supply to critical facilities, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.	HMGP, Federal	1-5 years	St Tammany Parish Government/Sun Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones	New
Flood Proofing Projects	Flood-proof critical structures within the City to help promote continuation of critical services during a storm event	HMGP, Federal	1-5 years	St Tammany Parish Government/Sun Mayor's Office	Flooding, Tropical Cyclones	New
Road Elevation	Elevate roads in vulnerable locations prone to flooding and drainage problems.	HMGP, Federal	1-5 years	St Tammany Parish Government/Sun Mayor's Office	Flooding, Tropical Cyclones	New
Pumping Station Projects	Elevate or flood proof pump stations; upgrade existing pump stations by installing block valves to prevent/protect against backwater	HMGP, Federal	1-5 years	St Tammany Parish Government/Sun Mayor's Office	Flooding, Tropical Cyclones	New

Flood Ordinances	Adopt new regulations reducing development density in floodplains.	HMGP, Federal	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Flooding, Tropical Cyclones	New
Communication System Upgrades	Implement upgrades and additions to communications systems, including the Auto call out system. Implement a public notification system, such as sirens or a call down system with backup capabilities.	HMGP, Local, regional, and federal	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Fog	New
Water Conservation Measures	Adopt ordinances requiring water-saving measures in time of drought	HMGP, Local	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Drought	New
Adoption of International Building Codes and Regulation of New Development	Adopt the current International Building Codes by ordinance, which would result in additional techniques to harden structures and mitigate against damage from hazards.	HMGP, Local	1-5 years	St Tammany Parish Government/ Sun Mayor's Office	Coastal Hazards, Flooding, Tropical Cyclone, Termites, Tornadoes, Thunderstorms, Wildfires	New

### Action Prioritization

During the prioritization process, the steering committee considered the costs and relative benefits of each new action. Costs can usually be listed in terms of dollars, although at times it involves staff time rather than the purchase of equipment or services that can be readily measured in dollars. In most cases, benefits, such as lives saved or future damage prevented, are hard to measure in dollars. 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 steering committee prioritized the possible activities that could be pursued. Steering 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 steering committee met internally for mitigation action meetings to review and approve St. Tammany mitigation actions. On-going actions, as well as actions which can be undertaken by existing parish staff without need for additional funding, were given high priority. The actions with high benefit and low cost, political support, and public support but require additional funding from parish or external sources were given medium priority. The actions that require substantial funding from external sources with relatively longer completion time were given low priority.

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

## Appendix A: Planning Process

### Purpose

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

### The St. Tammany Parish Hazard Mitigation Plan Update

The St. Tammany Parish Hazard Mitigation Plan Update process began in February 2020 with a series of meetings and collaborations between the contractor (SDMI) and the participating agencies. Update activities were intended to give each participating agency the opportunity to shape the plan to best fit their community's goals. Community stakeholders and the general public were invited to attend and contribute information to the planning process during specific time periods or meetings.

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

Date	Meeting or Outreach	Location	Public Invited	Purpose
2/11/2019	Kick Off Meeting	Covington, LA	No	Discuss with Parish HM Director the expectations and requirements of the project.
3/5/2020	Initial Planning Meeting	Covington, LA	No	Discuss with the plan Steering Committee expectations and requirements of the project. Assign plan worksheets to Parish.
6/17/2020	Risk Assessment Overview	Phone Call	No	Discuss and review the Risk Assessment with the Steering Committee. Discuss and review expectations for Public Meeting.
6/18/2020	Public Meeting	Multiple Locations/ ZOOM	Yes	The Public Meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Maps of the St. Tammany Parish communities were provide for the meeting attendees to identify specific areas where localized hazards occur.
Ongoing	Public Survey Tool	Online	Yes	This survey asked participants about public perceptions and opinions regarding natural hazards in St. Tammany Parish. In addition, questions covered the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey Results: <a href="https://www.surveymonkey.com/results/SM-XMSFL89G7/">https://www.surveymonkey.com/results/SM-XMSFL89G7/</a>
2 Week Period	Public Plan Review (Digital)		Yes	Parish Website or other locations determined by Steering Committee

## Planning

The plan update process consisted of several phases:

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
<b>Plan Revision</b>							
<b>Data Collection</b>							
<b>Risk Assessment</b>							
<b>Public Input</b>							
<b>Mitigation Strategy and Actions</b>							
<b>Plan Review by GOHSEP and FEMA</b>							
<b>Plan Adoption</b>							
<b>Plan Approval</b>							

## Coordination

The St. Tammany Parish Office of Homeland Security and Emergency Preparedness (OHSEP) oversaw the coordination of the 2020 Hazard Mitigation Plan Update Steering Committee during the update process. The parish OHSEP was responsible for identifying members for the committee.

The Parish Director and SDMI were jointly responsible for inviting the steering committees and key stakeholders to planned meetings and activities. 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 meetings and outreach efforts during the update process.

## Neighboring Community, Local and Regional Planning Process Involvement

From the outset of the planning process, the steering 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 Team meetings at the local and parish level
- Sharing local data and information
- Action item development
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan document following provisional approval by the State of Louisiana and FEMA

The 2020 Hazard Mitigation Plan Update Steering Committee consisted of representatives from the following parish, municipal or community stakeholders:

- St. Tammany Parish Government
- St. Tammany Office of Homeland Security and Emergency Preparedness
- St. Tammany Parish Public Works
- Town of Abita Springs
- City of Covington
- Village of Folsom
- Town of Madisonville
- City of Mandeville
- Town of Pearl River
- City of Slidell

The St. Tammany Parish OHSEP Director attended the Kick Off, Initial Planning, and Risk Assessment Meetings for St. Tammany Parish in an effort to coordinate mitigation efforts where possible as neighboring communities. The Tangipahoa OHSEP Director was invited via email and phone call to participate in an effort to collaborate with neighboring communities. SDMI assisted St. Tammany Parish with encouraging the collaboration with these neighboring communities via email by extending an invitation to the St. Tammany Hazard Mitigation Plan Update Meetings. The participation of the GOHSEP Region 9 Coordinator during the process also contributed to neighboring community representation.

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 Plan Update Worksheets.

Below is a detailed list of the 2020 HMPU Steering Committee:

St. Tammany Parish Hazard Mitigation Planning Committee				
Name	Title	Agency	Email	Phone
Clarence Powe	Director	St. Tammany Parish OHSEP	<a href="mailto:cpowe@stpgov.org">cpowe@stpgov.org</a>	(985) 867-3787
Ross Liner	Director of Planning	St. Tammany Parish Government	<a href="mailto:rliner@stpgov.org">rliner@stpgov.org</a>	(985) 809-7448
Jay Watson	Parish Engineer	St. Tammany Parish Government	<a href="mailto:jwatson@stpgov.org">jwatson@stpgov.org</a>	(985) 898-2552
Donna O'Dell	Engineer IV	St. Tammany Parish Government	<a href="mailto:dsodell@stpgov.org">dsodell@stpgov.org</a>	(985) 898-2552
deEtte Smythe	Regulatory Manager/CRS Coordinator	St. Tammany Parish Government	<a href="mailto:jduplessis@ppgov.net">jduplessis@ppgov.net</a>	(985) 809-7448
Amy Bouton	Public Information Officer	St. Tammany Parish Government	<a href="mailto:jbutcher@ppgov.net">jbutcher@ppgov.net</a>	(985) 898-2541
Bridget Saladino	Grants Manager	St. Tammany Parish Government	<a href="mailto:mmetcalf@ppgov.net">mmetcalf@ppgov.net</a>	(985) 867-5095
Jeanne Marino	Director of Grants	St. Tammany Parish Government	<a href="mailto:jrahaim@sbgp.net">jrahaim@sbgp.net</a>	(985) 867-5095
Dan Curtis	Mayor	Town of Abita Springs	<a href="mailto:dcurtis@abitaspringsla.gov">dcurtis@abitaspringsla.gov</a>	(985) 892-0711
Janet Dufrene	Town Clerk	Town of Abita Springs	<a href="mailto:jdufrene@abitaspringsla.gov">jdufrene@abitaspringsla.gov</a>	(985) 892-0711
Chris Brown	CBO, CFM, FPA	City of Covington	<a href="mailto:cbrown@covla.com">cbrown@covla.com</a>	(985) 867-1218



Nahketah Bagby	Director of Planning	City of Covington	<a href="mailto:nbagby@covla.com">nbagby@covla.com</a>	(985) 867-1214
David Zechenelly	Asst Dir., Dept. of Public Works	City of Covington	<a href="mailto:dzechenelly@covla.com">dzechenelly@covla.com</a>	(985) 898-4700
Lance Willie	Mayor	Village of Folsom	<a href="mailto:lwillie@villageoffolsom.com">lwillie@villageoffolsom.com</a>	(985) 807-9042
Margra Steele	Assistant to the Mayor	Village of Folsom	<a href="mailto:margrasteele@villageoffolsom.com">margrasteele@villageoffolsom.com</a>	(985) 796-5607
Al Courouveau	CBO, Floodplain Manager, Permits	Town of Madisonville	<a href="mailto:acourouveau@townofmadisonville.org">acourouveau@townofmadisonville.org</a>	(985) 264-2001
Louissette Scott	Director of Planning	City of Mandeville	<a href="mailto:lscott@cityofmandeville.com">lscott@cityofmandeville.com</a>	(985) 624-3103
Lori Spranley	Planning Secretary	City of Mandeville	<a href="mailto:lspranley@cityofmandeville.com">lspranley@cityofmandeville.com</a>	(985) 624-3103
Glenn Jones	Building Official	City of Mandeville	<a href="mailto:gjones@cityofmandeville.com">gjones@cityofmandeville.com</a>	(985) 966-7042
Tim Mathison	Town Attorney	Town of Pearl River	<a href="mailto:attorney.mathison@townofpearlriver.net">attorney.mathison@townofpearlriver.net</a>	(985) 863-5800
Melissa Guilbeau	Director of Planning	City of Slidell	<a href="mailto:mguilbeau@cityofslidell.org">mguilbeau@cityofslidell.org</a>	(985) 646-4320
Blaine Clancy	City Engineer	City of Slidell	<a href="mailto:bclancy@cityofslidell.org">bclancy@cityofslidell.org</a>	(985) 646-4270
Jennifer Puissegrur	Clerk	Village of Sun	<a href="mailto:sunclerk.jenp@outlook.com">sunclerk.jenp@outlook.com</a>	(985) 886-5500
Ginger Strauss	Clerk	Village of Sun	<a href="mailto:village@villageofsun.com">village@villageofsun.com</a>	(601) 569-1356
Jay Newcomb	Resident	City of Slidell	<a href="mailto:newcombjay@bellsouth.net">newcombjay@bellsouth.net</a>	(985) 960-7988
Dave Martin	Resident	City of Slidell	<a href="mailto:dmartin@allstate.com">dmartin@allstate.com</a>	(985) 640-9527
Kyle Cooper	Owner	Cooper Homes	<a href="mailto:kyle@cooperhomesllc.com">kyle@cooperhomesllc.com</a>	(985) 966-0620
Cleosias Seay	Resident	City of Covington	<a href="mailto:cleosias@gmail.com">cleosias@gmail.com</a>	(810) 407-3849
Aaron Hebert	Resident	City of Covington	<a href="mailto:aabear54@bellsouth.net">aabear54@bellsouth.net</a>	(985) 233-0476
Randy Brown	Resident	City of Mandeville	<a href="mailto:rbrown@brownsurveys.com">rbrown@brownsurveys.com</a>	(985) 624-5368
David Bulloch	Regional Sales Director	Bankers Insurance Group	<a href="mailto:david.bulloch@bankersinsurance.com">david.bulloch@bankersinsurance.com</a>	(985) 630-3362
Jason Kaufman	Fire Protection Officer	Mandeville Fire District 4	<a href="mailto:jkaufmann@mandevillefire.com">jkaufmann@mandevillefire.com</a>	(985) 624-8671
Ren Clark	Resident	City of Mandeville	<a href="mailto:rylaur@bellsouth.net">rylaur@bellsouth.net</a>	(985) 264-3549
John Lopez	Coastal Programs Director	Lake Pontchartrain Basin Foundation	<a href="mailto:johnlopez@pobox.com">johnlopez@pobox.com</a>	(504) 421-7348
Chris Laborde	Resident	City of Covington	<a href="mailto:claborde@norpc.org">claborde@norpc.org</a>	(504) 483-8540

## 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 St. Tammany Parish programs and planning.

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

St. Tammany 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 the Plan Maintenance section. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of any individual city/town plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the St. Tammany Parish Hazard Mitigation Steering 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 2015 Hazard Mitigation Plan was also used in the planning process. Other existing data and plans used in the planning process include those listed below.

- Louisiana Coastal Master Plan
- Parish Emergency Operations Plan
- State of Louisiana Hazard Mitigation Plan
- Flood Insurance Rate Maps

Further information on the plans can be found in the Capabilities Assessment, Section 3.

### 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 for St. Tammany Parish.

#### Meeting #1: Hazard Mitigation Plan Update Kick-Off

**Date:** February 11, 2020

**Location:** Covington, Louisiana

**Purpose:** Discuss the expectations and requirements of the hazard mitigation plan update process and establish an initial project timeline with the Parish's OHSEP Director and any additional personnel.

**Public Initiation:** No

**Meeting Invitees:**

Name	Title	Agency
Clarence Powe	Director	St. Tammany Parish OHSEP
Ross Liner	Director of Planning	St. Tammany Parish Government
Donna O'Dell	Engineer	St. Tammany Parish Government
deEtte Smythe	Regulatory Manager	St. Tammany Parish Government
Chris Brown	Chief Building Official	St. Tammany Parish Government
Vanessa Allison-Wall	EM Tech	St. Tammany Parish OHSEP
Lauren Morgan	Associate Director	Stephenson Disaster Management Institute
Chris Rippetoe	Program Manager	Stephenson Disaster Management Institute

**Meeting #2: Hazard Mitigation Plan Update Initial Planning Meeting****Date:** March 5, 2020**Location:** Covington, Louisiana

**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 Steering Committee. Assign each individual the parish data collection for the plan update.

**Meeting Invitees:**

<b>St. Tammany Parish Hazard Mitigation Planning Committee</b>		
<b>Name</b>	<b>Title</b>	<b>Agency</b>
Clarence Powe	Director	St. Tammany Parish OHSEP
Ross Liner	Director of Planning	St. Tammany Parish Government
Jay Watson	Parish Engineer	St. Tammany Parish Government
Donna O'Dell	Engineer IV	St. Tammany Parish Government
deEtte Smythe	Regulatory Manager/CRS Coordinator	St. Tammany Parish Government
Amy Bouton	Public Information Officer	St. Tammany Parish Government
Bridget Saladino	Grants Manager	St. Tammany Parish Government
Jeanne Marino	Director of Grants	St. Tammany Parish Government
Vanessa Allison-Wall	EM Tech	St. Tammany Parish OHSEP
Dan Curtis	Mayor	Town of Abita Springs
Janet Dufrene	Town Clerk	Town of Abita Springs
Chris Brown	CBO, CFM, FPA	City of Covington
Nahketah Bagby	Director of Planning	City of Covington
David Zechenelly	Asst Dir., Dept. of Public Works	City of Covington
Lance Willie	Mayor	Village of Folsom
Margra Steele	Assistant to the Mayor	Village of Folsom
Al Courouleau	CBO, Floodplain Manager, Permits	Town of Madisonville
Louissette Scott	Director of Planning	City of Mandeville
Lori Spranley	Planning Secretary	City of Mandeville
Glenn Jones	Building Official	City of Mandeville
Tim Mathison	Town Attorney	Town of Pearl River
Melissa Guilbeau	Director of Planning	City of Slidell
Blaine Clancy	City Engineer	City of Slidell
Jennifer Puissegur	Clerk	Village of Sun
Ginger Strauss	Clerk	Village of Sun
Jay Newcomb	Resident	City of Slidell
Dave Martin	Resident	City of Slidell
Kyle Cooper	Owner	Cooper Homes
Cleosia Seay	Resident	City of Covington
Aaron Hebert	Resident	City of Covington
Randy Brown	Resident	City of Mandeville
David Bulloch	Regional Sales Director	Bankers Insurance Group
Jason Kaufman	Fire Protection Officer	Mandeville Fire District 4
Ren Clark	Resident	City of Mandeville
John Lopez	Coastal Programs Director	Lake Pontchartrain Basin Foundation
Chris Laborde	Resident	City of Covington

**Meeting #3: Public Meeting****Date:** February 12, 2020**Location:** St. Tammany Parish, LA - ZOOM Meeting

**Purpose:** Members of the St. Tammany Parish Hazard Mitigation Plan Update Steering Committee were presented the results of the risk assessment and an overview of the public meeting presentation during this overview. The assessment was conducted based on hazards identified during previous plans and on any newly identified risks.

**Meeting Invitees:** Steering Committee Members and Members of the Public

St. Tammany Parish Hazard Mitigation Planning Committee		
Name	Title	Agency
Clarence Powe	Director	St. Tammany Parish OHSEP
Ross Liner	Director of Planning	St. Tammany Parish Government
Jay Watson	Parish Engineer	St. Tammany Parish Government
Donna O'Dell	Engineer IV	St. Tammany Parish Government
deEtte Smythe	Regulatory Manager/CRS Coordinator	St. Tammany Parish Government
Amy Bouton	Public Information Officer	St. Tammany Parish Government
Bridget Saladino	Grants Manager	St. Tammany Parish Government
Jeanne Marino	Director of Grants	St. Tammany Parish Government
Vanessa Allison-Wall	EM Tech	St. Tammany Parish OHSEP
Dan Curtis	Mayor	Town of Abita Springs
Janet Dufrene	Town Clerk	Town of Abita Springs
Chris Brown	CBO, CFM, FPA	City of Covington
Nahketa Bagby	Director of Planning	City of Covington
David Zechenelly	Asst Dir., Dept. of Public Works	City of Covington
Lance Willie	Mayor	Village of Folsom
Margra Steele	Assistant to the Mayor	Village of Folsom
Al Courouleau	CBO, Floodplain Manager, Permits	Town of Madisonville
Louissette Scott	Director of Planning	City of Mandeville
Lori Spranley	Planning Secretary	City of Mandeville
Glenn Jones	Building Official	City of Mandeville
Tim Mathison	Town Attorney	Town of Pearl River
Melissa Guilbeau	Director of Planning	City of Slidell
Blaine Clancy	City Engineer	City of Slidell
Jennifer Puissegur	Clerk	Village of Sun
Ginger Strauss	Clerk	Village of Sun
Jay Newcomb	Resident	City of Slidell
Dave Martin	Resident	City of Slidell
Kyle Cooper	Owner	Cooper Homes
Cleosia Seay	Resident	City of Covington
Aaron Hebert	Resident	City of Covington
Randy Brown	Resident	City of Mandeville
David Bulloch	Regional Sales Director	Bankers Insurance Group
Jason Kaufman	Fire Protection Officer	Mandeville Fire District 4
Ren Clark	Resident	City of Mandeville
John Lopez	Coastal Programs Director	Lake Pontchartrain Basin Foundation
Chris Laborde	Resident	City of Covington

Outreach Activity: Public Opinion Survey

**Date:** Ongoing throughout planning process

**Location:** Web survey

**Public Initiation:** Yes; public was provided the opportunity to participate in the survey, and were also provided an update on survey results at the public meeting.

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

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

### Responsible Parties

St. Tammany Parish has designated an entity that will perform a regular review and update of the Hazard Mitigation Plan. This will be the responsibility of the steering committee, which consists of representatives from governmental organizations, local businesses, and private citizens, who will be involved in the process of monitoring, evaluating and updating the plan. All committee members in this plan will remain active in the steering committee.

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

### Methods for Monitoring and Evaluating the Plan and Plan Evaluation Criteria

St. Tammany Parish has developed a method to ensure monitoring, evaluating, and updating of the HMP occurs during the five-year cycle of the plan. The planning committee will become a permanent body and will be responsible for monitoring, evaluating, and updating of the plan. The planning committee meeting



will be held annually in order to monitor, evaluate, and update the plan. The St. Tammany 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 St. Tammany Parish OHSEP Director at least 30 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

An evaluation of the plan will be conducted in the annual planning committee meeting. The planning committee will review each goal and objective to determine their relevance to changing situations in the parish, as well as changes to state or federal policy, and to ensure that they are addressing current and expected conditions. The planning committee will evaluate if any change in hazard profile and risk in the parish occurred during the past year. In addition, the evaluation will include the following criteria in respect of plan implementation:

- 1) Any local staffing changes that would warrant inviting different members to the planning committee
- 2) Any new organizations that would be valuable in the planning process or project implementation need to be included in the planning committee
- 3) Are there any procedures that can be done more efficiently
- 4) Are there more ways to gain more diverse and widespread cooperation
- 5) Are there any different or additional funding sources available for mitigation planning and implementation

The HMP will be updated every five years to remain eligible for continued HMGP funding. The planning committee will be responsible for updating the HMP. The OHSEP Director will be the lead person for the HMP update. The HMP update process will commence at least one year prior to the expiration of the

plan. The HMP will be updated after a major disaster if an annual evaluation of the plan indicates a substantial change in hazard profile and risk assessment in the parish.

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

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

### 2020 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 2015 update were adequate. 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 the responsibility of the St. Tammany Parish Hazard Mitigation Plan Steering Committee to determine additional implementation procedures when appropriate. This may include integrating the requirements of the St. Tammany Parish Hazard Mitigation Plan into planning documents, processes, or mechanisms as follows:

- Ordinances, Resolutions, Regulations
- Floodplain Ordinances
- Comprehensive Master Plan
- Capital Improvements Plan
- Economic Development Plan
- Emergency Operations Plan
- Continuity of Operations Plan
- Transportation Plan
- Storm water Management Plan

The above referenced ordinances, building codes, and regulations will be amended by a resolution in the parish council in order to incorporate the mitigation actions identified in the HMP.

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the St. Tammany Parish Hazard Mitigation Steering Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of individual plans that require specific planning and administrative tasks (e.g. risk

assessment, plan amendments, ordinance revisions, capital improvement projects, etc.). The members of the steering committee will meet with Department Heads to discuss what should be included in the changes that are necessary before the changes are introduced to the city council or police jury meetings. The members of the steering committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their agencies are consistent with the goals and actions of the St. Tammany Parish Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability within the parish.

During the planning process for new and updated local planning documents, such as a Risk Assessment, Comprehensive Plan, Capital Improvements Plan, or Emergency Operations Plan, the parish 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 planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the steering committee to be the most effective and appropriate method to ensure implementation of parish and local hazard mitigation actions. And while the development and maintenance of this stand-alone plan has been recognized as the most effective course of mitigation action implementation, individual facets of this plan have been used to bolster other planning and mitigation efforts. Since the last update, the flooding section of the risk assessment was used as a resource when St. Tammany Parish reviewed their floodplain and land use ordinances during the past five years. St. Tammany Parish also used this plan as a guide when identifying which mitigation actions would best benefit the parish and its citizens as the money became available.

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

**St. Tammany Unincorporated**

- Comprehensive Master Plan – Updated as needed by St. Tammany Parish Government
- Capital Improvements Plan – Updated as needed by St. Tammany Parish Government
- Economic Development Plan – Updated as needed by St. Tammany Parish Government
- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP
- Transportation Plan – Updated as needed by St. Tammany Parish Government
- Continuity of Operations Plan – Update as needed by St. Tammany Parish OHSEP
- Storm water Management Plan – Updated as needed by St. Tammany Parish Government

**Abita Springs**

- Comprehensive Master Plan – Updated as needed by St. Tammany Parish Government and Abita Springs Mayor's Office
- Capital Improvements Plan – Updated as needed by St. Tammany Parish Government and Abita Springs Mayor's Office
- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Abita Springs Mayor's Office

- Stormwater Management Plan – Updated as needed by St. Tammany Parish Government and Abita Springs Mayor’s Office

**Covington**

- Comprehensive Master Plan – Updated as needed by St. Tammany Parish Government and Covington Mayor’s Office
- Capital Improvements Plan – Updated as needed by St. Tammany Parish Government and Covington Mayor’s Office
- Economic Development Plan – Updated as needed by St. Tammany Parish Government and Covington Mayor’s Office
- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Covington Mayor’s Office
- Continuity of Operations Plan – Update as needed by St. Tammany Parish OHSEP and Covington Mayor’s Office
- Transportation Plan – Updated as needed by St. Tammany Parish Government and Covington Mayor’s Office
- Continuity of Operations Plan – Update as needed by St. Tammany Parish OHSEP and Covington Mayor’s Office
- Stormwater Management Plan – Updated as needed by St. Tammany Parish Government and Covington Mayor’s Office

**Folsom**

- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Folsom Mayor’s Office

**Madisonville**

- Comprehensive Master Plan – Updated as needed by St. Tammany Parish Government and Madisonville Mayor’s Office
- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Madisonville Mayor’s Office
- Transportation Plan – Updated as needed by St. Tammany Parish Government and Madisonville Mayor’s Office

**Mandeville**

- Comprehensive Master Plan – Updated as needed by St. Tammany Parish Government and Mandeville Mayor’s Office
- Capital Improvements Plan – Updated as needed by St. Tammany Parish Government and Mandeville Mayor’s Office
- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Mandeville Mayor’s Office
- Continuity of Operations Plan – Update as needed by St. Tammany Parish OHSEP and Mandeville Mayor’s Office
- Transportation Plan – Updated as needed by St. Tammany Parish Government and Mandeville Mayor’s Office
- Stormwater Management Plan – Updated as needed by St. Tammany Parish Government and Mandeville Mayor’s Office

**Pearl River**

- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Pearl River Mayor’s Office

**Slidell**

- Capital Improvements Plan – Updated as needed by St. Tammany Parish Government and Slidell Mayor’s Office
- Economic Development Plan – Updated as needed by St. Tammany Parish Government and Slidell Mayor’s Office
- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Slidell Mayor’s Office
- Continuity of Operations Plan – Update as needed by St. Tammany Parish OHSEP and Slidell Mayor’s Office
- Transportation Plan – Updated as needed by St. Tammany Parish Government and Slidell Mayor’s Office
- Stormwater Management Plan – Updated as needed by St. Tammany Parish Government and Slidell Mayor’s Office

**Sun**

- Local Emergency Operations Plan – Updated as needed by St. Tammany Parish OHSEP and Sun Mayor’s Office
- Community Wildfire Plan - Updated as needed by St. Tammany Parish OHSEP, Sun Mayor’s Office, and Sun Fire Department

**Continued Public Participation**

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

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

## Appendix C: Essential Facilities

## St. Tammany Parish Essential Facilities

## St. Tammany Parish Unincorporated Essential Facilities

Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Fire & Rescue	Abita-Waldheim Fire Dist 8				X		X	X	X	X	X	X	X	X
	Bush And Fifth Ward Volunteer Fire Dist. 9 Station 1				X		X	X	X	X	X	X	X	X
	Bush And Fifth Ward Volunteer Fire Dist. 9 Station 2				X		X	X	X	X	X	X	X	X
	Covington Fire Dept				X		X	X	X	X	X	X	X	X
	Fire Dist. 12 Station 121				X		X	X	X	X	X	X	X	X
	Goodbee Fire District 13 Station 131				X		X	X	X	X	X	X	X	X
	Mandeville FD Dist. 4				X		X	X	X	X	X	X	X	X
	Lacombe FD Dist. 3 Station 31				X		X	X	X	X	X	X	X	X
	Lacombe FD Dist. 3 Station 32				X		X	X	X	X	X	X	X	X
	Folsom FD Dist. 5				X		X	X	X	X	X	X	X	X
	Goodbee Fire District 13 Station 132				X		X	X	X	X	X	X	X	X
	Goodbee Fire District No 13				X		X	X	X	X	X	X	X	X
	Lee Road VFD Dist 6				X		X	X	X	X	X	X	X	X
	Madisonville FD Dist. 2 Station				X		X	X	X	X	X	X	X	X
	Madisonville FD Dist. 2 Station 23				X		X	X	X	X	X	X	X	X
	Pearl River FD Dist. 11				X		X	X	X	X	X	X	X	X



	Fire Protection District 7				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 HQ				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station I				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station II				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station III				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station IV				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station V				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station VI				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Station VII				X		X	X	X	X	X	X	X	X
	St Tammany Parish Fire District No 1 Training Facility				X		X	X	X	X	X	X	X	X
	Sun Vol. FD Dist. 10				X		X	X	X	X	X	X	X	X
Government	ADMIN AND JC COMPLEX EAST (TOWERS)				X		X	X	X	X	X	X	X	X
	ANIMAL SERVICES COMPLEX				X		X	X	X	X	X	X	X	X
	BUSH COMMUNITY CENTER				X		X	X	X	X	X	X	X	X
	CAMP SALMEN NATURE PARK				X		X	X	X	X	X	X	X	X

	COMMUNICATION TOWER EQUIP BLDG				X		X	X	X	X	X	X	X	X
	COMMUNITY WELLNESS CENTER				X		X	X	X	X	X	X	X	X
	EOC COMPLEX				X		X	X	X	X	X	X	X	X
	JUSTICE CENTER COMPLEX				X		X	X	X	X	X	X	X	X
	JUSTICE CENTER PARKING GARAGE				X		X	X	X	X	X	X	X	X
	KIDS TOWN BLDG				X		X	X	X	X	X	X	X	X
	KOOP DR COMPLEX				X		X	X	X	X	X	X	X	X
	LEVEE BOARD/COMMUNITY CENTER BLDG				X		X	X	X	X	X	X	X	X
	LIBRARY ABITA SPRINGS BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY BUSH BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY CAUSEWAY BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY COVINGTON BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY FOLSOM BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY HEADQUARTERS ANNEX LA36				X		X	X	X	X	X	X	X	X
	LIBRARY LACOMBE BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY LEE RD BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY MADISONVILLE BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY MANDEVILLE BRANCH				X		X	X	X	X	X	X	X	X

	LIBRARY PEARL RIVER BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY SLIDELL BRANCH				X		X	X	X	X	X	X	X	X
	LIBRARY SOUTH SLIDELL BRANCH				X		X	X	X	X	X	X	X	X
	MAINEGRA BARN (OLD)				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN AIRPORT				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN BREWSTER				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN BUSH				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN COVINGTON				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN FOLSOM				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN FRITCHIE NORTH				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN FRITCHIE SOUTH				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN HICKORY				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN HWY 59				X		X	X	X	X	X	X	X	X
	MAINTENANCE BARN KELLER				X		X	X	X	X	X	X	X	X
	NAVIGATION CANAL HOUSE LOCK 3				X		X	X	X	X	X	X	X	X
	NAVIGATION CANAL PAVILLION LOCK 1				X		X	X	X	X	X	X	X	X
	NAVIGATION CANAL PAVILLION LOCK 2				X		X	X	X	X	X	X	X	X

	NORTHSHORE BEACH PAVILLION EAST				X		X	X	X	X	X	X	X	X
	NORTHSHORE BEACH PAVILLION WEST				X		X	X	X	X	X	X	X	X
	OLD UNION GROVE REC CTR/HWY 40 POLLING				X		X	X	X	X	X	X	X	X
	PARK AND RIDE ABITA SPRINGS PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE CENTERPOINT PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE HIGHWAY 41 PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE KOOP DR PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE LACOMBE PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE MANDEVILLE PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE NORTH BLVD PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE OAK HARBOR PAVILLION				X		X	X	X	X	X	X	X	X
	PARK AND RIDE/TRAILHEAD BLDG SLIDELL				X		X	X	X	X	X	X	X	X
	PERFORMING ARTS CENTER				X		X	X	X	X	X	X	X	X
	PUBLIC DEFENDER OFFICE BLDG				X		X	X	X	X	X	X	X	X
	SAFE HAVEN COMPLEX				X		X	X	X	X	X	X	X	X

	SLIDELL AIRPORT COMPLEX				X		X	X	X	X	X	X	X	X
	SLIDELL COURTHOUSE				X		X	X	X	X	X	X	X	X
	ST MARY ST BUILDING LACOMBE				X		X	X	X	X	X	X	X	X
	ST TAMMANY ADVANCED CAMPUS COMPLEX				X		X	X	X	X	X	X	X	X
	STP AIRPORT COMPLEX				X		X	X	X	X	X	X	X	X
	STP CORONER COMPLEX				X		X	X	X	X	X	X	X	X
	STP FAIRGROUNDS ANNEX COMPLEX				X		X	X	X	X	X	X	X	X
	STP FAIRGROUNDS COMPLEX				X		X	X	X	X	X	X	X	X
	STP FISHING PIER SITE				X		X	X	X	X	X	X	X	X
	TAMMANY UTILITIES EAST WAREHOUSE/OFFICE				X		X	X	X	X	X	X	X	X
	TAMMANY UTILITIES WEST COMPLEX				X		X	X	X	X	X	X	X	X
	TRACE KOOP COMPLEX				X		X	X	X	X	X	X	X	X
	TRACE RANGER BLDG				X		X	X	X	X	X	X	X	X
	TRACE TRAILHEAD BRIDGE HOUSE				X		X	X	X	X	X	X	X	X
	TYLER ST COMPLEX				X		X	X	X	X	X	X	X	X
Law Enforcement	St Tammany Parish Of Sheriff				X		X	X	X	X	X	X	X	X
	St Tammany Parish Of Sheriff's Office				X		X	X	X	X	X	X	X	X
	St Tammany Parish Of Sheriff's Office Folsom Sub-station				X		X	X	X	X	X	X	X	X

	St Tammany Parish Sheriff's Office Bush Substation				X		X	X	X	X	X	X	X	X
	St. Tammany Parish Sheriff's Office Lacombe Sub-station				X		X	X	X	X	X	X	X	X
	Causeway Police Dept.				X		X	X	X	X	X	X	X	X
<b>Corrections</b>	STP JAIL COMPLEX				X		X	X	X	X	X	X	X	X
<b>Schools</b>	Bayou Lacombe Middle School				X		X	X	X	X	X	X	X	X
	Fifth Ward Jr. High School				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in Unincorporated St. Tammany Parish would be adversely impacted by dam failure or fog\*\*\*

Town of Abita Springs Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
<b>Fire &amp; Rescue</b>	Fire Dept				X		X	X	X	X	X	X	X	X
<b>Law Enforcement</b>	Abita Springs Police Dept				X		X	X	X	X	X	X	X	X
<b>Government</b>	Abita Springs Town Hall				X		X	X	X	X	X	X	X	X
	Maintenance Barn (3 structures)													
<b>Public Health</b>	Prevost Memorial Hospital				X		X	X	X	X	X	X	X	X
<b>Schools</b>	Abita Springs Elementary				X		X	X	X	X	X	X	X	X
	Abita Springs Middle				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the Town of Abita Springs would be adversely impacted by fog\*\*\*



City of Covington Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Fire & Rescue	Covington Fire Department				X		X	X	X	X	X	X	X	X
	Fire Dist. 12 Station 121													
Government	Greater Convention Center/City Hall				X		X	X	X	X	X	X	X	X
Law Enforcement	Covington Police Department				X		X	X	X	X	X	X	X	X
	Covington Police Department													
Public Health	Lakeview Medical Center				X		X	X	X	X	X	X	X	X
	St Tammany Parish Hospital				X		X	X	X	X	X	X	X	X
	Avala Hospital				X		X	X	X	X	X	X	X	X
	PAM Specialty Hospital of Covington				X		X	X	X	X	X	X	X	X
Schools	Covington Elementary School				X		X	X	X	X	X	X	X	X
	Covington High School				X		X	X	X	X	X	X	X	X
	Lee Road Jr. High School				X		X	X	X	X	X	X	X	X
	Lyon Elementary/Pet Shelter				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the City of Covington would be adversely impacted by fog\*\*\*

Village of Folsom Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Government	Folsom Town Hall				X		X	X	X	X	X	X	X	X
Fire & Rescue	Folsom FD Dist. 5				X		X	X	X	X	X	X	X	X
Law Enforcement	Folsom Police Dept													
Schools	Folsom Elementary School				X		X	X	X	X	X	X	X	X
	Folsom Jr. High School				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the Village of Folsom would be adversely impacted by fog\*\*\*

Town of Madisonville Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Government	Town Hall				X		X	X	X	X	X	X	X	X
	Maintenance Barn													
Law Enforcement	Police Department				X		X	X	X	X	X	X	X	X
	Madisonville Police Department				X		X	X	X	X	X	X	X	X
Fire & Rescue	Madisonville FD Dist. 2 Station													
	Madisonville FD Dist. 2 Station 23				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the Town of Madisonville would be adversely impacted by fog\*\*\*

City of Mandeville Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Government	City Hall				X		X	X	X	X	X	X	X	X
	Community Center				X		X	X	X	X	X	X	X	X
	Trailhead Facility				X		X	X	X	X	X	X	X	X
	Old Water Works Bldg				X		X	X	X	X	X	X	X	X
	Public Works Facility				X		X	X	X	X	X	X	X	X
Fire & Rescue	Mandeville FD Dist. 4				X		X	X	X	X	X	X	X	X
Law Enforcement	Police Investigations Annex				X		X	X	X	X	X	X	X	X
	Police Department Complex				X		X	X	X	X	X	X	X	X
	Police Maintenance Bldg				X		X	X	X	X	X	X	X	X
Public Health	Northlake Behavior Health Care				X		X	X	X	X	X	X	X	X
	Lurline Smith Mental Health Clinic				X		X	X	X	X	X	X	X	X
Schools	Fontainebleau High School				X		X	X	X	X	X	X	X	X
	Fontainebleau Jr. High School				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the City of Mandeville would be adversely impacted by fog\*\*\*

Town of Pearl River Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Government	Civil Government				X		X	X	X	X	X	X	X	X
Fire & Rescue	Pearl River FD Dist. 11				X		X	X	X	X	X	X	X	X
	Fire Protection District 7				X		X	X	X	X	X	X	X	X
Law Enforcement	Pearl River Police Dept				X		X	X	X	X	X	X	X	X
Schools	Creekside Jr. High				X		X	X	X	X	X	X	X	X
	Pearl River High School				X		X	X	X	X	X	X	X	X
	Riverside Elementary School				X		X	X	X	X	X	X	X	X
	Sixth Ward Elementary School				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the Town of Pearl River would be adversely impacted by fog\*\*\*

City of Slidell Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Government	Airport Hanger/Office				X		X	X	X	X	X	X	X	X
	Animal Control Center				X		X	X	X	X	X	X	X	X
	Auditorium				X		X	X	X	X	X	X	X	X
	Building #1				X		X	X	X	X	X	X	X	X
	Building #2				X		X	X	X	X	X	X	X	X
	City Hall				X		X	X	X	X	X	X	X	X

	City Museum				X		X	X	X	X	X	X	X	X
	DISA Building				X		X	X	X	X	X	X	X	X
	Guardians of Slidell History Museum				X		X	X	X	X	X	X	X	X
	Public Operations - Administration				X		X	X	X	X	X	X	X	X
	Public Operations - Employee Building				X		X	X	X	X	X	X	X	X
	Public Operations - Purchasing				X		X	X	X	X	X	X	X	X
	Public Operations - Tool Shop				X		X	X	X	X	X	X	X	X
	Public Operations - Vehicle Maintenance				X		X	X	X	X	X	X	X	X
	Public Ops #6				X		X	X	X	X	X	X	X	X
	Railroad Depot				X		X	X	X	X	X	X	X	X
	Records Building				X		X	X	X	X	X	X	X	X
	Rufus Viner Center				X		X	X	X	X	X	X	X	X
	Wastewater Treatment Plant				X		X	X	X	X	X	X	X	X
Fire & Rescue	Fire District 1 Headquarters				X		X	X	X	X	X	X	X	X
	Fire Headquarters				X		X	X	X	X	X	X	X	X
	Fire Station				X		X	X	X	X	X	X	X	X
	Fire Station #11				X		X	X	X	X	X	X	X	X
	Fire Station #12				X		X	X	X	X	X	X	X	X
	Fire Station #13				X		X	X	X	X	X	X	X	X
	Fire Station #16				X		X	X	X	X	X	X	X	X
	Fire District 1 Training Academy				X		X	X	X	X	X	X	X	X
Law Enforcement	City Court				X		X	X	X	X	X	X	X	X

	City Police Building & Jail				X		X	X	X	X	X	X	X	X
	Police Evid/Admin Bldg.				X		X	X	X	X	X	X	X	X
	Police Storage Building				X		X	X	X	X	X	X	X	X
	Slidell Police Department				X		X	X	X	X	X	X	X	X
	Slidell PD Sub-station				X		X	X	X	X	X	X	X	X
Public Health	Greenbrier Hospital				X		X	X	X	X	X	X	X	X
	Ochsner Medical Center				X		X	X	X	X	X	X	X	X
	Slidell Memorial Hospital				X		X	X	X	X	X	X	X	X
	Sterling Surgical Hospital				X		X	X	X	X	X	X	X	X
	Southern Surgical Hospital				X		X	X	X	X	X	X	X	X
	Slidell Memorial Hospital				X		X	X	X	X	X	X	X	X
	Ochsner Hospital				X		X	X	X	X	X	X	X	X
Schools	Alton Elementary School				X		X	X	X	X	X	X	X	X
	Whispering Forest Elementary				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the City of Slidell would be adversely impacted by fog\*\*\*

Village of Sun Essential Facilities														
Type	Name	Coastal Hazards	Dam Failure	Drought	Flooding	Fog	Hail	Wind	Lightning	Levee Failure	Termites	Tornadoes	Tropical Cyclones	Wildfires
Government	Sun Town Hall				X		X	X	X	X	X	X	X	X
Fire & Rescue	Fire Station #4				X		X	X	X	X	X	X	X	X
Law Enforcement	Sun Police Department				X		X	X	X	X	X	X	X	X

\*\*\*No critical facilities in the Village of Sun would be adversely impacted by fog\*\*\*



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## Appendix D: Plan Adoption

### ST. TAMMANY PARISH COUNCIL

#### RESOLUTION

RESOLUTION COUNCIL SERIES NO: C-6333

COUNCIL SPONSOR: LORINO/COOPER

PROVIDED BY: COUNCIL OFFICE

RESOLUTION TO ADOPT CHANGES TO THE ST. TAMMANY PARISH NATURAL HAZARDS MITIGATION PLAN ORIGINALLY PASSED IN NOVEMBER 2004 AND THE CHANGES ADOPTED IN 2010 AND 2015.

WHEREAS, St. Tammany Parish is subject to tropical storms, hurricanes, flooding, tornadoes, and other natural hazards that can damage property, close businesses, disrupt traffic and present a public health and safety hazard; and

WHEREAS, several Federal programs require that the Parish have an adopted hazard mitigation plan to qualify for Federal benefits; and

WHEREAS, the Parish Council and participating municipalities passed a resolution adopted the Natural Hazards Mitigation Plan in November 2004 and adopted changes to the Plan in 2010 and in 2015; and

WHEREAS, the adopted plan required the participation and support of different public and private agencies and organizations that are impacted by natural hazards and/or that can help mitigate the impacts of natural disasters; and

WHEREAS, the Natural Hazards Mitigation Plan is required by the Federal Emergency Management Agency (FEMA) to be updated and revised every 5 years; and

WHEREAS, the Natural Hazards Mitigation Plan 2015 is now renamed ST. Tammany Parish Multi-Jurisdictional Hazards Mitigation Plan 2020 update has been completed and forwarded to FEMA for review and requires the adoption of the changes by the parish and participating municipal councils; and

WHEREAS, this ST. Multi-Jurisdictional Hazards Mitigation Plan 2020 update will include the additions of the Community Rating System Appendix. To ensure every effort has been taken to achieve the best possible rating available under the National Floods Insurance Program.

THE PARISH OF ST. TAMMANY HEREBY RESOLVES to adopt the changes to the St. Tammany Parish Multi-Jurisdictional Hazards Mitigation Plan 2020.

THIS RESOLUTION HAVING BEEN SUBMITTED TO A VOTE, THE VOTE THEREON WAS AS FOLLOWS:

MOVED FOR ADOPTION BY: MS. O'BRIEN SECONDED BY: MR. CANULETTE

YEAS: DEAN, CAZAUBON, LORINO, TOLEDANO, TANNER, DAVIS, CANULETTE, M. SMITH, O'BRIEN, STEFANCIK, BINDER, AIREY, T. SMITH (13)

NAYS: (0)

ABSTAIN: (0)

ABSENT: FITZGERALD (1)

Resolution Council Series No. C-6333

PAGE 2 OF 4

THIS RESOLUTION WAS DECLARED ADOPTED ON THE 3 DAY OF SEPTEMBER, 2020,  
AT A REGULAR MEETING OF THE PARISH COUNCIL, A QUORUM OF THE MEMBERS BEING  
PRESENT AND VOTING.



MICHAEL R. LORINO, JR., COUNCIL CHAIRMAN

ATTEST:



KATRINA L. BUCKLEY, COUNCIL CLERK

Resolution Council Series No. C

PAGE 2 OF 3

**ADMINISTRATIVE COMMENT**

This Resolution is to adopt changes to the St. Tammany Parish Natural Hazards Mitigation Plan originally passed in November 2004 and the changes adopted in 2010 and 2015.



## MEMO

September 1, 2020

Parish Council

Clarence Powe

## St. Tammany Parish Multi-Jurisdiction Hazards Mitigation Plan

St. Tammany Parish Council  
P.O. Box 628 Covington, LA 70434

Dear Council Members:

The St. Tammany Parish Hazards Mitigation Planning Committee completed its update of the 2020 Multi-Jurisdiction Hazards Mitigation Plan on July 21, 2020. This update was done through the Hazard Mitigation Grant Program (HMGP) and the plan was updated by Stephenson Disaster Management Institute (SDMI), Parish Departments, the cities of Covington, Mandeville, Slidell, Towns of Abita Springs, Madisonville, Pearl River and the Villages of Folsom and Sun. The plan was submitted to the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) for review and approval by the state before being submitted to the Federal Emergency Management Agency (FEMA) for approval. FEMA completed its crosswalk of the plan and issued an Approval Pending Adoption (APA) of Resolution by the Parish on August 11, 2020. The next requirements to finalize FEMA's approval is for the Plan's updates be accepted and passed by a Parish resolution.

All participating Cities, Towns and Villages will also have to pass a resolution adopting the Multi-Jurisdiction Hazards Mitigation Plan updates.

Completion and approval of the Multi-Jurisdiction Hazards Mitigation Plan will entitle St. Tammany Parish and participating jurisdiction eligibility for Hazard Mitigation Grant Program funding for the next 5 years, expiring September 2025.

If you have comments or question, please submit them to the parish Office of Homeland Security and Emergency Preparedness ATTN: Clarence Powe - Chairman Mitigation Planning Committee at (985) 867-3787 or [cpowe@stpgov.org](mailto:cpowe@stpgov.org).

Sincerely,

A handwritten signature in black ink that reads "Mike Cooper".

Mike Cooper  
Parish President  
St. Tammany Parish Government

\*\*\*Reserved for Abita Springs adoption\*\*\*

**CITY OF COVINGTON  
STATE OF LOUISIANA**

**RESOLUTION NUMBER 2020-25**

**A RESOLUTION OF THE COVINGTON CITY COUNCIL  
ADOPTING THE 2020 ST. TAMMANY PARISH MULTI-  
JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE**

**WHEREAS**, the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to prepare and adopt a hazard mitigation plan as a precondition for receiving federal mitigation funds; and

**WHEREAS**, the City of Covington is subject to many natural hazards including tropical storms, hurricanes, flooding, tornadoes, and other hazards that can damage property, close businesses, disrupt traffic and present a public health and safety hazard; and

**WHEREAS**, 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; and

**WHEREAS**, the City Council of the City of Covington adopted Resolution 2015-14, which adopted the St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update in 2015. The Hazard Mitigation Plan is required by the Federal Emergency Management Agency (FEMA) to be updated every five (5) years; and

**WHEREAS**, the 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan update was coordinated by the St. Tammany Parish Hazard Mitigation Plan Update Steering Committee, in collaboration with community stakeholders and the general public. The City of Covington is one of the participating jurisdictions; and

**WHEREAS**, this 2020 St. Tammany Parish Hazard Mitigation Plan update documents the planning process, identifies the natural hazards and risks within the Parish and jurisdictions, and identifies the mitigation strategy to make St. Tammany Parish less vulnerable and more disaster resilient. Information in the Plan will be used to help guide and coordinate mitigation and local policy decisions affecting future land use; and

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Covington, Louisiana, in regular session convened, that it hereby adopts the 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan update.



Resolution No. 2020-25  
 Adopt 2020 Hazard Mitigation Plan update  
 Page 2 of 2

1 **MOVED FOR ADOPTION** by Verret, seconded by Ludwig,

2 was then submitted to a vote, the vote thereon being as follows:

3	<u>MEMBERS</u>	<u>YEAS</u>	<u>NAYS</u>	<u>ABSENT</u>	<u>ABSTAINING</u>
4	Peter Lewis Sr.	<u>✓</u>	_____	_____	_____
5	John Botsford	<u>✓</u>	_____	_____	_____
6	Joey Roberts	<u>✓</u>	_____	_____	_____
7	Cody Ludwig	<u>✓</u>	_____	_____	_____
8	Mark W. Verret	<u>✓</u>	_____	_____	_____
9	Rick Smith	<u>✓</u>	_____	_____	_____
10	Larry Rolling	<u>✓</u>	_____	_____	_____


11  
 12  
 13 And the resolution was declared adopted on the 22<sup>nd</sup> day of September,  
 14 2020.

15		
16	LARRY ROLLING	BONNIE D. CHAMPAGNE
17	COUNCIL <del>VICE</del> PRESIDENT	COUNCIL CLERK
18		
19		

#### 20 C E R T I F I C A T E

21  
 22  
 23 I, Bonnie D. Champagne, Council Clerk of the City of Covington, certify that  
 24 the above and foregoing constitutes a true and correct copy of a Resolution passed  
 25 and adopted by the City of Covington on the 22<sup>nd</sup> day of September, 2020, at which  
 26 meeting a quorum was present and voting.

27 Covington, Louisiana, this 22<sup>nd</sup> day of September, 2020.

28	
29	
30	BONNIE D. CHAMPAGNE
31	COUNCIL CLERK

\*\*\*Reserved for Folsom adoption\*\*\*

\*\*\*Reserved for Madisonville adoption\*\*\*

**THE FOLLOWING RESOLUTION WAS INTRODUCED BY COUNCIL MEMBER BUSH; AND SECONDED FOR ADOPTION BY COUNCIL MEMBER ZUCKERMAN**

**RESOLUTION NO. 20-20**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MANDEVILLE ADOPTING THE 2020 ST. TAMMANY PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE.**

**WHEREAS**, the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to prepare and adopt a hazard mitigation plan as a precondition for receiving federal mitigation funds; and

**WHEREAS**, the City of Mandeville is subject to many natural hazards including tropical storms, hurricanes, flooding, tornadoes, and other hazards that can damage property, close businesses, disrupt traffic and present a public health and safety hazard; and

**WHEREAS**, 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; and

**WHEREAS**, the City Council of the City of Mandeville adopted Resolution 15-33, which adopted the St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update in 2015. The Hazard Mitigation Plan is required by the Federal Emergency Management Agency (FEMA) to be updated every five (5) years; and

**WHEREAS**, the 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan update was coordinated by the St. Tammany Parish Hazard Mitigation Plan Update Steering Committee, in collaboration with community stakeholders and the general public. The City of Mandeville is one of the participating jurisdictions; and

**WHEREAS**, this 2020 St. Tammany Parish Hazard Mitigation Plan update documents the planning process, identifies the natural hazards and risks within the Parish and jurisdictions, and identifies the mitigation strategy to make St. Tammany Parish less vulnerable and more disaster resilient. Information in the Plan will be used to help guide and coordinate mitigation and local policy decisions affecting future land use; and

**NOW, THEREFORE, BE IT RESOLVED** that the City Council of the City of Mandeville does hereby adopt the 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan update.

With the above resolution having been properly introduced and duly seconded, the vote was as follows:

AYES: 5 ( Bush, Kreller, Danielson, McGuire, Zuckerman)

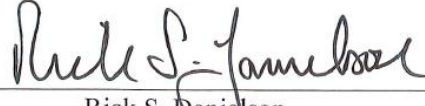
NAYS: 0

ABSENT: 0

ABSTENTIONS: 0

and the resolution was declared adopted this 1st day of September, 2020.

  
\_\_\_\_\_  
Kristine Scherer  
Clerk of Council

  
\_\_\_\_\_  
Rick S. Danielson  
Council Chairman

**RESOLUTION 09-15-20(A)**

A Resolution adopting the 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update.

**WHEREAS**, Hazard Mitigation is defined as sustained actions taken to reduce or eliminate long-term risk from hazards and their effects; and

**WHEREAS**, 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; and

**WHEREAS**, the St. Tammany Parish Hazard Mitigation Plan accomplishes the following: (A) documents the St. Tammany Parish Hazard Mitigation Plan Update (HMPU), (B) identifies natural hazards and risks within the Parish, and (C) identifies the Parish's hazard mitigation strategy to make St. Tammany Parish less vulnerable and more disaster resilient; and

**WHEREAS**, the Town of Pearl River participated in the Hazard Mitigation Plan update process with the Parish; and

**WHEREAS**, under the Disaster Mitigation Act of 2000 (42 U.S.C. 5165), a mitigation plan is a requirement for receiving federal mitigation funds; and

**WHEREAS**, in the future the Town may be in need of federal mitigation funds;

**BE IT THEREFORE RESOLVED** by the Board of Aldermen of the Town of Pearl River that the 2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update is hereby adopted.

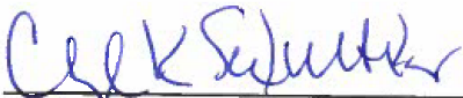
**ADOPTED this 22nd day of September, 2020.**

**YEAS: 5 (Walsh, Bennett, Galloway, McGregor, Lee)**

**NAYS: 0**

**ABSENT: 0**

**ABSTENTIONS: 0**



Cheryl K. Schultheis, Town Clerk



Clarence David McQueen, Mayor

Introduced September 8, 2020, by Councilman  
Tamborella, seconded by Councilwoman  
Denham, (by request of Administration)

### RESOLUTION R20-28

A resolution adopting the *2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update*.

WHEREAS, Slidell is subject to tropical storms, flooding, tornadoes, and other natural hazards that can damage property, close businesses, and present public health and safety hazards; and

WHEREAS, having an adopted and approved hazard mitigation plan makes the City an eligible applicant for hazard mitigation assistance grants administered by FEMA; and

WHEREAS, the City adopted a hazard mitigation plan in 2006 and updated it in 2010; and

WHEREAS, in 2015, Slidell joined other jurisdictions in the parish in a multi-jurisdictional hazard mitigation plan – the *2015 St. Tammany Parish Hazard Mitigation Plan Update* – which the City Council adopted on May 26, 2015 (R15-18) and the Governor's Office of Homeland Security (GOHSEP) and the Federal Emergency Management Agency (FEMA) approved on August 3, 2015; and

WHEREAS, the 2015 plan expired on July 28, 2020; and

WHEREAS, in early 2020, St. Tammany Parish Government and the Stephenson Disaster Management Institute (SDMI) at Louisiana State University, in coordination with GOHSEP, began the process to update the 2015 plan; and



**RESOLUTION R20-28**  
**PAGE 2**

WHEREAS, on March 10, 2020, the City Council agreed to participate in the 2015 plan update and appointed four individuals to the plan update steering committee (R20-06); and


WHEREAS, the process experienced delays due to COVID-19 restrictions; and

WHEREAS, on August 31, 2020, SDMI forwarded a final draft of the *2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update* to the Parish and participating jurisdictions for adoption, which draft is substantially complete but may have minor edits and be updated from time to time; and

WHEREAS, the City of Slidell and all participating jurisdictions should adopt the 2020 update as soon as practicable, as the 2015 plan has expired and we are at the peak of an active hurricane season.

NOW THEREFORE BE IT RESOLVED by the Slidell City Council that it hereby adopts the *2020 St. Tammany Parish Multi-Jurisdictional Hazard Mitigation Plan Update*.

**ADOPTED** this 8<sup>th</sup> day of September, 2020.



Kenny Tamborella  
President of the Council  
Councilman, District E



Thomas P. Reeves  
Council Administrator

## RESOLUTION 8.11.2020.2

A RESOLUTION OF THE VILLAGE OF SUN DESIGNATING THE VILLAGE  
COUNCIL TO ADOPT CHANGES TO THE ST. TAMMANY PARISH NATURAL  
HAZARDS MITIGATION PLANNING.

**Whereas**, The Village of Sun is subject to tropical storms, hurricanes, flooding, tornadoes, and other natural hazards that can cause damaged property, close businesses, disrupt traffic, and present a public health and safety hazard: and

**Whereas**, Several Federal programs requires that the Parish and Municipalities have an adopted hazard mitigation plan to qualify for Federal Hazard Mitigation benefits: and

**Whereas**, St. Tammany Parish Council and participating municipalities passed a resolution adopting the Natural Hazards Mitigation Plan in 2010.

**Whereas**, The Village of Sun participated in the development and the update of the Natural Hazards Mitigation Plan and subsequently making the Village eligible for benefits associated with the Natural Hazard Mitigation Plan and the Hazards Mitigation Grant Program (HMGP).

**Whereas**, The Natural Hazards Mitigation Plan is required by the Federal Emergency Management Agency (FEMA) to be updated and revised every four (4) years.

**Whereas**, This Hazards Mitigation Plan update will entitle St. Tammany Parish and participating jurisdiction the eligibility for the Hazards Mitigation Grant Program for the next five (5) years expiring March 22, 2025.

**Now, therefore, be it resolved that:**

1. The Village of Sun hereby states its continued interest in participating in the Parish's Mitigation Planning process by adopting the current updates to the Natural Hazards Mitigation Plan.
2. The appointed representative to the Parish's Mitigation Planning Committee is charged with:
  - a. Attending the regular meetings of the Parish Mitigation Planning Committee;
  - b. Keeping Village staff and this council informed of the Committee activities and recommendations;
  - c. Assisting the Parish's efforts to collect information about the hazards facing the **Village of Sun** and our current policies and programs that can mitigate the impacts of those hazards, and.
  - d. Obtaining input from The Village staff on mitigation issues relevant to their work.
3. When the Parish's Mitigation Planning Committee has completed its work and presents its recommended plan, this council will review it with the intention of adopting all or parts of it. It is understood that this resolution of commitment to participate in the planning process does not constitute a commitment to enact the recommended plan.

MOVED FOR ADOPTION BY \_\_\_Mayor Pro Tem Brian Blackwell\_\_\_,  
Seconded by \_\_\_Alderman Mark Hall\_\_\_ motion was carried.

Was then submitted to a vote, the vote thereon being as follows:

<u>MEMBERS</u>	<u>YEAS</u>	<u>NAYS</u>	<u>ABSENT</u>	<u>ABSTAINING</u>
Brian Blackwell	X			
Scott Meiners	X			
Mark Hall	X			

And the resolution was declared adopted on the, \_\_11th\_\_ day of August 2020

I Ginger Bays, Clerk of the Village of Sun do hereby certify the foregoing to be a true and correct copy of a Resolution adopted by the Village of Sun Board of Alderman at a meeting on \_\_11th\_\_ day of August 2020.

My signature this \_\_11th\_\_ day of August 2020

*Ginger Bays - Strauss*  
Ginger Bays - Clerk

APPROVED this \_\_11th\_\_ day of August, 2020

*Will Talley*  
Will Talley,  
Mayor  
Village of Sun, Louisiana

## Appendix E: State Required Worksheets

During the planning process (Appendix A) the Hazard Mitigation Plan Update Steering Committee was provided state-required plan update process worksheets to be filled out. 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 (Element E) for the update. The plan update worksheets allowed for collection of information such as planning team members, community capabilities, critical infrastructure and vulnerable populations and NFIP information. The following pages contain documentation of the state required worksheets.

### Mitigation Planning Team

St. Tammany Parish Hazard Mitigation Planning Committee				
Name	Title	Agency	Email	Phone
Clarence Powe	Director	St. Tammany Parish OHSEP	<a href="mailto:cpowe@stp.gov">cpowe@stp.gov</a>	(985) 867-3787
Ross Liner	Director of Planning	St. Tammany Parish Government	<a href="mailto:rliner@stp.gov">rliner@stp.gov</a>	(985) 809-7448
Jay Watson	Parish Engineer	St. Tammany Parish Government	<a href="mailto:jwatson@stp.gov">jwatson@stp.gov</a>	(985) 898-2552
Donna O'Dell	Engineer IV	St. Tammany Parish Government	<a href="mailto:dsodell@stp.gov">dsodell@stp.gov</a>	(985) 898-2552
deEtte Smythe	Regulatory Manager/CRS Coordinator	St. Tammany Parish Government	<a href="mailto:jduplessis@ppg.gov">jduplessis@ppg.gov</a>	(985) 809-7448
Amy Bouton	Public Information Officer	St. Tammany Parish Government	<a href="mailto:jbutcher@ppg.gov">jbutcher@ppg.gov</a>	(985) 898-2541
Bridget Saladino	Grants Manager	St. Tammany Parish Government	<a href="mailto:mmetcalf@ppg.gov">mmetcalf@ppg.gov</a>	(985) 867-5095
Jeanne Marino	Director of Grants	St. Tammany Parish Government	<a href="mailto:jrahaim@sbpg.net">jrahaim@sbpg.net</a>	(985) 867-5095
Dan Curtis	Mayor	Town of Abita Springs	<a href="mailto:dcurtis@abitaspringsla.gov">dcurtis@abitaspringsla.gov</a>	(985) 892-0711
Janet Dufrene	Town Clerk	Town of Abita Springs	<a href="mailto:jdufrene@abitaspringsla.gov">jdufrene@abitaspringsla.gov</a>	(985) 892-0711
Chris Brown	CBO, CFM, FPA	City of Covington	<a href="mailto:cbrown@covla.com">cbrown@covla.com</a>	(985) 867-1218
Nahketah Bagby	Director of Planning	City of Covington	<a href="mailto:nbagby@covla.com">nbagby@covla.com</a>	(985) 867-1214
David Zechenelly	Asst Dir., Dept. of Public Works	City of Covington	<a href="mailto:dzechenelly@covla.com">dzechenelly@covla.com</a>	(985) 898-4700
Lance Willie	Mayor	Village of Folsom	<a href="mailto:lwillie@villageoffolsom.com">lwillie@villageoffolsom.com</a>	(985) 807-9042
Margra Steele	Assistant to the Mayor	Village of Folsom	<a href="mailto:margrasteele@villageoffolsom.com">margrasteele@villageoffolsom.com</a>	(985) 796-5607
Al Courouleau	CBO, Floodplain Manager, Permits	Town of Madisonville	<a href="mailto:acourouleau@townofmadisonville.org">acourouleau@townofmadisonville.org</a>	(985) 264-2001
Louissette Scott	Director of Planning	City of Mandeville	<a href="mailto:lscott@cityofmandeville.com">lscott@cityofmandeville.com</a>	(985) 624-3103
Lori Spranley	Planning Secretary	City of Mandeville	<a href="mailto:lspranley@cityofmandeville.com">lspranley@cityofmandeville.com</a>	(985) 624-3103

Glenn Jones	Building Official	City of Mandeville	<a href="mailto:gjones@cityofmandeville.com">gjones@cityofmandeville.com</a>	(985) 966-7042
Tim Mathison	Town Attorney	Town of Pearl River	<a href="mailto:attorney.mathison@townofpearlriver.net">attorney.mathison@townofpearlriver.net</a>	(985) 863-5800
Melissa Guilbeau	Director of Planning	City of Slidell	<a href="mailto:mguilbeau@cityofslidell.org">mguilbeau@cityofslidell.org</a>	(985) 646-4320
Blaine Clancy	City Engineer	City of Slidell	<a href="mailto:bclancy@cityofslidell.org">bclancy@cityofslidell.org</a>	(985) 646-4270
Jennifer Puissegur	Clerk	Village of Sun	<a href="mailto:sunclerk.jenp@outlook.com">sunclerk.jenp@outlook.com</a>	(985) 886-5500
Ginger Strauss	Clerk	Village of Sun	<a href="mailto:village@villageofsun.com">village@villageofsun.com</a>	(601) 569-1356
Jay Newcomb	Resident	City of Slidell	<a href="mailto:newcombjay@bellsouth.net">newcombjay@bellsouth.net</a>	(985) 960-7988
Dave Martin	Resident	City of Slidell	<a href="mailto:dmartin@allstate.com">dmartin@allstate.com</a>	(985) 640-9527
Kyle Cooper	Owner	Cooper Homes	<a href="mailto:kyle@cooperhomesllc.com">kyle@cooperhomesllc.com</a>	(985) 966-0620
Cleosias Seay	Resident	City of Covington	<a href="mailto:cleosias@gmail.com">cleosias@gmail.com</a>	(810) 407-3849
Aaron Hebert	Resident	City of Covington	<a href="mailto:aabear54@bellsouth.net">aabear54@bellsouth.net</a>	(985) 233-0476
Randy Brown	Resident	City of Mandeville	<a href="mailto:rbrown@brownsurveys.com">rbrown@brownsurveys.com</a>	(985) 624-5368
David Bulloch	Regional Sales Director	Bankers Insurance Group	<a href="mailto:david.bulloch@bankersinsurance.com">david.bulloch@bankersinsurance.com</a>	(985) 630-3362
Jason Kaufman	Fire Protection Officer	Mandeville Fire District 4	<a href="mailto:jkaufmann@mandevillefire.com">jkaufmann@mandevillefire.com</a>	(985) 624-8671
Ren Clark	Resident	City of Mandeville	<a href="mailto:rylaur@bellsouth.net">rylaur@bellsouth.net</a>	(985) 264-3549
John Lopez	Coastal Programs Director	Lake Pontchartrain Basin Foundation	<a href="mailto:johnlopez@pobox.com">johnlopez@pobox.com</a>	(504) 421-7348
Chris Laborde	Resident	City of Covington	<a href="mailto:claborde@norpc.org">claborde@norpc.org</a>	(504) 483-8540



## Capability Assessment

Capability Assessment Worksheet		
Unincorporated St. Tammany		
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	Yes	2025 Future Land Use Plan
Capital Improvements Plan	Yes	Annually
Economic Development Plan	Yes	St Tammany Corporation
Local Emergency Operations Plan	Yes	Bi-Annually
Continuity of Operations Plan	Yes	Bi Annually
Transportation Plan	Yes	Annually
Stormwater Management Plan	Yes	Updated Biannually (latest was in 2019)
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	Yes	CZ Management
Building Code, Permitting and Inspections	Yes / No	Comments
Building Code	Yes	State Code Council (RS 40: 1730.21) STP adopted them: Section 125 (Subdivision) and 105-03 (Building Code)
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	6/5
Fire Department ISO/PIAL rating	2	Rating
Site plan review requirements	Yes	Every site requiring a permit is reviewed
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	Hazard Mitigation Plan - Update 2015; Stormwater Ordinance (# 16-3596, adopted 10/06/2016)
Flood Insurance Rate Maps	Yes	Effective FIRM 4/21/1999
Acquisition of land for open space and public recreation uses	Yes	
Other		



Administration and Technical		
Identify whether your community has the following administrative and technical capabilities. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.		
Administration	Yes / No	Comments
Planning Commission	Yes	
Mitigation Planning Committee	Yes	HMP Steering Committee
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	CRS Activity 540 (Drainage System maintenance) SOP
Staff	Yes / No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	
Community Planner	Yes	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other		
Technical	Yes / No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	Yes	
Grant Writing	Yes	
Hazus Analysis	No	
Other		

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

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

Capability Assessment Worksheet		
Town of Abita Springs		
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	Y	New plan in process as of 2020
Capital Improvements Plan	Y	Major infrastructure rehab in process 2020
Economic Development Plan	N	
Local Emergency Operations Plan	Y	
Continuity of Operations Plan	N	
Transportation Plan	N	
Stormwater Management Plan	Y	MS4; ordinance review in process 2020
Community Wildfire Protection Plan	N	
Other plans (redevelopment, recovery, coastal zone management)	Y	St. Tammany Hazard Mitigation Plan
Building Code, Permitting and Inspections	Yes / No	Comments
Building Code	Y	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Y	
Fire Department ISO/PIAL rating	3	
Site plan review requirements	Y	
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	Y	
Subdivision Ordinance	Y	
Floodplain Ordinance	Y	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Y	review and revision in process 2020
Flood Insurance Rate Maps	Y	
Acquisition of land for open space and public recreation uses	N	review and plan being created to acquire land 2020
Other		

### Administration and Technical

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

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

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	Y	
Authority to levy taxes for specific purposes	N	
Fees for water, sewer, gas, or electric services	Y	
Impact fees for new development	Y	
Stormwater Utility Fee	N	
Community Development Block Grant (CDBG)	Y	
Other Funding Programs	Y	Grants

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.	Y	
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Y	Gas public awareness program
Natural Disaster or safety related school program	Y	
Storm Ready certification	N	
Firewise Communities certification	Y	
Public/Private partnership initiatives addressing disaster-related issues	N	
Other	N	

Capability Assessment Worksheet		
City of Covington		
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.		
Plans	Yes / No	Comments
Comprehensive / Master Plan	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	Yes	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	Yes	Part of St. Tammany Parish's plan
Stormwater Management Plan	Yes	
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	N/A	
Fire Department ISO/PIAL rating	3	
Site plan review requirements	Yes	
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	Yes	



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	No	St. Tammany Parish Government
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	
Staff	Yes / No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	No	Rely on Parish
Community Planner	Yes	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical	Yes / No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Website
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	Yes	Annually budget for drainage projects
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	No	
Impact fees for new development	Yes	Impact Fees began in 2017
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	Through St. Tammany Parish Government
Other Funding Programs	No	

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.		
Program / Organization	Yes / No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Keep Covington Beautiful, Council on Aging, STARC
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Participate in the Community Rating System that requires annual and ongoing public outreach and education...multiple programs
Natural Disaster or safety related school program		
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other	N/A	

### Capability Assessment Worksheet

#### City of Mandeville

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	Yes	
Capital Improvements Plan	Yes	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	Yes	
Transportation Plan	Yes	
Stormwater Management Plan	yes	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	Yes	
Building Code, Permitting and Inspections	Yes / No	Comments
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	5 over 4
Fire Department ISO/PIAL rating	Yes	Class 1
Site plan review requirements	Yes	
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other/ Historic Resources Survey	yes	Historic Preservation District created in 2012

### 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 & Zoning Commissions	Yes	
Historic Preservation District Commission	Yes	
Mitigation Planning Committee	No	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	Yes	Public tree maintenance, Drainage clearing and maintenance
Staff	Yes / No	Comments
Chief Building Official	Yes	
Floodplain Administrator	Yes	
Emergency Manager	Yes	Relies on Parish
Community Planner	Yes	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	Relies on Parish
Other		
Technical	Yes / No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	Reverse 911 and other at parish level
Hazard Data & Information	Yes	GIS/NOAA/FEMA
Grant Writing	Yes	Partnership with Solutient, Inc.
Hazus Analysis	Yes	Relies on Parish
Other		

Financial		
Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.		
Funding Resource	Yes / No	Comments
Capital Improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	Yes, if authorized
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	
Stormwater Utility Fee	Yes	Yes, if authorized
Community Development Block Grant (CDBG)	Yes	Yes, if authorized by program guidance
Other Funding Programs	Yes	HMGP and FMA through FEMA and GOHSEP

Education and Outreach		
Identify education and outreach programs and methods, already in place that could be used to implement mitigation activities and communicate hazard-related information.		
Program / Organization	Yes / No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Keep Mandeville Beautiful, Council on Aging, STARC
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	Participate in the Community Rating System that requires annual and ongoing public outreach and education...multiple programs
Natural Disaster or safety related school program	No	
Storm Ready certification	No	
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	Yes	Developing a Program for Public Information authorized by the Community Rating System and Committee Includes Public and Private members
Other	Yes	Developing a Program for Public Information authorized by the Community Rating System

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



Administration and Technical		
<p>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.</p>		
Administration	Yes / No	Comments
Planning Commission	No	
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	No	
Community Planner	Yes	
Civil Engineer	Yes	
GIS Coordinator	Yes	
Grant Writer	Yes	
Other	No	
Technical	Yes / No	Comments
Warning Systems / Service (Reverse 911, outdoor warning signals)	Yes	
Hazard Data & Information	No	
Grant Writing	No	
Hazus Analysis	No	
Other	No	

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

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

Capability Assessment Worksheet		
Town of Madisonville		
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	YES	ACCEPTED AS WRITTEN
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	YES	RPC REGIONAL PLANNING COMMISSION
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	No	
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	No	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	No	
Other	No	

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

### Financial

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

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

### Education and Outreach

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

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

Capability Assessment Worksheet		
Town of Pearl River		
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.		
Plans	Yes / No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	No	
Building Code, Permitting and Inspections	Yes / No	Comments
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	
Fire Department ISO/PIAL rating	Yes	
Site plan review requirements	No	
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	No	
Subdivision Ordinance	No	
Floodplain Ordinance	Yes	Relies on Parish
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		
<p>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.</p>		
Administration	Yes / No	Comments
Planning Commission	No	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes / No	Comments
Chief Building Official	No	
Floodplain Administrator	Yes	Relies
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
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	No	
Hazus Analysis	No	
Other	No	

### Financial

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

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

### Education and Outreach

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

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

### Capability Assessment Worksheet

#### City of Slidell

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	Yes	
Economic Development Plan	Yes	THRIVE2023
Local Emergency Operations Plan	Yes	Hurricane Incident Plan
Continuity of Operations Plan	Yes	
Transportation Plan	Yes	MPO TIP
Stormwater Management Plan	Yes	Stormwater Management Program
Community Wildfire Protection Plan	No	
Other plans (redevelopment, recovery, coastal zone management)	Yes	Housing, North Slidell Revitalization Project
Building Code, Permitting and Inspections	Yes / No	Comments
Building Code	Yes	
Building Code Effectiveness Grading Schedule (BCEGS) Score	Yes	Residential = 3rd Class; Commercial = 4th Class
Fire Department ISO/PIAL rating	Yes	Class 2
Site plan review requirements	Yes	
Land Use Planning and Ordinances	Yes / No	Comments
Zoning Ordinance	Yes	
Subdivision Ordinance	Yes	
Floodplain Ordinance	Yes	
Natural Hazard Specific Ordinance (stormwater, steep slope, wildfire)	Yes	
Flood Insurance Rate Maps	Yes	
Acquisition of land for open space and public recreation uses	Yes	
Other	No	

### Administration and Technical

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

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

### Financial

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

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

### Education and Outreach

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

Program / Organization	Yes / No	Comments
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Keep Slidell Beautiful, Council on Aging St. Tammany, STARC of Louisiana
Ongoing public education or information program (responsible water use, fire safety, household preparedness, environmental education)	Yes	CRS outreach
Natural Disaster or safety related school program	No	
Storm Ready certification	Yes	Parish is StormReady
Firewise Communities certification	No	
Public/Private partnership initiatives addressing disaster-related issues	No	
Other		

Capability Assessment Worksheet		
Village of Sun		
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.		
Plans	Yes / No	Comments
Comprehensive / Master Plan	No	
Capital Improvements Plan	No	
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	
Continuity of Operations Plan	No	
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	Yes	
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	No	
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	Yes	
Other	No	

Administration and Technical		
<p>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.</p>		
Administration	Yes / No	Comments
Planning Commission	No	
Mitigation Planning Committee	Yes	
Maintenance programs to reduce risk (tree trimming, clearing drainage systems)	No	
Staff	Yes / No	Comments
Chief Building Official	No	
Floodplain Administrator	Yes	Relies on Parish
Emergency Manager	No	
Community Planner	No	
Civil Engineer	No	
GIS Coordinator	No	
Grant Writer	Yes	
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	No	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	No	
Stormwater Utility Fee	No	
Community Development Block Grant (CDBG)	Yes	
Other Funding Programs	Yes	

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

## Building Inventory

St. Tammany Parish Owned Building Information								
St. Tammany Unincorporated								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
ADMIN AND JC COMPLEX EAST (TOWERS)	Government Business	520 OLD SPANISH TRAIL	Slidell	30.265116	-89.783834			
ANIMAL SERVICES COMPLEX		31078 HWY 36	Lacombe	30.429602	-89.89822			
BUSH COMMUNITY CENTER		81605 HWY 41	Bush	30.608753	-89.895805			
CAMP SALMEN NATURE PARK		35122 CAMP SALMEN RD	Slidell	30.293752	-89.823529			
COMMUNICATION TOWER EQUIP BLDG		68400 OTIS DR	Lacombe	30.425517	-89.900189			
COMMUNITY WELLNESS CENTER		1505 N. FLORIDA ST	Covington	30.492278	-90.097493			
EOC COMPLEX	Emergency Operations	510 E. BOSTON ST	Covington	30.47603	-90.095455			
JUSTICE CENTER COMPLEX	Government Business	701 N. COLUMBIA ST	Covington	30.180177	-90.096388			
JUSTICE CENTER PARKING GARAGE	Government Business	601 N. Jefferson St.	Covington	40.138918	87.394424			
KIDS TOWN BLDG		21404 KOOP DR	Mandeville	30.418088	-90.045612			
KOOP DR COMPLEX	Government Operations	21490 KOOP DR	Mandeville	30.417586	-90.041932			
LEVEE BOARD/COMMUNITY CENTER BLDG		61134 MILITARY RD	Slidell	30.312557	-89.730622			
LIBRARY ABITA SPRINGS BRANCH		71683 LEVESON ST	Abita Springs	30.47815	-90.039523			
LIBRARY BUSH BRANCH		81597 HWY 41	Bush	30.47815	-90.039523			
LIBRARY CAUSEWAY BRANCH		3457-3505 HWY 190	Mandeville	30.394318	-90.084195			
LIBRARY COVINGTON BRANCH		310 W. 21ST AVE	Covington	30.476867	-90.102935			
LIBRARY FOLSOM BRANCH		82393 RAILROAD AVE	Folsom	30.583403	-90.076029			

LIBRARY HEADQUARTERS ANNEX LA36		19612 HWY 36	Covington	30.48117	-90.076846			
LIBRARY LACOMBE BRANCH		28027 HWY 190	Lacombe	30.313279	-89.941597			
LIBRARY LEE RD BRANCH		79213 HWY 40	Covington	30.583403	-90.076029			
LIBRARY MADISONVILLE BRANCH		1123 MAIN ST	Madisonville	30.398782	-90.156297			
LIBRARY MANDEVILLE BRANCH		842 GIROD ST	Mandeville	30.363228	-90.06286			
LIBRARY PEARL RIVER BRANCH		64580 HWY 41	Pearl River	30.370656	-89.762217			
LIBRARY SLIDELL BRANCH		555 ROBERT RD	Slidell	30.299025	-89.759882			
LIBRARY SOUTH SLIDELL BRANCH		3901 PONTCHARTRAIN DR	Slidell	30.251385	-89.79229			
MAINEGRA BARN (OLD)		57700-57798 Mainegra Rd	Slidell	30.276316	-89.807438			
MAINTENANCE BARN AIRPORT		34783 GRANTHAM COLLEGE RD	Slidell	30.311261	-89.81693			
MAINTENANCE BARN BREWSTER		644 BREWSTER RD	Madisonville	30.445605	-90.20627			
MAINTENANCE BARN BUSH		81408 HWY 41	Bush	30.609729	-89.889514			
MAINTENANCE BARN COVINGTON		1305 N. FLORIDA ST	Covington	30.492476	-90.09997			
MAINTENANCE BARN FOLSOM		84307 HWY 437	Folsom	30.659133	-90.11465			
MAINTENANCE BARN FRITCHIE NORTH		63119 HWY 1090	Slidell	30.341616	-89.737295			
MAINTENANCE BARN FRITCHIE SOUTH		63119 HWY 1090	Slidell	30.341616	-89.737295			
MAINTENANCE BARN HICKORY		67835 HWY 41	Pearl River	30.412067	-89.781489			
MAINTENANCE BARN HWY 59		1699 NORTH LN	Mandeville	30.429773	-90.033286			
MAINTENANCE BARN KELLER		63131 FISH HATCHERY RD	Lacombe	30.347457	-89.942877			
NAVIGATION CANAL HOUSE LOCK 3		31538 LOCK #3 RD	Sun	30.637935	-89.869493			
NAVIGATION CANAL PAVILLION LOCK 1		LOCK #1 RD	Sun/Washington Parish	30.637935	-89.869493			

NAVIGATION CANAL PAVILLION LOCK 2		LOCK #2 RD	Sun/Washington Parish	30.637935	-89.869493			
NORTHSHORE BEACH PAVILLION EAST		DEBBIE DR	Slidell	30.222443	-89.83539			
NORTHSHORE BEACH PAVILLION WEST		DEBBIE DR	Slidell	30.22455	-89.83589			
OLD UNION GROVE REC CTR/HWY 40 POLLING		21799 HWY 40	Bush	30.617313	-90.049793			
PARK AND RIDE ABITA SPRINGS PAVILLION		22539 HWY 36	Abita Springs	30.472536	-90.027999			
PARK AND RIDE CENTERPOINT PAVILLION		65320 HWY 434	Lacombe	30.381874	-89.899364			
PARK AND RIDE HIGHWAY 41 PAVILLION		66306 HWY 41	Pearl River	30.391225	-89.760246			
PARK AND RIDE KOOP DR PAVILLION		21450 KOOP DR	Mandeville	30.417998	-90.043187			
PARK AND RIDE LACOMBE PAVILLION		61096 ST. MARY ST	Lacombe	30.315235	-89.941881			
PARK AND RIDE MANDEVILLE PAVILLION		675 LAFITTE ST	Mandeville	30.361402	-90.064772			
PARK AND RIDE NORTH BLVD PAVILLION		393 NORTH BLVD	Slidell	30.298921	-89.762294			
PARK AND RIDE OAK HARBOR PAVILLION		100 HARBOR CENTER BLVD	Slidell	30.216576	-89.773871			
PARK AND RIDE/TRAILHEAD BLDG SLIDELL		2289 GAUSE BLVD	Slidell	30.301436	-89.831453			
PERFORMING ARTS CENTER		PINNACLE PARKWAY	Covington	30.443676	-90.121982			
PUBLIC DEFENDER OFFICE BLDG		402 N. JEFFERSON ST	Covington	30.477773	-90.098614			
SAFE HAVEN COMPLEX		23515 HWY 190	Maneville	30.346402	-90.018157			
SLIDELL AIRPORT COMPLEX		62512 AIRPORT RD	Slidell	30.342464	-89.823136			
SLIDELL COURTHOUSE		501 BOUSCAREN ST	Slidell	30.275017	-89.779014			
ST MARY ST BUILDING LACOMBE		61096 ST. MARY ST	Lacombe	30.315283	-89.942374			
ST TAMMANY ADVANCED CAMPUS COMPLEX		HWY 434	Lacombe	30.379087	-89.900001			

STP AIRPORT COMPLEX		25048 HWY 36	Abita Springs	30.446065	-89.987633			
STP CORONER COMPLEX		65278 HWY 434	Lacombe	30.37465	-89.90365			
STP FAIRGROUNDS ANNEX COMPLEX		1301 N. FLORIDA ST	Covington	30.490892	-90.096895			
STP FAIRGROUNDS COMPLEX		1515 N. COLUMBIA ST	Covington	30.492278	-90.097493			
STP FISHING PIER SITE		54001 E. HOWZE BEACH RD	Slidell	30.210952	-89.793492			
STP JAIL COMPLEX		1200 CHAMPAGNE ST	Covington	30.493166	-90.10609			
TAMMANY UTILITIES EAST WAREHOUSE/OFFICE		350 N. MILITARY RD	Slidell	30.300369	-89.723002			
TAMMANY UTILITIES WEST COMPLEX		4000 HWY 59	Mandeville	30.406884	-90.041676			
TRACE KOOP COMPLEX		21400-21404 KOOP DR	Mandeville	30.418047	-90.04505			
TRACE RANGER BLDG		60244 S. 12TH ST	Lacombe	30.312235	-89.943046			
TRACE TRAILHEAD BRIDGE HOUSE		28449 BALEHI RD	Lacombe	30.30537	-89.926394			
TYLER ST COMPLEX		620 N. TYLER ST	Covington	30.48345	-90.102204			
<b>Shelters</b>								
Abita Springs Elementary School		22410 Level St	Abita Springs	30.480205	-90.038452			
Abita Springs Middle School		72079 Maple St	Abita Springs	30.479019	90.038041			
Alton Elementary School		38276 N. 5th Ave	Slidell	30.280269	-89.779406			
Bayou Lacombe Middle School		27527 St. Joseph St.	Lacombe	30.315393	-89.943497			
Clearwood Jr. High School		130 Clearwood DR	Slidell	30.312229	-89.752894			
Covington Elementary School		325 S. Jackson St	Covington	30.474783	-90.106451			
Covington High School (Surveyed for Gen Population also)		73057 E. Stadium Dr.	Covington	30.493602	-90.132662			
Creekside Jr. High (Surveyed for Gen Population also)		65434 Hwy 41	Pearl River	30.382233	-89.765865			
Fifth Ward Jr. High School		81419 Hwy 21	Bush	30.615102	-89.922972			

Folsom Elementary School		82144 Hwy 25	Folsom	30.625145	-90-185145			
Folsom Jr. High School		83055 Hay Hollow Rd	Folsom	30.637391	-90.207329			
Fontainebleau High School		100 Bulldog Drive	Mandeville	30.407217	-90.037425			
Fontainebleau Jr. High School		100 Hurricane Alley	Mandeville	30.404311	-90.038701			
Lee Road Jr. High School		79131 Hwy 40/Lee Rd	Covington	30.581415	-90.076562			
Lyon Elementary/Pet Shelter		1615 N. Florida St.	Covington	30.493553	-90.098101			
Pearl River High School		39110 Rebel Ln	Pearl River	30.370942	-89.756392			
Pineview Middle School		1115 W. 28th Ave	Covington	30.486911	-90.106369			
Riverside Elementary School		38480 Sullivan Dr	Pearl River	30.361182	-89.756762			
Sixth Ward Elementary School		72360 Hwy 41	Pearl River	30.481243	-89.808056			
Whispering Forest Elementary		300 Spiehler Rd	Slidell	30.319265	-89.762029			
William Pitcher		415 S. Jefferson Ave	Covington	30.472969	-90.104342			
Harrison Curriculum Center Tyler Street Complex		706 West 28th Ave, 620 N. Tyler St.	Covington	30.484737	-90.101792			
Law Enforcement								
St Tammany Parish Of Sheriff		141 Production Dr.	Slidell					
St Tammany Parish Of Sheriff's Office		2070 Collins Blvd.	Covington					
St Tammany Parish Of Sheriff's Office Folsom Sub-station		16245 Hwy 40	Folsom					
St Tammany Parish Sheriff's Office Bush Substation		81635 Highway 41	Bush					
St. Tammany Parish Sheriff's Office Lacombe Sub-station		28389 Hwy 190	Lacombe					
Causeway Police Dept.		3943 N. Causeway Blvd.	Metairie					
Fire Districts and Department								

Abita-Waldheim Fire Dist 8		22455 Hwy 36	Abita Springs					
Bush And Fifth Ward Volunteer Fire Dist. 9 Station 1		29439 Highway 40	Bush	30.6173	89.9222			
Bush And Fifth Ward Volunteer Fire Dist. 9 Station 2		Hwy 1083	Bush					
Covington Fire Department		609 N Columbia St	Covington	30.4792	90.0953			
Fire Dist. 12 Station 121		115 Northpark Blvd.	Covington					
Goodbee Fire District 13 Station 131		13027 Highway 190	Covington					
Mandeville FD Dist. 4		709 Gerard St	Mandeville	30.3608	90.0632			
Lacombe FD Dist. 3 Station 31		60267 S 8th St	Lacombe					
Lacombe FD Dist. 3 Station 32		525 N. Jefferson	Lacombe					
Folsom FD Dist. 5		13206 Broadway St	Folsom	30.6291	90.183			
Goodbee Fire District 13 Station 132		15281 Highway 1085	Covington					
Goodbee Fire District No 13		13053 Highway 190	Covington					
Lee Road Vol. FD Dist 6		81041 Dawsey Rd	Covington	30.6094	90.1081			
Madisonville FD Dist. 2 Station		805 Main St	Madisonville	30.4044	90.1566			
Madisonville FD Dist. 2 Station 23		69320 Hwy 22	Madisonville					
Pearl River FD Dist. 11		37546 Pine Street Ext	Pearl River	30.3722	89.7813			
Fire Protection District 7		73469 Highway 41	Pearl River					
St Tammany Parish Fire District No 1 HQ		554 Old Spanish Trail	Slidell					
St Tammany Parish Fire District No 1 Station I		322 Bouscaren	Slidell					
St Tammany Parish Fire District No 1 Station II		1570 West Hall	Slidell					
St Tammany Parish Fire District No 1 Station III		101 Normandy	Slidell					
St Tammany Parish Fire District No 1 Station IV		300 Steele Road	Slidell					



St Tammany Parish Fire District No 1 Station V		58405 Holly Road	Slidell					
St Tammany Parish Fire District No 1 Station VI		320 Marina Dr.	Slidell					
St Tammany Parish Fire District No 1 Station VII		850 Browns switch Rd.	Slidell					
St Tammany Parish Fire District No 1 Training Facility		34780 S. Range Road	Slidell					
Sun Vol. FD Dist. 10		28666 Hwy 16	Sun					

Abita Springs								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Abita Springs Town Hall	Civil Government	22161 Level Street	Abita Springs			550,000	1920	Wood
Maintenance Barn (3 structures)	Civil Government	Orme St	Abita Springs					Metal
Fire Dept	Fire & SAR	Hwy 36	Abita Springs					Metal
Abita Springs Police Dept	Law Enforcement	22161 Level St	Abita Springs					
Abita Trailhead Museum	Cultural		Abita Springs					Wood
Abita Trailhead Pavilion	Cultural		Abita Springs					Wood
Sewer Lift Station	Utilities	Bryan St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Pearl St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	St. Charles St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Indian Trail	Abita Springs					Concrete
Sewer Lift Station	Utilities	South St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Dundee St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Hwy 59 @ Harrison Rd.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Dundee St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Maple St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Minkler St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Hwy 59 @ Ball Field	Abita Springs					Concrete
Sewer Lift Station	Utilities	Gordon Ave.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Abita Oaks Lp.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Peters St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Rosalie St.	Abita Springs					Concrete
Sewer Lift Station	Utilities	Sewer Plant	Abita Springs					Concrete
Sewer Plant	Utilities		Abita Springs					Steel
Water Well	Utilities	HWY 36	Abita Springs					Steel
Water Well	Utilities	22161 Level Street (Behind Town Hall)	Abita Springs					Steel

Water Well	Utilities	Millar St.	Abita Springs					Steel
Water Well	Utilities	Main St. (Behind the Middle School)	Abita Springs					Steel
Gas Regulator Station	Utilities	Nursery @ Hwy 36	Abita Springs					Steel
Gas Regulator Station	Utilities	Rainbow & Joseph St.	Abita Springs					Steel
Gas Regulator Station	Utilities	Abita Middle School & Hwy 36	Abita Springs					Steel
Gas Rectorfier Station	Utilities	Gordon Ave. @ Pearl St.	Abita Springs					Steel
Generator Shed		Pearl St.	Abita Springs					Wood
Abita Springs Elementary	School	Level St.	Abita Springs					
Abita Springs Middle	School	Hwy 36	Abita Springs					

Covington								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Greater Convention Center/City Hall	Government (municipality-owned)	317 N. Jefferson Ave.	Covington	30°28'39.28"N	90° 5'58.62"W	\$6,271,813	1980	Wood
Covington Police Department	Law Enforcement	609 N. Columbia St.	Covington	30°28'45.53"N	90° 5'44.05"W	\$2,466,750	1960	Wood
Covington Police Department	Law Enforcement	200 E Kirkland St	Covington					
Covington Fire Department	Fire Department	525 N. Jefferson Ave.	Covington	30°28'46.59"N	90° 5'52.66"W	\$1,638,000	1985	Reinforced Masonry
Covington Elementary School	Education	325 S. Jackson St	Covington	30.474783	-90.106451			
Covington High School	Education	73057 E. Stadium Dr.	Covington	30.493602	-90.132662			
Lee Road Jr. High School	Education	79131 Hwy 40/Lee Rd	Covington	30.581415	-90.076562			
Lyon Elementary/Pet Shelter	Education	1615 N. Florida St.	Covington	30.493553	-90.098101			
Public Works Administrative Office and Barn	Utilities	1300 W.27th Ave.	Covington	30°29'16.35"N	90° 6'31.58"W	\$1,292,000	2019	Steel
Water Tower	Utilities (water)	739 S. Filmore St.	Covington	30°28'33.11"N	90° 6'46.77"W	\$678,500	1960	Metal
Water Tower	Utilities (water)	1324 N. Columbia St.	Covington	30°29'31.24"N	90° 6'0.80"W	\$678,500	2000	Metal
Mausoleum	Cemetery (municipality-owned)	1402 N. Columbia St.	Covington	30°29'32.12"N	90° 6'4.32"W	\$531,300	1960	Reinforced Masonry
Trailhead and Visitor's Center	Parks/Recreation	419 N. New Hampshire St.	Covington	30°28'37.53"N	90° 5'47.64"W	\$488,750	2008	Wood
Firehouse Event Center	Parks/Recreation	432 N. Theard St.	Covington	30°28'40.12"N	90° 5'49.61"W	\$413,000	2019	Wood
Covington Fire Department (Station #2)	Fire Department	2059 Philip Dr.	Covington	30°29'33.94"N	90° 6'58.16"W	\$392,710	2000	Unreinforced Masonry

Covered Basketball Pavillion	Parks/Recreation	701 N. Tyler St.	Covington	30.484248	-90.102503	\$330,541	2015	Steel
Trailhead Campanille	Parks/Recreation	419 N. New Hampshire St.	Covington	30°28'38.15"N	90° 5'47.19"W	\$281,750	2008	Steel
Bogue Falaya Park (Park Pavillion)	Parks/Recreation	213 Park Dr.	Covington	30°28'14.35"N	90° 5'41.06"W	\$248,400	1960	Wood
Concession Stand	Parks/Recreation	4000 Deporres Rd.	Covington	30°29'27.97"N	90° 6'42.29"W	\$230,000	2008	Unreinforced Masonry
Trailhead Bandstand	Parks/Recreation	419 N. New Hampshire St.	Covington	30°28'38.26"N	90° 5'46.57"W	\$201,250	2008	Steel
Tower & Pump Shed (Water Tower)	Utilities (water)	436-444 N. Theard St.	Covington	30°28'40.78"N	90° 5'49.41"W	\$155,250	1960	Metal
Park Ranger's House	Parks/Recreation	213 Park Dr.	Covington	30.470592	-90.095065	\$142,240	2016	Wood
Trailhead Open Air Market	Parks/Recreation	419 N. New Hampshire St.	Covington	30°28'38.58"N	90° 5'47.27"W	\$132,250	2008	Steel
Peter Atkins Park Bathrooms	Parks/Recreation	701 N. Tyler St.	Covington	30.484248	-90.102503	\$127,200	2018	Reinforced Masonry
Tower & Pump Shed (Old Pump Bldg.)	Utilities (water)	436-444 N. Theard St.	Covington	30°28'41.20"N	90° 5'49.09"W	\$82,800	1960	Reinforced Masonry
Office at Sewer Plant	Utilities (wastewater)	1400 W. 27th Ave	Covington	30°29'19.93"N	90° 6'38.12"W	\$82,800	1960	Unreinforced Masonry
Maintenance (Vehicle Storage Shed)	Utilities	1300 W.27th Ave.	Covington	30°29'15.95"N	90° 6'32.26"W	\$62,100	1960	Metal
Park Office and Storage	Parks/Recreation	4000 Deporres Rd.	Covington	30.491777	-90.110632	\$30,000	2018	Wood
Bogue Falaya Park (Park Storage Bldg.)	Parks/Recreation	213 Park Dr.	Covington	30°28'13.93"N	90° 5'41.49"W	\$22,080	1960	Metal
Water Pumping Station	Utilities (water)	739 S. Filmore St.	Covington	30°28'32.79"N	90° 6'46.03"W	\$21,850	1960	Unreinforced Masonry
Trailhead Sign Tower	Parks/Recreation	419 N. New Hampshire St.	Covington	30°28'40.72"N	90° 5'48.85"W	\$20,700	2008	Steel
Trailhead Sign Tower	Parks/Recreation	419 N. New Hampshire St.	Covington	30°28'39.15"N	90° 5'47.15"W	\$20,700	2008	Steel
Bogue Falaya Park (Park Picnic Shelter)	Parks/Recreation	213 Park Dr.	Covington	30°28'15.00"N	90° 5'42.25"W	\$14,490	1970	Wood
Bogue Falaya Park (Park Storage Bldg.)	Parks/Recreation	213 Park Dr.	Covington	30°28'13.97"N	90° 5'42.47"W	\$11,730	1970	Metal

Scoreboard	Parks/Recreation	4000 Deporres Rd.	Covington	30°29'26.20"N	90° 6'40.15"W	\$11,500	2008	Metal
Scoreboard	Parks/Recreation	4000 Deporres Rd.	Covington	30°29'29.67"N	90° 6'44.67"W	\$11,500	2008	Metal
Scoreboard	Parks/Recreation	4000 Deporres Rd.	Covington	30°29'25.99"N	90° 6'44.38"W	\$11,500	2008	Metal
City of Covington Sewer Plant	Utilities	1400 W. 27th Ave.	Covington	30°29'19.93"N	90° 6'38.12"W			
Covington Water Well #1	Utilities	669 Filmore & W. 16 <sup>th</sup> Ave	Covington	30°28'33.00"N	90° 6'46.31"W			
Covington Water Well #3	Utilities	Bollfield Rd. & Branch Crossing	Covington	30°30'1.14"N	90° 6'0.51"W			
Covington Water Well #2	Utilities	2626 W. 15 <sup>th</sup> & Ellen	Covington	30°29'13.58"N	90° 8'11.02"W			
Sewer Lift Station #1 (Major)	Utilities	431 E. 1st Avenue	Covington	30°27'20.86"N	90°06'37.77"W			
Sewer Lift Station #3 (Major)	Utilities	330 W. 8th Avenue	Covington	30°27'56.60"N	90°06'44.28"W			
Sewer Lift Station #4 (Major)	Utilities	400 E. 9th Avenue	Covington	30°27'48.16"N	90°06'21.67"W			
Sewer Lift Station #6 (Major)	Utilities	233 E. 14th Avenue	Covington	30°28'03.19"N	90°06'10.18"W			
Sewer Lift Station #9 (Major)	Utilities	111 S. New Hampshire Street	Covington	30°28'20.66"N	90°05'45.32"W			
Sewer Lift Station #10 (Major)	Utilities	901 W. 19th Avenue	Covington	30°28'40.25"N	90°06'35.57"W			
Sewer Lift Station #11 (Major)	Utilities	730 W. 26th Avenue	Covington	30°29'01.56"N	90°06'15.59"W			
Sewer Lift Station #15 (Major)	Utilities	61 Patricia Drive	Covington	30°28'57.49"N	90°08'23.16"W			
Sewer Lift Station #52 (Major)	Utilities	1032 Ronald Reagan Highway	Covington	30°29'48.47"N	90°06'54.82"W			
Sewer Lift Station #55 (Major)	Utilities	601 Barkley Blvd.	Covington	30°29'09.28"N	90°06'52.27"W			
Sewer Lift Station #57 (Major)	Utilities	4000 De Porres Road	Covington	30°29'37.31"N	90°06'49.01"W			
Minor Sewer Lift Station Network	Utilities	City-wide	Covington	City-wide	City-wide			

Village of Folsom								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Folsom Town Hall	Civil Government	82378 June St.	Folsom					
Folsom Police Dept	Law Enforcement	82341 Railroad Ave	Folsom					
Folsom Elementary School	Education	82144 Hwy 25	Folsom	30.625145	-90.185145			
Folsom Jr. High School	Education	83055 Hay Hollow Rd	Folsom	30.637391	-90.207329			

Madisonville								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Town Hall	Civil Government	403 St. Francis St.	Madisonville	30.403889	90.156111			Reinforced Masonry
Maintenance Barn	Civil Government	500 Johnson St.	Madisonville	30.410961	90.16436			Steel
Police Department	Law Enforcement	400 Cedar St.	Madisonville	30.407788	90.159318			Wood
Madisonville Police Dept	Law Enforcement	805 Main St	Madisonville					
Lift Station	Utilities	Main St.	Madisonville					Concrete
Lift Station	Utilities	First St.	Madisonville					Concrete
Lift Station	Utilities	St. Louis St.	Madisonville					Concrete
Lift Station	Utilities	Johnson St.	Madisonville					Concrete
Lift Station	Utilities	Old Ponchatoula Highway	Madisonville					Concrete
Lift Station	Utilities	Highway 22	Madisonville					Concrete
Lift Station	Utilities	Taverny Ct.	Madisonville					Concrete
Water Well	Utilities	Pine St.	Madisonville					Metal
Water Well	Utilities	Old Ponchatoula Highway	Madisonville					Metal
Sewer Treatment Plant	Utilities	500 Johnson St.	Madisonville					Concrete



Mandeville								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
City Hall	Government (municipality-owned)	3101 East Causeway Approach	Mandeville	30°22'22.87"N	90° 04'42.13"W	\$1,633,563	1974	Unreinforced Masonry
Community Center	Government (municipality-owned)	3090 East Causeway Approach	Mandeville	30°22'16.84"N	90° 04'42.24"W	\$1,064,249	1979	Unreinforced Masonry
Trailhead Facility	Government (municipality-owned)	675 Lafitte Street	Mandeville	30°21'39.89"N	90° 03'52.17"W	\$1,034,021	2000	Reinforced Masonry
Dew Drop Building	Historical Site (National)	430 Lamarque Street	Mandeville	30°21'21.54"N	90° 03'44.19"W	\$89,123	1895	Wood
Basketball Court Cover	Parks/Recreation	530 Lamarque Street	Mandeville	30°21'27.55"N	90° 03'40.05"W	\$69,000	2001	Metal
Tyler Thomas Park Bathrooms	Parks/Recreation	530 Lamarque Street	Mandeville	30°22'16.84"N	90° 04'42.24"W	\$92,000	2014	Wood
Harbor Pavillion	Parks/Recreation	1500 Lakeshore Drive	Mandeville	30°20'56.71"N	90° 03'35.86"W	\$345,000	2008	Wood
Paul Cordes Park Bathrooms	Parks/Recreation	3131 East Causeway Approach	Mandeville	30°21'28.60"N	90° 03'40.94"W	\$115,000	1995	Reinforced Masonry
Police Investigations Annex	Law Enforcement	1923 Jefferson Street	Mandeville	30°21'18.76"N	90° 03'57.16"W	\$201,250	1955	Wood
Police Department Complex	Law Enforcement	1870 Hwy 190	Mandeville	30°22'25.26"N	90° 04'37.13"W	\$1,369,740	1983	Unreinforced Masonry
Police Maintenance Bldg	Law Enforcement	1870 Hwy 190	Mandeville	30°22'22.86"N	90° 04'36.54"W	\$27,955	1986	Wood
Old Water Works Bldg	Government (municipality-owned)	1926 Madison Street	Mandeville	30°21'26.44"N	90° 03'55.52"W	\$557,556	1971	Unreinforced Masonry
Water Tower	Utilities (water)	3350 Monroe Street	Mandeville	30°22'07.02"N	90° 05'12.42"W	\$460,000	1957	Steel
St. Ann Water Tower	Utilities (water)	1461 North Causeway Boulevard	Mandeville	30°23'20.25"N	90° 05'17.37"W	\$2,300,000	2002	Steel
Water Pump Station Bldg	Utilities (water)	1462 North Causeway Boulevard	Mandeville	30°23'20.25"N	90° 05'17.37"W	\$10,350	1982	Steel
Water Pump Station Bldg	Utilities (water)	1010 Atalin Street	Mandeville	30°21'37.29"N	90° 03'02.22"W	\$287,500	2004	Steel

Water Pump Station Bldg	Utilities (water)	1876 Hwy 190	Mandeville	30°22'22.86"N	90° 04'36.54"W	\$287,500	2004	Steel
Water Pump Station Bldg	Utilities (water)	1923 Jefferson Street	Mandeville	30°21'20.22"N	90° 03'56.44"W	\$287,500	1938	Steel
Water Pump Station Bldg	Utilities (water)	3350 Monroe Street	Mandeville	30°22'07.02"N	90° 05'12.42"W	\$1,150,000	1957	Unreinforced Masonry
Sewerage Treatment Plant	Utilities (wastewater)	1100 Mandeville High Boulevard	Mandeville	30°22'35.58"N	90° 05'59.04"W	\$230,000	1989	Reinforced Masonry
Public Works Facility	Government (municipality-owned)	1100 Mandeville High Boulevard	Mandeville	30°22'35.58"N	90° 05'59.04"W	\$1,725,000	2003	Steel
Water Pump Station Bldg	Utilities (water)	225 Mandeville High Boulevard	Mandeville	30°22'53.47"N	90° 05'53.16"W	\$287,500	1999	Steel
Lift Station #01	Utilities	Rapatel St at Florida St	Mandeville	30°21'13.25"N	90° 02'30.35"W			
Lift Station #02	Utilities	Atalin St at Railroad	Mandeville	30°21'21.57"N	90° 03'11.94"W			
Lift Station #03	Utilities	Jackson Ave at Jefferson St	Mandeville	30°21'04.99"N	90° 03'31.84"W			
Lift Station #04	Utilities	Foy St at Claiborne St	Mandeville	30°21'07.10"N	90° 03'45.02"W			
Lift Station #05	Utilities	Jefferson St at Coffee St	Mandeville	30°21'27.23"N	90° 04'16.04"W			
Lift Station #06	Utilities	Adair St at Lakeshore Dr	Mandeville	30°21'20.59"N	90° 04'28.75"W			
Lift Station #07	Utilities	Carondelet St at Lakeshore Dr	Mandeville	30°21'30.09"N	90° 04'47.76"W			
Lift Station #08	Utilities	Kleber St at East Causeway Appr	Mandeville	30°22'04.20"N	90° 05'04.93"W			
Lift Station #09	Utilities	Monroe St at East Causeway Appr	Mandeville	30°22'16.97"N	90° 05'31.23"W			
Lift Station #10	Utilities	Antibes East at Mariners' Blvd	Mandeville	30°22'03.68"N	90° 05'19.91"W			
Lift Station #11	Utilities	Antibes West south of Mariners' Blvd	Mandeville	30°22'04.51"N	90° 05'30.51"W			
Lift Station #12	Utilities	North Causeway near Monroe St	Mandeville	30°22'22.40"N	90° 05'31.58"W			
Lift Station #13	Utilities	Service Rd south of Monroe St	Mandeville	30°22'15.83"N	90° 05'34.97"W			

Lift Station #14	Utilities	2600 Florida St	Mandeville	30°22'07.14"N	90° 04'16.18"W			
Lift Station #15	Utilities	Laura Drive North	Mandeville	30°22'39.45"N	90° 04'29.67"W			
Lift Station #16	Utilities	200 Block of Devon Dr	Mandeville	30°22'22.87"N	90° 05'02.44"W			
Lift Station #17	Utilities	Corin St at Katherine Ct	Mandeville	30°22'44.12"N	90° 05'13.30"W			
Lift Station #18	Utilities	Corin St by the Bridge	Mandeville	30°22'46.67"N	90° 05'14.23"W			
Lift Station #19	Utilities	Live Oak Blvd at West Hickory	Mandeville	30°22'54.08"N	90° 05'58.15"W			
Lift Station #20	Utilities	North end of Dorado Dr	Mandeville	30°23'26.63"N	90° 06'35.29"W			
Lift Station #21	Utilities	South end of Dorado Dr	Mandeville	30°23'26.50"N	90° 06'45.31"W			
Lift Station #22	Utilities	Heavens Dr at Libra	Mandeville	30°23'56.06"N	90° 06'54.96"W			
Lift Station #23	Utilities	Cedarwood Dr	Mandeville	30°23'50.45"N	90° 06'47.45"W			
Lift Station #24	Utilities	3601 Hwy 190 near Starbucks	Mandeville	30°23'34.56"N	90° 05'06.31"W			
Lift Station #25	Utilities	St. Ann St at the Service Road	Mandeville	30°23'23.50"N	90° 05'19.50"W			
Lift Station #26	Utilities	1800 North Causeway Blvd	Mandeville	30°23'29.63"N	90° 05'23.85"W			
Lift Station #27	Utilities	End of Mandeville High Blvd	Mandeville	30°22'40.40"N	90° 05'57.64"W			
Lift Station #28	Utilities	Hwy 22 near Rouquette Lodge	Mandeville	30°23'47.49"N	90° 05'50.77"W			
Lift Station #29	Utilities	Casey Dr at Elizabeth Dr	Mandeville	30°23'42.15"N	90° 06'58.99"W			
Lift Station #30	Utilities	1402 North Causeway Blvd at Fontainebleau	Mandeville	30°23'13.43"N	90° 05'25.98"W			
Lift Station #31	Utilities	1153 Rue Bayonne	Mandeville	30°23'16.22"N	90° 05'41.22"W			
Lift Station #32	Utilities	Shadow Oak Ln	Mandeville	30°22'54.92"N	90° 05'36.75"W			
Lift Station #33	Utilities	St. Ann St at Chinchuba Creek	Mandeville	30°23'19.19"N	90° 05'06.52"W			
Lift Station #34	Utilities	1459 North Causeway Blvd	Mandeville	30°23'21.17"N	90° 05'20.43"W			

Lift Station #35	Utilities	Fontainebleau Rue Bayonne	Mandeville	30°23'20.48"N	90° 05'37.04"W			
Lift Station #36	Utilities	1225 West Causeway Appr	Mandeville	30°23'01.52"N	90° 05'43.87"W			
Lift Station #37	Utilities	Cardinal Ln	Mandeville	30°23'18.58"N	90° 06'43.83"W			
Lift Station #38	Utilities	4520 Hwy 22	Mandeville	30°23'50.01"N	90° 06'14.35"W			
Lift Station #39	Utilities	Woodstone Dr at Christian Ct	Mandeville	30°23'06.07"N	90° 06'10.76"W			
Lift Station #40	Utilities	1501 West Causeway Appr	Mandeville	30°23'23.11"N	90° 05'57.22"W			
Lift Station #41	Utilities	4350 Hwy 22	Mandeville	30°23'41.19"N	90° 05'55.95"W			
Lift Station #42	Utilities	4575 Lasalle St	Mandeville	30°23'45.27"N	90° 05'24.72"W			
Lift Station #43	Utilities	721 Libby Ln	Mandeville	30°23'42.37"N	90° 06'42.58"W			
Lift Station #44	Utilities	Pintail Dr	Mandeville	30°22'48.58"N	90° 06'34.10"W			
Lift Station #45	Utilities	1241 North Causeway Blvd	Mandeville	30°23'03.47"N	90° 05'23.61"W			
Lift Station #47	Utilities	Sanctuary Dr	Mandeville	30°22'34.07"N	90° 06'45.77"W			
Lift Station #48	Utilities	Antibes West at Tops'l	Mandeville	30°22'04.59"N	90° 05'30.51"W			
Lift Station #50	Utilities	1117 North Causeway	Mandeville	30°22'55.59"N	90° 05'25.54"W			
Lift Station #A	Utilities	Montgomery St near Dupre St	Mandeville	30°21'08.46"N	90° 02'34.94"W			
Lift Station #B	Utilities	Montgomery St near Colbert St	Mandeville	30°21'10.95"N	90° 02'50.42"W			
Lift Station #C	Utilities	Villere St near Soult St	Mandeville	30°21'17.90"N	90° 02'54.06"W			
Lift Station #C/C	Utilities	West Florida near North Causeway Blvd	Mandeville	30°22'42.79"N	90° 05'31.43"W			
Lift Station #D	Utilities	Clausel St near Livingston St	Mandeville	30°21'24.11"N	90° 03'26.32"W			
Lift Station #E	Utilities	Albert St near Madison St	Mandeville	30°21'02.93"N	90° 03'16.25"W			
Lift Station #F	Utilities	Walmart at East Causeway Approach	Mandeville	30°22'19.72"N	90° 04'40.52"W			

Lift Station #G	Utilities	Castine Point Subdivision	Mandeville	30°21'10.04"N	90° 02'19.00"W			
Lift Station #H	Utilities	Hermitage on the Lake / Sunset Point	Mandeville	30°21'51.79"N	90° 04'59.98"W			
Lift Station #I	Utilities	Chenier at Hwy 190	Mandeville	30°22'35.25"N	90° 04'30.53"W			
Water Well #1	Utilities	1923 Jefferson St	Mandeville	30°21'20.22"N	90° 03'56.44"W			
Water Well #2	Utilities	3350 Monroe St	Mandeville	30°22'07.02"N	90° 05'12.42"W			
Water Well #5	Utilities	225 Mandeville High Blvd	Mandeville	30°22'53.47"N	90° 05'53.16"W			
Water Well #6	Utilities	1010 Atalin St	Mandeville	30°21'37.29"N	90° 03'02.22"W			
Water Well #7	Utilities	1876 Hwy 190	Mandeville	30°22'22.86"N	90° 04'36.54"W			
Woodstone Pump Station	Utilities	109 Woodstone Dr	Mandeville	30°23'01.06"N	90° 06'08.22"W			
Rapatel Street Water Tower	Utilities	800 Block of Rapatel St	Mandeville	30°21'03.93"N	90° 02'22.75"W			
St Ann Street Water Tower	Utilities	1461 North Causeway Blvd	Mandeville	30°23'20.25"N	90° 05'17.37"W			

Pearl River								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Pearl River Town Hall	Civil Government	39460 Willis Alley	Pearl River					
Pearl River Police Dept	Law Enforcement	34970 Willis Alley	Pearl River					

Slidell								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Airport Hanger/Office	Civil Government	62512 Airport Road	Slidell	30°20'32.869"N	89°49'23.131"W			Steel
Animal Control Center	Civil Government	2700 Terrace Ave	Slidell	30°15'56.383"N	89°46'14.725"W			
Auditorium	Civil Government	2056 Second St.	Slidell	30°16'31.821"N	89°46'52.119"W			Steel
Building #1	Civil Government	2045 Second St	Slidell	30°"N	89°46'54.575"W			Steel
Building #2	Civil Government	250 Bouscaren	Slidell	30°16'31.484"N	89°46'56.624"W			Steel
City Hall	Civil Government	2055 Second Street	Slidell	30°16'31.685"N	46'54.448			Wood
City Museum	Civil Government	2020 First Street	Slidell	30°16'32.925"N	89°46'56.845"W			Wood
DISA Building	Civil Government	1010 Gause Blvd.	Slidell	30°17'9.445"N	89°46'8.934"W			
Guardians of Slidell History Museum	Civil Government	2065 Second Street	Slidell	30°16'31.085"N	89°46'54.524"W			Wood
Public Operations - Administration	Civil Government	1325 Bayou Lane	Slidell	30°17'2.608"N	89°46'57.445"W			Steel
Public Operations - Employee Building	Civil Government	1325 Bayou Lane	Slidell	30°17'2.198"N	89°46'59.244"W			Steel
Public Operations - Purchasing	Civil Government	1329 Bayou Lane	Slidell	30°16'55.830"N	89°46'58.447"W			Steel
Public Operations - Tool Shop	Civil Government	1325 Bayou Lane	Slidell	30°17'1.060"N	89°46'58.883"W			Steel
Public Operations - Vehicle Maintenance	Civil Government	1327 Bayou Lane	Slidell	30°16'57.008"N	89°46'58.682"W			Steel
Public Ops #6	Civil Government	1325 Bayou Lane	Slidell	30°16'55.704"N	89°46'58.459"W			Steel
Railroad Depot	Civil Government	1827 Front Street	Slidell	30°16'42.273"N	89°46'57.158"W			
Records Building	Civil Government	1319 Bayou Lane	Slidell	30°17'3.939"N	89°46'55.573"W			Metal
Rufus Viner Center	Civil Government	1010 Schley	Slidell	30°16'17.277"N	89°46'33.496"W			Wood
Wastewater Treatment Plant	Civil Government	2800 Terrace Avenue	Slidell	30°15'48.592"N	89°46'7.361"W			
Bayou Pattasatt Pump Station	Drainage Pump Station		Slidell	30°16'24.094"N	89°47'18.377"W			
Bayou Vincent Pump Station 201	Drainage Pump Station		Slidell					

Dellwood Pump Station 203	Drainage Pump Station		Slidell	30.27833N	89.74556E			
Lee Street Pump Station 202	Drainage Pump Station		Slidell	30.28056N	89.7475E			
Schnieider Canal Pump Station 210	Drainage Pump Station		Slidell	30.29139N	89.75861E			
Fire District 1 Headquarters	Fire & SAR	1358 Corporate Square	Slidell	30°16'59.816"N	89°45'24.946"W			
Fire Headquarters	Fire & SAR	522 Robert Blvd	Slidell					
Fire Station	Fire & SAR	530 Robert Blvd	Slidell					
Fire Station #11	Fire & SAR	322 Bouscaren St	Slidell	30°16'31.487"N	89°46'50.753"W			
Fire Station #12	Fire & SAR	1570 West Hall Ave	Slidell	30°17'6.314"N	89°45'57.615"W			
Fire Station #13	Fire & SAR	101 Normandy Drive	Slidell	30°17'41.987"N	89°45'57.615"W			
Fire Station #16	Fire & SAR	320 Marina Dr	Slidell	30°17'41.987"N	89°47'16.018"W			
Fire District 1 Training Academy	Fire & SAR	34780 S Range Rd	Slidell					
City Court	Law Enforcement	501 Bouscaren	Slidell	30°16'30.042"N	89°46'44.361"W			
City Police Building & Jail	Law Enforcement	2112 Third Street	Slidell	30°16'29.512"N	89°46'48.535"W			
Police Evid/Admin Bldg.	Law Enforcement	429 Bouscaren	Slidell	30°16'29.446"N	89°46'48.543"W			
Police Storage Building	Law Enforcement	2112 Third Street	Slidell	30°16'29.512"N	89°46'48.535"W			
Slidell Police Department	Law Enforcement	2112 Sgt Alfred Dr	Slidell					
Slidell PD Sub-station	Law Enforcement	34870 Grantham College Rd.	Slidell					
Duckworth Park Restroom Building	Parks/Recreation	1191 Campbell Drive	Slidell					Reinforced Masonry
Heritage Park Amphitheater	Parks/Recreation	101 Bayou Lane	Slidell	30°16'48.794"N	89°47'3.301"W			Reinforced Masonry
Heritage Park Guard Building	Parks/Recreation	1701 Bayou Lane	Slidell	30°16'44.789"N	89°46'57.752"W			Metal
John Slidell Park Concession/Restroom	Parks/Recreation	105 Robert Blvd.	Slidell	30°18'22.969"N	89°44'52.099"W			
John Slidell Park Gym	Parks/Recreation	105 Robert Rd.	Slidell	30°18'21.804"N	89°44'43.140"W			Steel



John Slidell Park Log Cabin	Parks/Recreation	105 Robert Blvd.	Slidell	30°18'19.093"N	89°44'58.129"W			Wood
John Slidell Park Storage & Maint.	Parks/Recreation	105 Robert Blvd.	Slidell	30°18'23.648"N	89°44'45.772"W			Reinforced Masonry
Possum Hollow Park Concession/Restroom Bldg.	Parks/Recreation	801 Cousin Street	Slidell	30°16'21.582"N	89°46'36.039"W			Reinforced Masonry
PS 101	Sewer Pump Station	Town Center Pkwy	Slidell					
PS 102	Sewer Pump Station	1888ps W Lindberg Dr	Slidell					
PS 200 Linberg Dirve	Sewer Pump Station	Linberg Drive	Slidell					
PS 201	Sewer Pump Station	796PS - East I-10 Service Rd	Slidell					
PS 202	Sewer Pump Station	Holiday Square of Slidell - 790PS - East I-10 Service Rd	Slidell					
PS 203	Sewer Pump Station	1901PS Yaupon Dr - Pope John Paul	Slidell					
PS 204	Sewer Pump Station	Holiday Square of Slidell -350PS Hoover Dr	Slidell					
PS 208	Sewer Pump Station	Nickel Creek - 400PS Kensington Ln	Slidell					
PS 209	Sewer Pump Station	Kensington Estates - 100PS Kensington Ln	Slidell					
PS 210	Sewer Pump Station	Charleston Square - 815PS Rue Rochelle	Slidell					
PS 211	Sewer Pump Station	503PS Robert Blvd - Greenbriar	Slidell					
PS 212	Sewer Pump Station	Heritage Estates - 1404PS Independence Dr	Slidell					
PS 215	Sewer Pump Station	358PS Robert Blvd - Aldergate #1	Slidell					
PS 216	Sewer Pump Station	360PS Robert Blvd - Aldergate #2	Slidell					

PS 220	Sewer Pump Station	Audubon Estates - 150PS Civic Club Ln	Slidell					
PS 221	Sewer Pump Station	Brookwood Estates - 344PS Driftwood Circle	Slidell					
PS 230	Sewer Pump Station	Forest Glenn - 223PS Melody Ln	Slidell					
PS 231	Sewer Pump Station	Forest Glenn - 201PS Melody Ln	Slidell					
PS 240	Sewer Pump Station	Country Club Estates - 447PS Country Club Blvd	Slidell					
PS 241	Sewer Pump Station	Country Club Estates - 322PS Country Club Blvd	Slidell					
PS 242	Sewer Pump Station	Country Club Plaza - 801PS Robert Blvd	Slidell					
PS 243	Sewer Pump Station	Brookwood Estates - 124PS Driftwood Circle	Slidell					
PS 244	Sewer Pump Station	Village Square - 111PS Village St	Slidell					
PS 250	Sewer Pump Station	Smalls - 301PS Gateway Dr (Northshore Hospital)	Slidell					
PS 251 Pearl Acres	Sewer Pump Station	Intersection Pearl Acres and Gause Blvd (East)	Slidell					
PS 252	Sewer Pump Station	Breckenridge - 1040PS Breckenridge Dr	Slidell					
PS 253	Sewer Pump Station	Breckenridge - 248PS Goldenwood Dr	Slidell					
PS 254	Sewer Pump Station	Breckenridge - 1117PS Joy Dr	Slidell					
PS 255	Sewer Pump Station	Sterling Oaks - 58480PS Pearl Acres Rd	Slidell					
PS 260	Sewer Pump Station	Robbert Park - 1777PS Frederick	Slidell					
PS 301	Sewer Pump Station	1101PS Lakewood Drive	Slidell					

PS 302	Sewer Pump Station	Interstate Commercial Park - 1645PS (Days Inn)	Slidell					
PS 310	Sewer Pump Station	Bon Village - 1100PS Rue Miramon	Slidell					
PS 311	Sewer Pump Station	Tanglewood - 401PS Cardinal Dr	Slidell					
PS 312	Sewer Pump Station	Country Club Estates - 150PS Grafton Dr	Slidell					
PS 313	Sewer Pump Station	John Slidell Park - 105PS	Slidell					
PS 318	Sewer Pump Station	Tanglewood Crossing - 611PS Highlands Dr	Slidell					
PS 320	Sewer Pump Station	1280PS Independence Dr	Slidell					
PS 321	Sewer Pump Station	987PS Robert Road	Slidell					
PS 322	Sewer Pump Station	1055PS Robert Road (Water Tower)	Slidell					
PS 323	Sewer Pump Station	Fountain Estates - 105PS Fountain Dr	Slidell					
PS 324	Sewer Pump Station	Wimbledon Estates - 157PS Fountain Dr	Slidell					
PS 325	Sewer Pump Station	Forest Manor - 309PS North Blvd	Slidell					
PS 401	Sewer Pump Station	Reine Addition - 1177PS Reine Ave	Slidell					
PS 402	Sewer Pump Station	Fritchie Park - 903PS	Slidell					
PS 403	Sewer Pump Station	Lake Gardens - 56460PS Frank J Pichon Dr	Slidell					
PS 404	Sewer Pump Station	1000PS Caruso Blvd (M.R.O.)	Slidell					
PS 405	Sewer Pump Station	2018PS Old Spanish Trail	Slidell					
PS 406	Sewer Pump Station	1833PS Joseph St	Slidell					

PS 407	Sewer Pump Station	901PS W Howze Beach Rd	Slidell					
PS 408	Sewer Pump Station	1821TPS Joseph St	Slidell					
PS 409	Sewer Pump Station	Northshore Business Park - 420PS Voters Rd	Slidell					
PS 411	Sewer Pump Station	Spartan Trace - 304PS Spartan Lp	Slidell					
PS 413	Sewer Pump Station	Manisons of Spartan Trace - 7201PS Spartan Dr	Slidell					
PS 420	Sewer Pump Station	Magnolia Heights - 475PS Olive Dr	Slidell					
PS 421	Sewer Pump Station	Westchester Estates - 600PS Markham Dr	Slidell					
PS 430	Sewer Pump Station	Pine Park Place - 501PS Fifth St	Slidell					
PS 432	Sewer Pump Station	Robert Addition - 610PS Cousin St	Slidell					
PS 433	Sewer Pump Station	Pine Park Place - 913PS Fremaux Ave	Slidell					
PS 440	Sewer Pump Station	Salmen Addition 1 - 3258PS Front St	Slidell					
PS 445	Sewer Pump Station	900PS Kostmayer Ave	Slidell					
PS 450	Sewer Pump Station	Dellwood - 295PS Biscayne Dr	Slidell					
PS 451	Sewer Pump Station	Westchester Estates - 480PS Dorset Dr	Slidell					
PS 452	Sewer Pump Station	Eagle Point - 134PS Anna St	Slidell					
PS 453	Sewer Pump Station	Eagle Point - 112PS Annette Dr	Slidell					
PS 454	Sewer Pump Station	Eagle Point - 119PS Kasey St	Slidell					
PS 455	Sewer Pump Station	4008PS Berkley St (Behind Lauren Plaza)	Slidell					

PS 460	Sewer Pump Station	Yester Oaks - 3978PS Riviera Dr	Slidell					
PS 461	Sewer Pump Station	3675PS Pontchartrain Dr	Slidell					
PS 500 Old City Barn	Sewer Pump Station	Bayou Lane	Slidell					
PS 501	Sewer Pump Station	Salmen North - 2541PS College St	Slidell					
PS 502	Sewer Pump Station	Chamale Cove - 50PS Chamale Cove West	Slidell					
PS 503	Sewer Pump Station	Robert Addition - 2011PS First St	Slidell					
PS 504	Sewer Pump Station	1701HPS Heritage Park Amphitheater	Slidell					
PS 506	Sewer Pump Station	2528PS Cleveland Ave (Textron)	Slidell					
PS 507	Sewer Pump Station	1325PS Bayou Ln (Public Opps)	Slidell					
PS 508	Sewer Pump Station	1701BPS Heritage Park	Slidell					
PS 509	Sewer Pump Station	1329PS Bayou Ln (Public Opps)	Slidell					
PS 510	Sewer Pump Station	Palm Lake - 2904PS Camellia Dr	Slidell					
PS 511	Sewer Pump Station	Palm Lake - 2966PS Camellia Dr	Slidell					
PS 512	Sewer Pump Station	Palm Lake - 210PS West Camellia Dr	Slidell					
PS 520	Sewer Pump Station	Bayou Lake Estates - 2963PS Palm Dr	Slidell					
PS 521	Sewer Pump Station	Palm Lake - 3050PS S Palm Dr	Slidell					
PS 522	Sewer Pump Station	Palm Lake - 3032PS N Palm Dr	Slidell					
PS 530	Sewer Pump Station	333PS Bayou Liberty Rd	Slidell					

PS 531	Sewer Pump Station	Bayou Bonfouca Estates - 3247PS Bonfouca Dr	Slidell					
PS 532	Sewer Pump Station	Bayou Isle - 100PS Island Dr	Slidell					
PS 550 Bayou Lane and West Hall Ave	Sewer Pump Station	Intersection of Bayou Lane and West Hall Ave	Slidell					
PS 551	Sewer Pump Station	1000PS Ninth St	Slidell					
PS 552	Sewer Pump Station	250PS Lulich Rd (Garment Plant)	Slidell					
PS 554	Sewer Pump Station	252PS Stone Rd	Slidell					
PS 555	Sewer Pump Station	1236PS Gladys St	Slidell					
PS 560	Sewer Pump Station	Hermadel Estates - 1383PS Hermadel Dr	Slidell					
PS 561	Sewer Pump Station	Bayou Cache - 1272PS St. Christopher Dr	Slidell					
PS 562	Sewer Pump Station	Forest Pines - 1711PS Forrestwood Dr	Slidell					
PS 563	Sewer Pump Station	35707PS Carrol Rd	Slidell					
PS A	Sewer Pump Station	138PS Northshore Sq	Slidell					
PS A-1	Sewer Pump Station	Village at Northshore - 138PS Northshore Blvd	Slidell					
PS A-2	Sewer Pump Station	124PS Northshore Blvd	Slidell					
PS B	Sewer Pump Station	34870PS Engineer Rd (Police Academy)	Slidell					
PS C	Sewer Pump Station	Stirling Slidell - 61125PS Airport Rd	Slidell					
PS D	Sewer Pump Station	62512PS Airport Rd (Coast Water Works)	Slidell					
PS E	Sewer Pump Station	2170PS Gause Blvd W	Slidell					

PS F	Sewer Pump Station	34845PS Grantham College Rd	Slidell					
PS G	Sewer Pump Station	62512PS Airport Rd (Coast Water Works)	Slidell					
PS NS S	Sewer Pump Station	Northshore High School	Slidell					
WWTP Head	Sewer Pump Station	Terrace Ave	Slidell					
Caruso Blvd	Water Well	1075 Caruso	Slidell					
Front Street	Water Well	3500 Front Street	Slidell					
Kostmayer Well	Water Well	631 Kostmayer Avenue	Slidell	30°15'29.957"N	89°47'8.466"W			
Northshore Hospital	Water Well	301 Gateway Drive	Slidell					
Northshore Mall North	Water Well	158 Northshore Blvd	Slidell					
Northshore Mall South	Water Well	138 Northshore Blvd	Slidell					
Northshore Walmart	Water Well	167 Northshore Blvd	Slidell					
Robert Blvd	Water Well	102 N. Braxton Dr	Slidell					
Robert Road Tower	Water Well	1055 Robert Blvd	Slidell					
Target Well	Water Well	61125 Airport Blvd	Slidell					
Westhall Well	Water Well	1291 Westhall Avenue	Slidell					

Village of Sun								
Name of Building	Purpose of Building	Address	City	Latitude	Longitude	Assessed Value	Date Built	Construction Type
Fire Station #4	Fire Department	28666 Hwy 16	Sun					Metal
Sun Police Department	Law Enforcement	30285 Lock #3 Rd	Sun					Concrete
Sun Town Hall	Civil Government	30285 Lock #3 Rd	Sun					Concrete
Sun Water System Tower	Utilities (water)	30285 Lock #3 Rd	Sun					Metal
Sun Water System Tower	Utilities (water)	30285 Lock #3 Rd	Sun					Metal
Sun Water System Tower	Utilities (water)	28666 Hwy 16	Sun					Metal



## Vulnerable Populations

Vulnerable Populations Worksheet					
St. Tammany Parish					
All Hospitals (Private or Public)	Address	City	Zip Code	Latitude	Longitude
Greenbrier Hospital	505 Robert Blvd.	Slidell	70458	30.299583	-89.757153
Lakeview Medical Center	95 Judge Tanner Boulevard	Covington	70433	30.409993	-90.081227
Ochsner Medical Center	100 Medical Center Drive	Slidell	70461	30.286328	-89.743111
Slidell Memorial Hospital	1001 Gause Boulevard	Slidell	70458	30.284596	-89.770383
Northlake Behavior Health Care	23515 Highway 190	Mandeville	70448	30.345142	-90.021735
St Tammany Parish Hospital	1202 South Tyler Street	Covington	70433	30.468871	-90.113923
Avala Hospital	67252 Industry Ln.	Covington	70433	30.40836	-90.08208
Sterling Surgical Hospital	989 Robert Blvd.	Slidell	70458	30.290956	-89.769326
PAM Specialty Hospital of Covington	20050 Crestwood Dr	Covington	70433	30.447531	-90.073134
Southern Surgical Hospital	1700 Lindberg Dr	Slidell	70458	30.273315	-89.755631
St. Tammany Parish Hospital	1202 S Tyler St	Covington	70433	30.468788	-90.113127
Lurline Smith Mental Health Clinic	900 Wilkinson St	Mandeville	70448	30°22'10.97"N	90° 04'14.84"W
Slidell Memorial Hospital	1001 Gause Blvd	Slidell	70458	30°17'3.779"N	89°46'11.836"W
Ochsner Hospital	100 Medical Center Dr	Slidell	70458	30°17'12.738"N	89°44'34.93"W
Nursing Homes (Private or Public)	Address	City	Zip Code	Latitude	Longitude
Christwood	100 Christwood Blvd.	COVINGTON	70433	30.439194	-90.141211
Forest Manor Nursing and Rehabilitation Center	1330 Ochsner Blvd	COVINGTON	70433	30.451498	-90.145455
Greenbriar Community Care Center	505 Robert Blvd.	SLIDELL	70458	30.299583	-89.757153
Guest House of Slidell	1051 Robert Blvd.	SLIDELL	70458	30.289657	-89.770473
Heritage Manor of Mandeville	1820 W. Causeway Approach	MANDEVILLE	70471	30.396916	-90.104323
Heritage Manor of Slidell	106 Medical Center Drive	SLIDELL	70461	30.287478	-89.744088
Lacombe Nursing Centre	28119 Hwy. 190	LACOMBE	70445	30.312232	-89.93974
Pontchartrain Health Care Center	1401 Hwy. 190	MANDEVILLE	70448	30.35918	-90.051715

Trinity Neurologic Rehab Center	1400 Lindberg Drive	SLIDELL	70458	30.281437	-89.752797
Canon Hospice	19376 N 3rd St	Covington	70433	30.469919	-90.083504
Pontchartrain Health Care Centre	1401 Florida St	Mandeville	70448	30°21'33.19"N	90° 03'06.36"W
Beau Provence	100 Beau West Dr	Mandeville	70471	30°24'00.93"N	90° 06'37.61"W
Heritage Manor of Mandeville	1820 W. Causeway Appr	Mandeville	70471	30°23'47.82"N	90° 06'17.72"W
Rouquette Lodge	4300 Hwy 22	Mandeville	70471	30°23'44.52"N	90° 05'49.20"W
Emeritus at Mandeville	1414 N. Causeway Blvd.	Mandeville	70471	30°23'17.92"N	90° 05'28.90"W
Windsor Senior Living Community	1770 N. Causeway Blvd.	Mandeville	70471	30°23'26.957"N	90° 05'31.43"W
Park Provence Senior Living	1925 Possum Hollow Rd	Slidell	70458		
Park Place Group Home	2201 11th St.	Slidell	70458		
Heritage Manor	106 Medical Center Dr.	Slidell	70461		
Greenbriar Community Care Center	505 Robert Blvd	Slidell	70458		
<b>Mobile Home Parks</b>	<b>Address</b>	<b>City</b>	<b>Zip Code</b>	<b>Latitude</b>	<b>Longitude</b>
Big Branch MH Community	61746 Bremermann Rd	Lacombe	70445	30.332351	-89.991547
Covington Manor Mobile Home Park	161 Barbee Road	Covington	70433	30.481429	-90.056573
Dream Courts Mobile Home	217 Dream Ct	Slidell	70461	30.237673	-89.757193
Eagle Lake Mobile Home	1210 Eagle Lake Boulevard	Slidell	70460	30.335385	-89.776655
Mangano Mobile Home Park	64096 Mangano Rd	Pearl River	70452	30.360676	-89.772578
Oak Villa Estates Mobile Home Park	15455 Ronald Reagan Highway	Covington	70433	30.493265	-90.146211
Pinecrest Mobile Home Park	2601 Old Spanish Trail	Slidell	70461	30.242287	-89.757539
Red Oak Mobile Home Park	133 Brigadier Loop	Pearl River	70452	30.356474	-89.739845
Rocket Ranch Trailer Park	1110 Brownsitch Rd	Slidell	70461	30.310476	-89.737589
Shady Pines Mobile Home Park	59275 Shady Lane	Slidell	70460	30.292059	-89.797619
Southern Manor Mobile Home Park	60375 N Military Rd	Slidell	70461	30.308209	-89.729602
Tammany Mobile Home Park	41662 E U.S. Hwy 190	Slidell	70461	30.251068	-89.709369
Timber Land Trailer Park	59338 Transmitter Rd	Lacombe	70445	30.294455	-89.896974
some stock of mobile homes but no mobile home parks (Abita Springs)					
Covington Oaks Mobile Home Park	1555 W 21st Ave	Covington	70433	30.483174	-90.114801
Rose Laird Trailer Park	30085 Hwy 16	Sun	70463		

## National Flood Insurance Program (NFIP)

ELEMENT F: STATE REQUIREMENT									
National Flood Insurance Program (NFIP)									
	St. Tammany Parish	Abita Springs	Covington	Folsom	Madisonville	Mandeville	Pearl River	Slidell	Sun
Insurance Summary									
How many NFIP policies are in the community? What is the total premium and coverage?	37,731 PIF; \$21,993,865 Total Prem.; \$11,274,126,300 Insurance in Force	information not available	1506; \$1,128,248 in premium; \$454,504,100 in coverage	13; Insurance in-force \$2,937,600; Written premium in-force:5,646	\$421,615 Prem.; \$78,797,100 Coverage	3152 NFIP policies, \$2,112,024 in total annual premium, and \$935,614,700 in total coverage	171; insurance in-force \$46,492,300; written in-force 80,696	6,503 policies; \$6,797,625 premiums; \$1,606,697,700 coverage (As of 4/23/2020)	
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?	17,049 Claims; \$1,140,878,324 Pd. Claims; 5705 Substantial Damage Claims	information not available	Number of Paid Claims: 726; Total Amount of Paid Claims: \$14,280,629; Claims for Substantial Damage: 71	2 claims, \$21,186	391 Claims;\$13,295,976 Pd.; 53 Substantial Damage	1,784 claims paid, total amount of claims paid is \$44,908,464 and 248 claims were for substantial damage	7 claims; \$89,870 claims paid; avg claim \$12,839	9,393 paid losses; 3,656 substantial damage claims; \$446,514,489 total losses paid (As of 4/23/2020)	
How many structures are exposed to flood risk with in the community?	V, VE, A & AE Zones; 34,258	information not available	1371	1 structure that is residential	A & AE Zones; 278 Policies	3858	3 residential	4,367 in AE; 306 in X500; 2,993 in X	
Describe any areas of flood risk with limited NFIP policy coverage.		information not available	There are some areas outside of the Special Flood Hazard Area that are subject to flooding but those areas do not have a mandatory flood insurance purchase requirement.	none		None	n/a	None	

Staff Resources									
Is the Community FPA or NFIP Coordinator certified?	Yes	Yes (CEA Parish)	Yes (2 CFMs)	Yes, Parish	No	Yes, Certified Floodplain Manager (CFM)	Yes, Parish	Yes (1 CFM)	
Is flood plain management an auxiliary function?	Yes	Yes	Yes	No	Yes	Combined with Building Official	yes	Yes, Chief Building Official is also Floodplain Administrator	
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	permit review, GIS, education or outreach, inspections, engineering capability	All permits are issued through the P&Z department. ALL applications are reviewed for documented compliance with all state agencies. Elevation clarification is required.	Permit Review, GIS, Inspections, Outreach	Engineering department carries out subdivision and commercial inspections. Permits inspects residential. Certificate of occupancy is not issued unless in compliance with NFIP regulations. Inspections conducted after each major storm and or a need for maintenance is identified.	Permit Reviews; Inspections	Permit review, education and outreach, grant administration, GIS, floodplain inspections, resources available to realtors and insurance agents, engineering	permits issued. All applications are reviewed for compliance with all state agencies.	Permit review, education and outreach, grant administration, GIS, floodplain inspections, resources available to realtors and insurance agents, engineering	
What are the barriers to running an effective NFIP program in the community, if any?	Funding & staff requirements	None if all proper documentati on is present	Time Constraints	none	Politics	Staff resources	none	Staff resources and funding. 45% of housing units, and a large percentage of non-residential structures, are pre-FIRM and are below BFE, so there is a great need for elevations or other mitigations.	

Compliance History									
Is the community in good standing with the NFIP?	Yes	Yes	Yes	yes	Yes	Yes	yes	Yes	Yes
Are there any outstanding compliance issues(i.e., current violations)?	No	No	No	no	Yes	None	not aware of any	No	None
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?	4/1/2018	2011	2020	Parish visit, July 2013	6/11/2014	CAC 2020	not sure	10/17/2018	
Is a CAV or CAC scheduled or needed? If so when?	No	No	No	no	No	None	n/a	None scheduled	
Regulation									
When did the community enter the NFIP?	Ord. No. 18 03/11/1987	1985	11/19/1980	Int FHBM Identified: 7/18/1975; Initial FIRM Identified 3/16/82; Current Eff Map Date: 3/16/82	Ord. No. 18 03/11/1987	9/28/1979	Init FHBM identified: 5/24/1974; Init FIRM Identified: 6/25/1976	11/23/1973	
Are the FIRMs digital or paper?	Paper	Digital	Paper	paper	Paper	Digital	paper	Paper. DFIRMs proposed in 2008 but not yet adopted.	
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Yes	Meets the regs (In Review 2020)	Yes; 1 foot freeboard	yes.	Yes Ord. No. 129 Eff. 09/13/2014	Yes, the city requires 2 feet of freeboard for new and substantially damaged/improved structures, and the city uses cumulative damage and improvement over 10-years in order to determine substantial damage/improvement	yes. 1 ft freeboard pearl river basin	Advisory Base Flood Elevation (ABFE) plus 1 foot for the majority of the city in the floodplain.	

Community Rating System (CRS)									
Does the community participate in CRS?	Yes	No	Yes	Yes, St Tammany Parish	No	Yes	No	Yes	No
What is the community's CRS Class Ranking?	7	N/A	8	St Tammany Parish Class 7	N/A	6	N/A	Class 9	N/A
Does the plan include CRS planning requirements?	Yes	N/A	Yes	Yes	N/A	Yes	N/A	Yes	N/A

