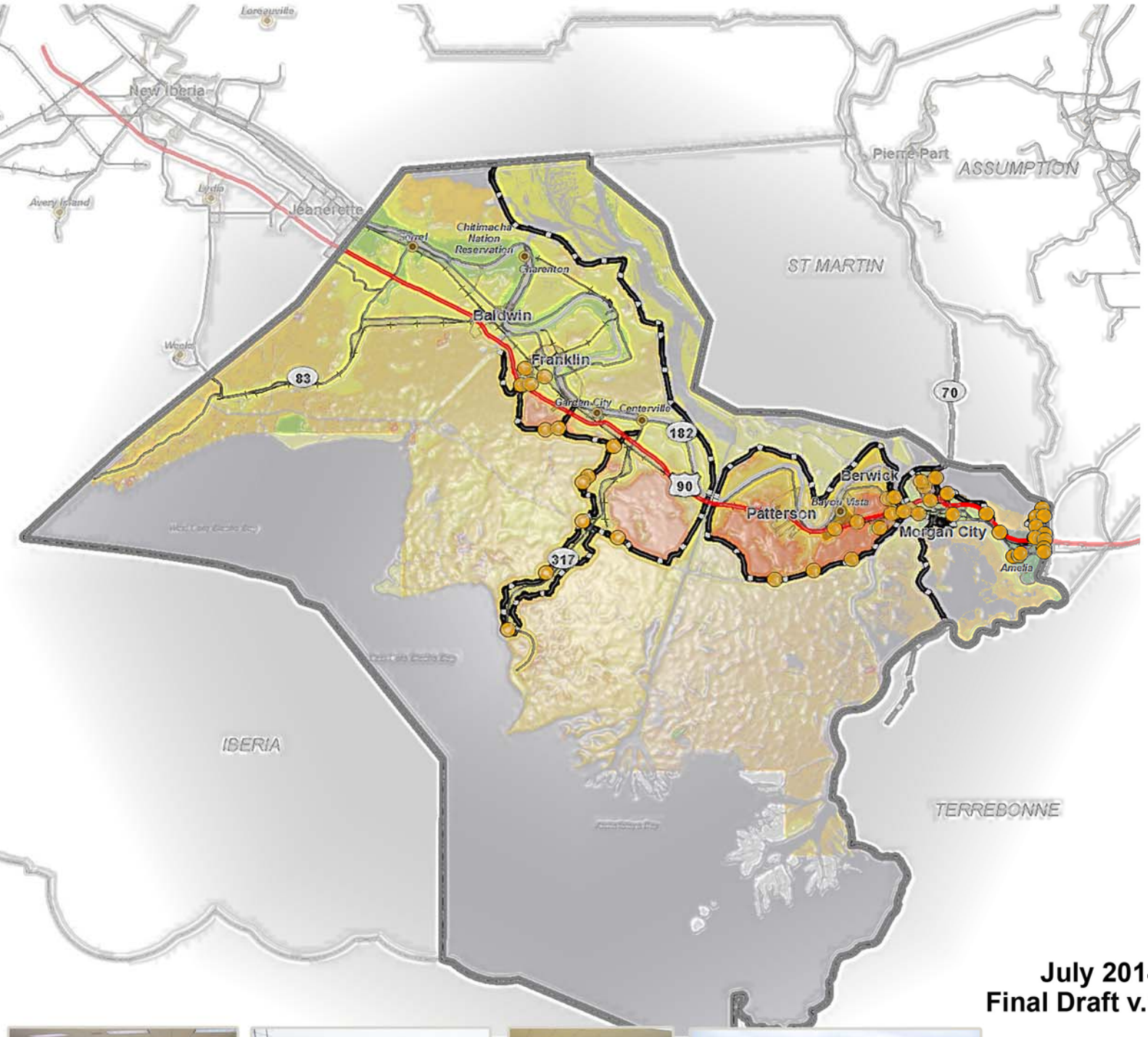
St. Mary Parish
Hazard Mitigation Plan Update 2014



July 2014
Final Draft v.1




Prepared for

ST. MARY PARISH
HAZARD MITIGATION PLAN UPDATE 2014

Hazard Mitigation Grant Program No. EMT-2012-PC-004
July 2014
Final Draft v.1

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Submitted to:
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FOREWORD

ST. MARY PARISH, LOUISIANA

2014 HAZARD MITIGATION PLAN UPDATE

This document continues the process of updating the St. Mary Parish Hazard Mitigation Plan (HMP) to address the following: 1) reflect existing conditions within the natural, human, and built environments; 2) formalize in revisions to risk assessments and mitigation strategies the lessons learned from hazard events that have occurred since the 2009 plan update; and 3) to make the parish more resilient to future hazard events.

St. Mary Parish's original HMP was developed in 2004 and was approved by the Parish and local jurisdictions, in 2005. In 2007, a plan update was drafted then finalized and approved in 2009. Work on the most recent round of plan updates commenced in 2013 and will be completed in 2014. This document represents the second iteration of updates for the HMP and follows the Parish's five-year timeframe for plan modernization. Plan updates are especially important in consideration of the major hazard events that have impacted St. Mary Parish since its 2009 HMPU adoption, namely Hurricanes Gustav, Ike, and Isaac, and the Mississippi River and corresponding Achafalaya River floods of 2011.

At the commencement of the 2013 HMPU process, the HMPU Committee identified four sections of the 2009 plan that required updates. These targeted sections include the Planning Process, Risk Assessment, Mitigation Strategies, and Plan Maintenance. A Tribal addendum specific to the Chitimacha was also included.

The planning process update also include the incorporation of new or updated plans and project lists. The Risk Assessment section includes updates to a table of National Oceanic and Atmospheric Administration (NOAA) recorded events and a new multi-jurisdictional risk assessment. Applicable attachments were added or updated. The goals to reduce or avoid long-term vulnerabilities to identified hazards was retained within Mitigation Strategies; however, the objectives and action items used to achieve the goals were updated.

The Plan Maintenance section was also updated to include procedures and issues to be addressed annually by a subcommittee of the HMPU committee. Public notifications of future meetings are also described in this section. It was determined that the next plan update will occur within five years from the date that his HMPU is approved.

1.0 PREREQUISITES—COPY OF FORMAL PLAN ADOPTION

1.1 §201.6 (c)(5) Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdiction requesting approval of the plan must document that it has been formally adopted.

Documentation that the plan has been formally approved by the governing authorities of St. Mary Parish including the Chitimacha Tribe is presented on the following seven pages of this section. Resolutions of the parish governing authority; each separate municipality and Tribe adopting the plan are included in conformance with the plan requirements.

DRAFT RESOLUTION
St. Mary Parish

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS, on October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000), and

WHEREAS, DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322—Mitigation Planning—which places new emphasis on local mitigation planning, and

WHEREAS, Section 322 requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants, and

WHEREAS, an Interim Final Rule (the Rule) for implementing Section 322 was published in the Federal Register, 44 CFR Parts 201 and 206, on February 26, 2002, with requirements for Local Plans found in Part 201.6, and

WHEREAS, in Louisiana, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) local mitigation planning initiative is focused at the parish level, and

WHEREAS, when incorporated jurisdictions exist within the parishes, their governments are encouraged to participate in the Parish mitigation planning process, and

WHEREAS, the St. Mary Parish Government participated in the preparation of the St. Mary Parish Hazard Mitigation Plan Update 2014 and supports the plan as it pertains to St. Mary Parish and the entire parish,

NOW THEREFORE, be it resolved by the Council of the St. Mary Parish Government that the council does hereby adopt the overall Hazard Mitigation Plan Update dated this
_____ day of _____, 2014.

APPROVED:

_____
Steve F. Bierhorst, Council Chairman

ATTEST:

_____
Lisa Morgan, Clerk

DRAFT RESOLUTION
Chitimacha Tribe of Louisiana

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS the Chitimacha Tribe of Louisiana (Tribe) has historically experienced or may experience severe damage from natural and human caused hazards such as flooding, wildfire, earthquake, drought, thunderstorms/high winds, and hazardous materials incidents resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS the Tribe has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its All Hazard Mitigation Plan under the requirements of 44 CFR 201.7; and

WHEREAS the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the Tribe; and

WHEREAS the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact the Tribe with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this plan will make the Tribe eligible for funding to alleviate the impacts of future hazards on the Reservation, and

NOW THEREFORE BE IT RESOLVED by the Council of the Chitimacha Tribe of Louisiana that:

1. The Plan is hereby adopted as an official plan of the St. Mary Parish Government and the Chitimacha Tribe
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them.
3. Future revisions and Plan maintenance required by 44 CFR 201.7 and FEMA are hereby adopted as a part of this resolution for a period of five years from the date of this resolution.
4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Tribal Council and the St. Mary Parish Government by July 1 of each calendar year when updates are applicable.
5. The Tribe will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11 (c) and will amend the relative Tribal and related components of the St. Mary Parish Multi-jurisdictional Plan whenever necessary to reflect applicable changes in Tribe, State, or Federal laws and statutes as required in 44 CFR 13.11. (d).

PASSED by the Chitimacha Tribe of Louisiana this ___ day of _____ , 2014.

APPROVED:

_____
John Paul Darden, Chairman

ATTEST:

_____
Jacqueline Junca, Council Clerk

DRAFT RESOLUTION
Town of Baldwin

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS, on October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000), and

WHEREAS, DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322—Mitigation Planning—which places new emphasis on local mitigation planning, and

WHEREAS, Section 322 requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants, and

WHEREAS, an Interim Final Rule (the Rule) for implementing Section 322 was published in the Federal Register, 44 CFR Parts 201 and 206, on February 26, 2002, with requirements for Local Plans found in Part 201.6, and

WHEREAS, in Louisiana, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) local mitigation planning initiative is focused at the parish level, and

WHEREAS, when incorporated jurisdictions exist within the parishes, their governments are encouraged to participate in the Parish mitigation planning process, and

WHEREAS, the Town of Baldwin participated in the preparation of the St. Mary Parish Hazard Mitigation Plan Update 2014 and supports the plan as it pertains to Baldwin and the entire parish,

NOW THEREFORE, be it resolved by the Council of the Town of Baldwin that the mayor and council do hereby adopt the overall Hazard Mitigation Plan Update dated this
_____ day of _____, 2014.

APPROVED:

_____
Wayne J. Breaux, Mayor

ATTEST:

_____
Sonya Jones, Town Clerk

DRAFT RESOLUTION
City of Franklin

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS, on October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000), and

WHEREAS, DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322—Mitigation Planning—which places new emphasis on local mitigation planning, and

WHEREAS, Section 322 requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants, and

WHEREAS, an Interim Final Rule (the Rule) for implementing Section 322 was published in the Federal Register, 44 CFR Parts 201 and 206, on February 26, 2002, with requirements for Local Plans found in Part 201.6, and

WHEREAS, in Louisiana, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) local mitigation planning initiative is focused at the parish level, and

WHEREAS, when incorporated jurisdictions exist within the parishes, their governments are encouraged to participate in the Parish mitigation planning process, and

WHEREAS, the City of Franklin participated in the preparation of the St. Mary Parish Hazard Mitigation Plan Update 2014 and supports the plan as it pertains to Franklin and the entire parish,

NOW THEREFORE, be it resolved by the Council of the City of Franklin that the mayor and council do hereby adopt the overall Hazard Mitigation Plan Update dated this _____ day of _____, 2014.

APPROVED:

_____
Raymond Harris, Jr., Mayor

ATTEST:

_____
Karen Leblanc, Clerk of Council

DRAFT RESOLUTION
City of Patterson

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS, on October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000), and

WHEREAS, DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322—Mitigation Planning—which places new emphasis on local mitigation planning, and

WHEREAS, Section 322 requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants, and

WHEREAS, an Interim Final Rule (the Rule) for implementing Section 322 was published in the Federal Register, 44 CFR Parts 201 and 206, on February 26, 2002, with requirements for Local Plans found in Part 201.6, and

WHEREAS, in Louisiana, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) local mitigation planning initiative is focused at the parish level, and

WHEREAS, when incorporated jurisdictions exist within the parishes, their governments are encouraged to participate in the Parish mitigation planning process, and

WHEREAS, the City of Patterson participated in the preparation of the St. Mary Parish Hazard Mitigation Plan Update 2014 and supports the plan as it pertains to Patterson and the entire parish,

NOW THEREFORE, be it resolved by the Council of the City of Patterson that the mayor and council do hereby adopt the overall Hazard Mitigation Plan Update dated this
_____ day of _____, 2014.

APPROVED:

_____
Rodney A. Grogan, Mayor

ATTEST:

_____
Pamela Washington, City Clerk

DRAFT RESOLUTION
Town of Berwick

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS, on October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000), and

WHEREAS, DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322—Mitigation Planning—which places new emphasis on local mitigation planning, and

WHEREAS, Section 322 requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants, and

WHEREAS, an Interim Final Rule (the Rule) for implementing Section 322 was published in the Federal Register, 44 CFR Parts 201 and 206, on February 26, 2002, with requirements for Local Plans found in Part 201.6, and

WHEREAS, in Louisiana, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) local mitigation planning initiative is focused at the parish level, and

WHEREAS, when incorporated jurisdictions exist within the parishes, their governments are encouraged to participate in the Parish mitigation planning process, and

WHEREAS, the Town of Berwick participated in the preparation of the St. Mary Parish Hazard Mitigation Plan Update 2014 and supports the plan as it pertains to Berwick and the entire parish,

NOW THEREFORE, be it resolved by the Council of the Town of Berwick that the mayor and council do hereby adopt the overall Hazard Mitigation Plan Update dated this
_____ day of _____, 2014.

APPROVED:

_____
Louis Ratcliff, Mayor

ATTEST:

_____
Newell W. Slaughter, CAO/Town Clerk

DRAFT RESOLUTION
City of Morgan City

To adopt the *St. Mary Hazard Mitigation Plan Update 2014* and approve submittal to the Louisiana Office of Emergency Preparedness and to FEMA for review and approval…

WHEREAS, on October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000), and

WHEREAS, DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322—Mitigation Planning—which places new emphasis on local mitigation planning, and

WHEREAS, Section 322 requires local governments to develop and submit mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants, and

WHEREAS, an Interim Final Rule (the Rule) for implementing Section 322 was published in the Federal Register, 44 CFR Parts 201 and 206, on February 26, 2002, with requirements for Local Plans found in Part 201.6, and

WHEREAS, in Louisiana, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) local mitigation planning initiative is focused at the parish level, and

WHEREAS, when incorporated jurisdictions exist within the parishes, their governments are encouraged to participate in the Parish mitigation planning process, and

WHEREAS, the City of Morgan City participated in the preparation of the St. Mary Parish Hazard Mitigation Plan Update 2014 and supports the plan as it pertains to Morgan City and the entire parish,

NOW THEREFORE, be it resolved by the Council of the City of Morgan City that the mayor and council do hereby adopt the overall Hazard Mitigation Plan Update dated this

_____ day of _____, 2014.

APPROVED:

_____
Frank P. Grizzaffi, III
Mayor

ATTEST:

_____
Debbie Harrington, Clerk

2.0 INTRODUCTION AND PARISH BACKGROUND

The information presented below is an overview of the geography and socioeconomic characteristics of St. Mary Parish, Louisiana. With this background information, data provided herein may be more easily evaluated.

2.1 GEOGRAPHIC SETTING

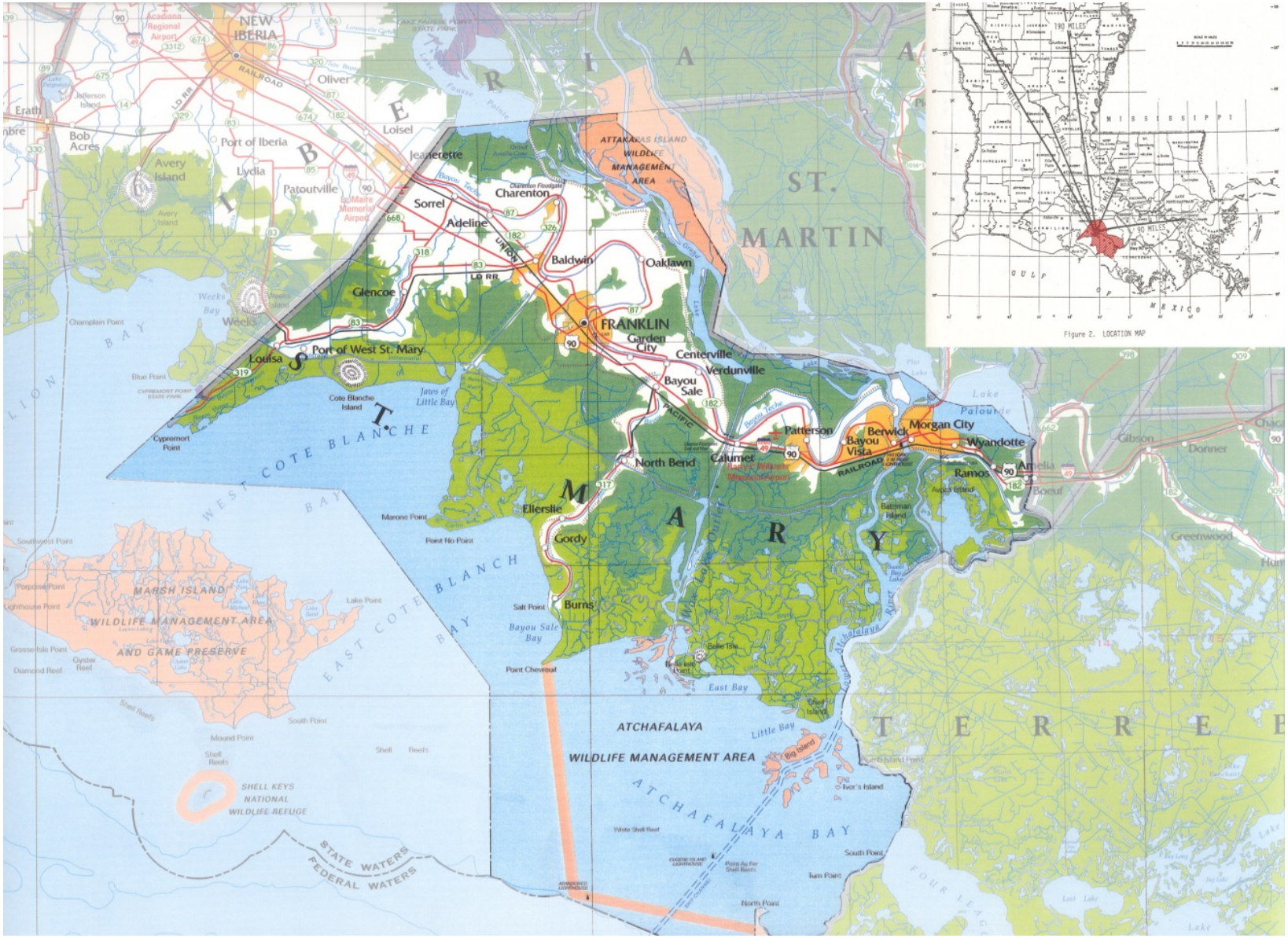
St. Mary Parish is situated along the Gulf coast in the center of the state's coastline. To the east is Terrebonne Parish, to the west Iberia Parish, and to the north Lower St. Martin and Assumption Parishes. A map of the Parish is presented on the following page.

Noted in the image on the following page are five municipalities which include, from east to west, Morgan City, Berwick, Patterson, Franklin, and Baldwin. The Chitimacha Teibe Reservation is shown on the map as Charenton. The parish is bordered to the south by transitional bays of the Gulf of Mexico, i.e., West Cote Blanche Bay, East Cote Blanche Bay, and Atchafalaya Bay. On the north, the parish is bounded by the Atchafalaya Basin and the Lake Verret watershed, two major drainage basins in the state. The Atchafalaya Basin is a floodway controlled by the U.S. Army Corps of Engineers designed to handle approximately one-third of the combined flow of the Mississippi and Red Rivers at the Old River Control Structure in southernmost Concordia Parish.

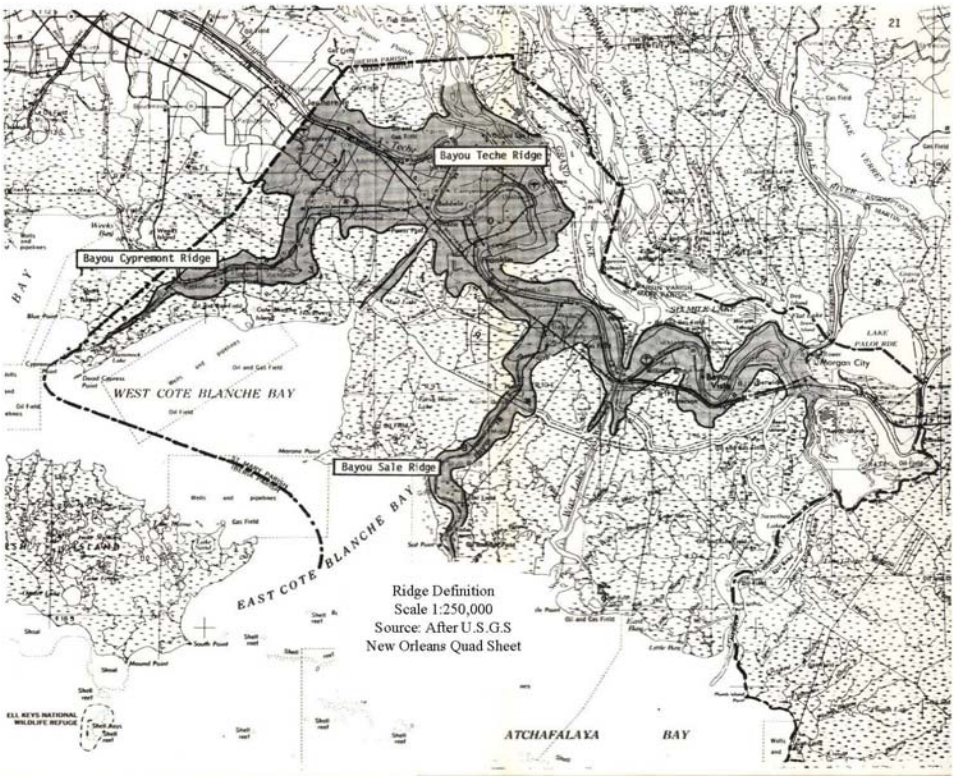
Levees and/or seawalls surround many of the communities protecting them from river flooding and storm surge. As a result, many of the stormwater drainage systems of the various municipalities include large pumping stations to remove stormwater. The layout of all levees and pump stations in the parish are presented in the risk assessment section of this Hazard Mitigation Plan Update (HMPU). To address existing and proposed levee alignments, the Parish retained Miller Engineers & Associates to prepare the *St. Mary Parish Storm Surge Protection Study* which suggests layouts for additional levee alignments and improvements to existing levees. The study is referred to herein as the "Miller Plan." The additional levee alignments proposed in the Miller Plan would further protect St. Mary Parish from surge.

St. Mary is part of three major watersheds, i.e., drainage basins. The area from the western parish line eastward to the Wax Lake Outlet is part of the Vermilion-Teche system. From the Wax Lake Outlet to the Atchafalaya River, the region is part of the Atchafalaya River system. East of the Atchafalaya River, the region is part of the Terrebonne basin which locally is called the Lake Verret watershed.

ST. MARY PARISH LOCATION MAP



ST. MARY PARISH RIDGE DEFINITION



Bayou Teche traverses the parish from east to west. Geologically, the Teche ridge, the highest areas of the parish, formed as the result of annual flooding cycles of the bayou when, centuries ago, the Mississippi River flowed in the Bayou Teche riverbed. It is upon this ridge and two smaller ridges (which are oriented north to south generally perpendicular to the Teche Ridge denoting two smaller historical stream bed ridges) that virtually all urban and agriculture land exist in the parish. Because of the formation of this ridge through alluvial processes, the five-foot contour clearly defines the ridges as the "high-ground" of the parish (with the exception of two salt domes). The depiction of these three ridges (above) form an image that is repeated in this report as almost all land areas other than these ridges are susceptible to flooding, either stormwater, riverine, storm surge, or backwater flooding. With little exception, the graphic above depicts the ridges that form the bulk of non-flooding urban and agricultural land in the parish. Exceptions include the lower reaches of the Bayou Cypremort and Bayou Sale (pronounced "Sally") ridges.

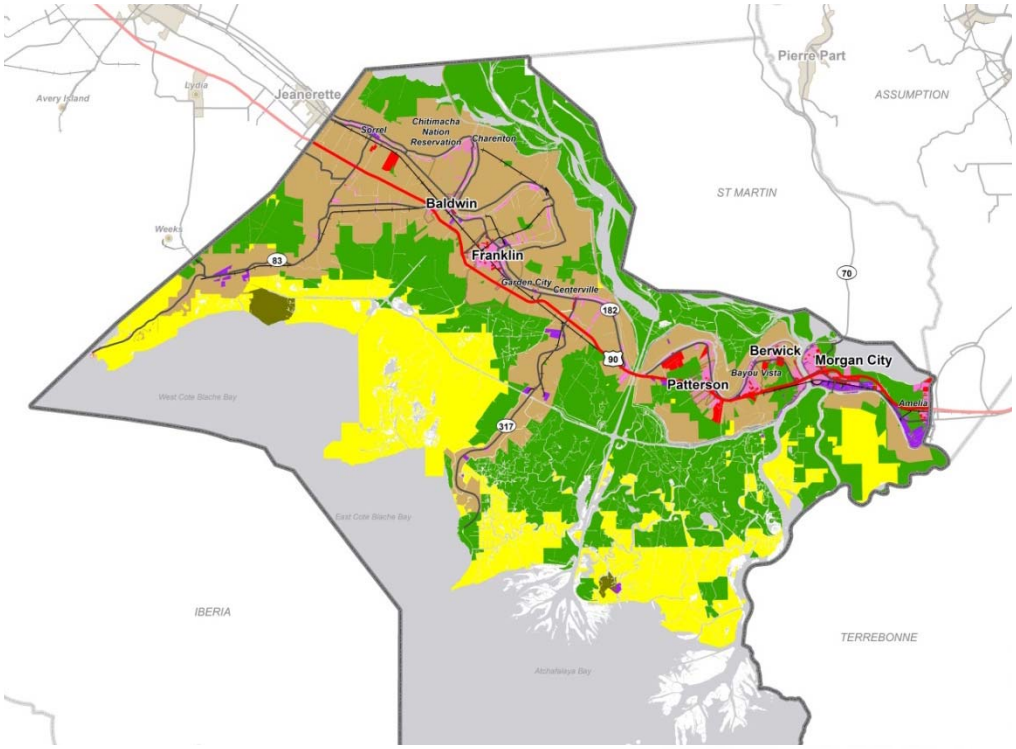
2.2 LAND USE

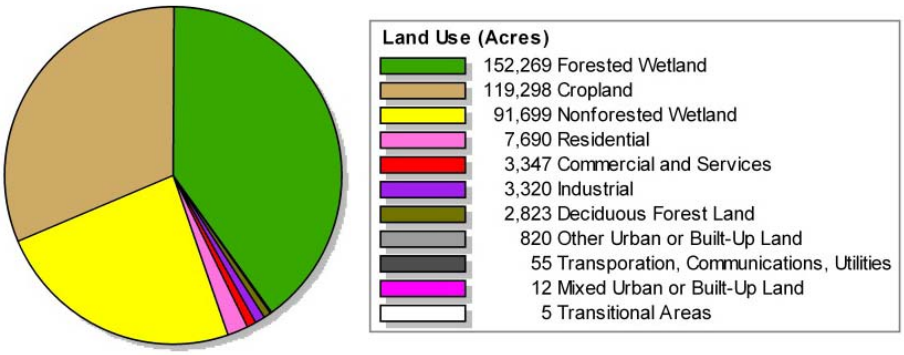
As a snapshot of the community, the following land use map and accompanying table are provided. Based upon this data, over 30% of the parish is urbanized and/or under cultivation. The remaining area of the 381,333-acre parish (not including an additional 236,139 acres of water) is wetlands and forestland.

In Chitimacha tribal lands, current and proposed (future) urban land use is 90 percent residential and 10 percent institutional, commercial, or similar. Non-urban land use is

agriculture and forest land. Part of the non-urban landscape is cultural and preserved as such by the Tribe.

ST. MARY PARISH EXISTING LAND USE





EXISTING LAND USE			
DESCRIPTION	**ACRES**	**%**	**TOTAL**
URBAN			4%
Residential	7,690	2.0%	
Commercial and Services	3,347	0.9%	
Industrial	3,320	0.9%	
Other Urban or Built-Up	820	0.2%	
Transportation/Communication/Utilities	55	0.0%	
Mixed Urban or Built-Up	12	0.0%	
AGRICULTURE			31%
Cropland and Pasture	119,298	31.3%	
FORESTED (wetland and non-wetlands)			41%
Decidious forest land	2,823	0.7%	
Forested Wetland	152,269	39.9%	
NON-FORESTED WETLANDS			24%
Non-forested wetland	91,699	24.0%	
TOTAL	**381,333***	**100.0%**	**100%**

*Total land area excludes water

2.3 SOCIOECONOMIC FACTORS

The parish has experienced intermittent population loss and gains between 2000 and 2013. According to the U.S. 2010 Census, the population of the parish is 54,650, a two percent increase from its population of 53,400 in 2000. However, the U.S. Census Bureau estimates that the parish's 2006 population was 51,867, and in 2013 the population is estimated at 53,543, two percent less than its 2010 population.

In 1980, the population was nearly 65,000. In the 2003 comprehensive plan, it is suggested that the rate of population loss will decline, and the parish population will reach 60,000 by 2020.

The existing population is distributed such that the heaviest concentration of people and most urbanized areas are in the eastern end of the parish.

2.4 Economy

Much of the parish economy is based upon its geographical setting on the Gulf Coast and the Atchafalaya River. Based upon 2011 U.S. Census Business Patterns drawn from the North American Industry Classification System (NAICS), basic industry relates to construction and manufacturing (primarily boats and oilfield equipment), transportation (boats and trucking), mining (oilfield), agriculture, and fishing. The following table offers a general breakdown of the economy in the parish denoting major business sectors.

ST. MARY PARISH BUSINESS SECTORS

Business Sector	Number of Employees	%
Manufacturing	3,719	48.45%
Mining, quarrying, and oil and gas extraction	2,658	
Construction	1,674	
Transportation and warehousing	2,657	
Health care and social assistance	2,047	17.12%
Accommodation and food services	1,737	
Wholesale trade	1,235	21.17%
Retail trade	2,377	
Real estate and rental and leasing	1,066	
Admin., support, waste management, and remediation services	928	13.26%
Professional, scientific, and technical services	690	
Other services (except public administration)	623	
Finance and insurance	510	
Information	179	
Total	22,100	100%

3.0 §201.6 (b) THE PLANNING PROCESS

§201.6 (b) Planning Process—An open public involvement process is essential to the development of an effective plan. To develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include the following:

3.1 §201.6 (b)(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

Several methods were incorporated into the planning process to allow and to encourage public comment on the plan during the drafting stage and prior to plan approval. For example, the news media was contacted prior to every meeting with public notices published to notify interested citizenry of the plan review and to obtain citizen input. Details of all public meetings of the HMPU committee are presented in attachments c1-2 – c1-3.3D.

3.2 §201.6 (b)(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process;

Local and regional agencies were directly involved in the planning process by way of their participation on the HMPU committee. These parties included the planning and zoning directors and mayors of the municipalities, and key operations personnel from the public works departments of the municipalities and the parish. Private and non-profit interests were also involved in the process as were business interests by way of committee participation. Neighboring tribal interests were invited to participate in the planning process. Specifically, the Chitimacha Tribe of Louisiana and the United Houma Nation were engaged. A list of HMPU committee members is provided as attachment c1-1.

Each section of the plan was presented at the three major committee meetings, and a draft copy of the plan was placed on the Parish website for the purpose of review.

3.3 §201.6 (b)(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Existing plans, studies, and technical information were incorporated in the planning process. Examples include flood data from FEMA, the U. S. Army Corps of Engineers, 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.

Additionally, the following plans and project lists were incorporated into the HMPU:

- *Unified Comprehensive Code/ Comprehensive Plan Update* (2014)
- *Louisiana Coastal Impact Assistance Plan* (2010)
- *St. Mary Parish Hazard Mitigation Plan Update* (2009)
- *Louisiana Comprehensive Master Plan for a Sustainable Coast* (2012)
- *Long Term Recovery Plan (ESF-14)* (2007)
- *Amelia Flood Protection Improvements Plan* (2006)
- *St. Mary Parish Hazard Mitigation Plan* (2005)
- *St. Mary Parish Comprehensive Plan* (2003) *and Update* (2013)
- *Parish Unified Development Code*
- *Coastal Wetlands Planning Protection and Restoration Act* Project List
- *St. Mary Parish Storm Surge Protection Study* (Miller Plan)
- *St. Mary Parish All Hazards Plan*
- Chitimacha Tribal Operations Plan
- St. Mary Land and Exploration with Submar, Inc., Coastal Engineering and Environmental Consultants, Inc. (see page 39)

Regarding the Chitmacha Tribe, some existing plans, studies, and/or reports may need updating. According to the HMPU 2014 tribal committee members, the plans will be revisited during the upcoming five-year period. The Chitimacha Tribe has an emergency operations plan; and the casino, also operated by the Tribe, has an operations and emergency plan. The Tribe participated in the Parish's All Hazards Plan, and the HMPU 2014 will be incorporated into the All Hazards plan and other plans that the Tribe may use in the future. Adding the Tribe's wind hardening projects to the multi-jurisdictional plan is evidence of Parish and Tribe coordination (see project list, p.82-86).

4.0 §201.6 (c) PLAN CONTENT

4.1 §201.6 (c)(1) Documentation of the planning process used to develop the plan including (1) how it was prepared, (2) who was involved in the process, and (3) how the public was involved.

4.1.1 How it was prepared…

The St. Mary Parish Government developed this update to its parishwide Hazard Mitigation Plan (2009) which also includes the five incorporated communities in the parish, the entirety of the unincorporated area, and the Chitimacha Tribe of Louisiana. As noted previously, the municipalities are Morgan City, Berwick, Patterson, Franklin, and Baldwin. The unincorporated yet urban areas of the parish include Cypremort Point, Bayou Vista, and Amelia. Chitimacha tribal land is comprised of 845 acres of land in Charenton bounded by U.S. Highway 182 to the south and Chitimacha Trail to the west, north, and east.

A Hazard Mitigation Plan Update Committee was created to assist in the planning process. The structure of that committee is detailed in the following section. The planning process used is a combination of the procedure spelled out in CFR §201.6, workshop manuals, and how-to guidelines. These guidelines, which were presented to the committee in a series of open public meetings, were followed throughout the plan update process. Goals of the HMPU committee included incorporating new data, especially that from hurricanes and flood events, updating risk and vulnerability assessments, and updating mitigation goals and action items.

4.1.2 Who was involved in the process…

A hazard mitigation planning team, referred to as HMPU Committee throughout this plan, was formed using the representation from the HMP Committee formed in 2004 and updated in 2008. It was expanded for the 2014 plan and still consists of representatives from throughout the parish and neighboring parishes. Members were selected from each of the drainage districts, water and sewer districts, the St. Mary Parish Council, the St. Mary Parish Government administration, police and fire departments, the parish and municipal public works departments, the mayors from each municipality, other municipal staff, and representatives from the Chitimacha Tribe of Louisiana.

Regarding the Chitimacha Tribe, the public works director and the police and fire chiefs were members of the committee. Late in the planning process, the Tribe's Development Official was also added. They attended regular committee meetings and also met with Parish consultants regarding tribal issues and the hazard mitigation plan. Chitimacha tribal representatives were also present when the St. Mary Parish hazard mitigation planning process was presented to the tribal council at a regularly scheduled council meeting. It is noteworthy that representatives of the Chitimatcha Tribe did not attend the first Hazard Mitigation Committee meeting as the result of a communication updating

error. The consultant team contacted the Tribe. As a result, the Tribal Council appointed three new members (the director of public works, the police chief, and the fire chief). Planning team members met with those three representatives via two special trips to the reservation. These representatives attended meeting 2 and/or 3, and they all attended the Tribal council meeting when the consultant team briefed the council on the plan update. A final meeting with Tribe representatives included the Tribal asministrator and Deputy administrator. This meeting focused on the updates capabilities chart (201.7(c)(3)(iv) and the attached Tribal addendum. As a result, the Tribe, via their representatives, is considered fully informed on HazMit planning for their reservation, other fee owned lands, and the parish as a whole.

Additionally, non-profits, representatives of the business community, economic development agencies, and consulting engineers were included. (See Attachment c1-1, page 1, for a list noting the makeup of the HMPU Committee.)

During the initial phases of the planning process, the HMPU committee served as the community's link to the planning process. Through the broad range of expertise and the diversity of geographic representation, the task force provided an open and public forum for input, feedback, and plan review. Each municipality and the Chitimacha Tribe of Louisiana contributed to each section of the HMPU. Many of the committee members, especially those representing drainage districts, reported back to their respective boards about the HMPU planning process allowing for even broader public involvement.

4.1.3 How the public was involved

The public was defined as the general citizenry of the Parish and was represented by the broad range of geographic representation and professional knowledge of the HMPU committee. In the case of the Tribe, the public was defined as all citizens of the Chitimacha Tribe. The public was notified of upcoming public committee meetings through a public committee notice published in *The Banner-Tribune* (the Parish's official journal) and *The Daily Review*. The Tribal and Parish council agendas also included notice when HMPU presentations were scheduled.

Undoubtedly, the most important element of the public planning process was the HMPU committee meetings. The three meetings were open to the public and occurred from February 2014 to April 2014. Summaries of the meetings are presented below. A listing of meeting attendees is presented as Attachment c1-2 on pages 2 and 3.

MEETING No. 1—February 12, 2014

The kick-off meeting for the Hazard Mitigation Plan Update was held on February 12, 2014, at the St. Mary Parish courthouse. At this meeting the purpose, need, and expectations of the project were discussed; the framework for how the committee would participate in developing plan updates was described; and committee members were engaged in a question and answer session. A copy of the public notice, sign in sheets, meeting agenda and summary meeting notes, and PowerPoint are presented as Attachments c1-3.1A-D (pages 4-15).

MEETING No. 2—March 6, 2014

The second HMPU Committee meeting was held on March 6, 2014, at the St. Mary Parish courthouse. The purpose of the meeting was to introduce new committee members, review agenda items discussed at the previous committee meeting, examine existing conditions and the threat of hazard events, and develop preliminary mitigation strategies. A copy of the public notice, sign in sheets, meeting agenda, summary meeting notes, and PowerPoint are presented as Attachments c1-3.2A-D (pages 16-34).

March 6, 2014 HMPU Committee Meeting

MEETING No. 3—April 16, 2014

A draft plan review meeting was held on April 16, 2014, at the Parish Courthouse in Franklin, Louisiana. Topics discussed include a past meetings review and the draft plan update. The ad, sign-in sheets, meeting agenda, summary notes, and Power Point presentation are presented in Attachments c1-3.3A-D on pages 35-50.

During Meeting 3, the Hazard Mitigation Plan Update advisory committee discussed the need for a plan that addresses necessary parish and municipal actions in the event of a catastrophic failure of the Old River Control Structure. Discussion delved into the lack of known plans by the Corps, lack of knowledge of a failure of the west levee system, and the ability to mobilize the populace in time for evacuation.

It was agreed that during the next five-year planning cycle (2019), the Parish would meet with the Corps to determine if any such plan exists. The Parish will review and evaluate the plan, if it exists, and incorporate its findings and recommendations into the 2019 HMPU process. If a federally approved plan does not exist, the Parish will petition for participation in preparing a plan for that catastrophic event.

Chitimacha Tribal Leadership Meeting

In addition to committee meetings, the HazMit consultant held several meetings with tribal leadership to review elements of the FEMA *Tribal Multi-Hazard Mitigation Plan Review Crosswalk*. Tribal representatives provided feedback on the HMPU 2014 and ensured that the proposed plan addresses hazard impacts experienced by the Tribe. Details are provident at the end of this plan in the Tribal Addendum.

4.2 §201.6 (c)(2) A risk assessment that provides factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

The St. Mary Parish Hazard Mitigation Plan Risk Assessment is outlined below. Exhibits for this section are included as attachments for this section and are presented on attachment pages 51-132. The section is divided in component parts including **§201.6 (c)(2)(i), §201.6 (c)(2)(ii), §201.6 (c)(2)(ii) (A), §201.6 (c)(2)(ii)(B), and §201.6 (c)(2)(ii)(C).**

The risk assessment includes the following:

4.2.1 §201.6 (c)(2)(ii) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on precious occurrences of hazard events and on the probability of future hazards events.

A vast amount of readily available statistical and mapped data was used to define each of the hazard events presented in this section. Of significant importance are the flood level indications provided by federal sources. This information served as the baseline data used in defining and mapping vulnerable areas identified in Section §201.6 (c)(2)(ii).

IDENTIFY HAZARDS

A full range of potential hazards was extensively researched and assessed from sources such as historical newspaper accounts, internet websites, government officials, current DFIRMS, NOAA data, members of the St. Mary Parish HMPU Committee, USACE Gage Data, and USGS Gage Data. The table to follow summarizes the NOAA recorded events, property and crop damage estimates, average events per year, and damage per event. A copy of NOAA damage estimates is provided on the following page. Base reference maps used in most of the hazard analyses are presented as attachments c2-1, c2-2, and c2-3 on pages 51-53.

	NOAA RECORDED EVENTS												
Event Type*	Number of Events 1957 - 2007	Property Damage 1957 - 2007	Crop Damage 1957 - 2007	Number of Events 2008 - 2013	Property Damage 2008 - 2013	Crop Damage 2008 - 2013	Total No. of Events 1957 - 2013	Property Damage 1957 - 2013	Crop Damage 1957 - 2013	Total Damage 1957 - 2013	Average Events/Yr.	Annual Probability	Damage/Event
Flood	16	$ 710,000		11	$ 648,000		27	$ 1,358,000		$ 1,358,000	0.5	48.21%	$ 50,296
Coastal Flood	1	$ 50,000	$ -	0	$ -	$ -	1	$ 50,000	$ -	$ 50,000	0.0	1.79%	$ 50,000
Flood	7	$ 365,000	$ -	1	$ 5,000	$ -	8	$ 370,000	$ -	$ 370,000	0.1	14.3%	$ 46,250
Flash Flood	3	$ 255,000	$ -	6	$ 628,000	$ -	9	$ 883,000	$ -	$ 883,000	0.2	16.1%	$ 98,111
Urban/Small Stream Flood	4	$ 40,000	$ -	0	$ -	$ -	4	$ 40,000	$ -	$ 40,000	0.1	7.1%	$ 10,000
Storm Surge	1	$ -	$ -	0	$ -	$ -	1	$ -	$ -	$ -	0.0	1.8%	$ -
Heavy Rain	0	$ -	$ -	4	$ 15,000	$ -	4	$ 15,000	$ -	$ 15,000	0.1	7.1%	$ 3,750
Cold/Freeze	1		$ 50,000,000	0	$ -	$ -	1	$ -	$ 50,000,000	$ 50,000,000	0.0	1.8%	$ 50,000,000
Wind	75	$ 10,461,000	$ -	16	$ 850,000		91	$ 11,311,000	$ -	$ 11,311,000	1.6	162.5%	$ 124,297
High Wind	2	$ 575,000	$ -	0	$ -	$ -	2	$ 575,000	$ -	$ 575,000	0.0	3.6%	$ 287,500
Thunderstorm Wind	57	$ 6,850,000	$ -	13	$ 748,000	$ -	70	$ 7,598,000	$ -	$ 7,598,000	1.3	125.0%	$ 108,543
Tornado	16	$ 3,036,000	$ -	3	$ 102,000	$ -	19	$ 3,138,000	$ -	$ 3,138,000	0.3	33.9%	$ 165,157.9
Excessive Heat	2	$ -		0	$ -	$ -	2	$ -	$ -	$ -	0.0	3.6%	$ -
Drought	3	$ -	$ 169,600,000	0	$ -	$ -	3	$ -	$ 169,600,000	$ 169,600,000	0.1	5.4%	$ 56,533,333
Hail	21	$ 100,000	$ -	13	$ 100,000	$ -	34	$ 200,000	$ -	$ 200,000	0.6	60.7%	$ 5,882
Hurricane/Tropical Storm	8	$ 4,389,132,000	$ 171,700,000	0	$ -	$ -	8	$ 4,389,132,000	$ 171,700,000	$ 4,560,832,000	0.1	14.3%	$ 570,104,000
Lightning	7	$ 320,000	$ -	4	$ 82,000	$ -	11	$ 402,000	$ -	$ 402,000	0.2	19.6%	$ 36,545
TOTALS	133	$ 4,400,723,000	$ 391,300,000	44	$ 1,680,000	$ -	177	$ 4,402,403,000	$ 391,300,000	$ 4,793,703,000	3.2	316.1%	$ 676,854,354
Event type as per 2009 Plan, c2-10; "heavy rain" new to NOAA report; included in Flood category													$ 677,449,073

Note (1): Damages are reported for the entire affected area and are not necessarily limited to St. Mary Parish

During the hazard mitigation kick-off meeting held on February 12, 2014, committee members reviewed hazards covered in the 2009 Hazard Mitigation Plan Update. The group then reached consensus on the most prevalent hazards in the community. A summary is presented below. More detail pertinent to the Chitimacha is included in the Tribal Addendum included as the last section of this update.

Avalanche Not applicable

There are no recorded avalanche events occurring in the parish.

Coastal Erosion

A significant area of the parish coastline is subject to erosion. The condition is serious enough to be considered prevalent and is considered a significant hazard in the parish. The probability of continued deterioration along this reach of the shoreline is high though minor when compared to land loss in other neighboring parishes. From the Tribe's perspective, coastal eriosion also threatens bodily remains and artifacts.

Coastal (Tropical) Storm

During the planning session, "coastal storm" was regarded as similar to hurricanes and therefore considered redundant. Both are prevalent hazards with similar impacts. For purposes of this report, both are considered regarding storm water and surge events with hurricanes being the more serious of the two.

Based upon historical events, coastal storms, referred to locally as tropical storms or tropical depressions, are often the cause of heavy rainfall events with less wind than hurricanes. The heaviest rainfalls in recent history resulted from tropical depressions. Tropical Storm Allison is a recent example. To the contrary, while hurricanes often contribute heavy rain (Hurricane Juan for example), it is the sustained wind damage that has caused the most damage to the region such as that which occurred with Hurricane Andrew. For these reasons, tropical storm data was incorporated into the planning process in combined analysis with historical hurricane evaluations.

Dam Failure Not Applicable

No dams exist within St. Mary Parish.

Drought Not Applicable

Drought is not a concern in St. Mary Parish as depicted in the NOAA table above. Only three recorded events were noted in the last 50 years, and no anticipated drought related mitigation issues were noted in St. Mary Parish.

Earthquake Not applicable

No recorded earthquake events occurred in the last 500 years in the parish and none are expected.

Expansive Soils Not applicable

Many of the soils of the parish have a high plasticity index. Also, urbanized areas in the eastern portion of the parish were developed on soils that were wetland areas before the development of human habitation as we know it today. As a result, many areas are constructed on fill areas. As such, shrink-swell potential of the soils is significant. In some areas, a high percentage of residential building slabs in many neighborhoods have been lifted and/or leveled. Even so, the HMPU committee felt that the soils issue in the parish is not of a magnitude to be addressed as a prevalent hazard for purposes of this plan.

Extreme Heat Not applicable

Although two recorded excessive heat events were recorded in the last 50 years, the HMPU committee felt that the hazard is not of a magnitude to be addressed as a prevalent hazard for the purposes of this plan.

Flood

Flooding concerns are addressed as the major hazard issue in the parish, and, as such, are detailed throughout this HMPU. Additionally, with high river stages and as a result of storm surge, flooding occurs in areas far removed from the source of the primary event. Locally, the term “backwater flooding” identifies this phenomenon. The issue is of such concern that the committee chose to include the feature with the overall function of flooding in addition to riverine, stormwater, and storm surge.

Hail Storm Not applicable

The committee concurred that hailstorms will not be of further consideration for the purposes of this plan because the damages incurred per event and frequency are not significant.

Hurricane

Hurricane hazards are a primary concern regarding flooding from both stormwater and storm surge. Wind damage from hurricanes is also of major concern. Stormwater issues and surge issues are also addressed as flood concerns.

Land Subsidence Not applicable

Though land subsidence is critical along the coast east of the Atchafalaya River, it is not considered significant in St. Mary Parish. The probability of significant subsidence in the parish is minimal, and the magnitude of the problem at this time is considered not critical for purposes of this planning effort.

Landslide Not applicable

No recorded landslide events have occurred in St. Mary Parish and will not be of further consideration for the purposes of this HMPU.

Levee Failure

Levee failure was discussed as a highly significant hazard even though no failures have occurred in the area. Should a levee fail during a high water event such as the Atchafalaya River flood of 1973, catastrophic losses would occur. The probability of levee failure is considered remote but only because of the diligence of parish and federal agencies and their routine inspection and maintenance. Nonetheless, the HMPU Committee considers this a serious threat. A map of levees and pump stations as well as drainage districts is displayed in Attachment c2-4 (page 54) at the end of this section.

Severe Winter Storm Not applicable

Because severe winter storms occur so infrequently in the coastal area, impacts were considered neither prevalent nor applicable to this planning effort. Because of the harsh winter of 2014-2015, the committee seriously considered adding “Severe Winter Storms” as a major hazard. However, after extensive analysis, it was determined that one record winter across much of the United States does not justify as a “prevalent” hazard event.

Tornado

Tornadoes are a function of high winds, and mitigation steps to reduce damages are being incorporated into the HMPU. As the entire parish is vulnerable to tornado damage, the hazard will be profiled for the purposes of this planning effort.

Tsunami Not applicable

Tsunami events have never been noted in St. Mary Parish and will not be of further consideration for the purposes of this HMPU.

Volcano Not applicable

Volcanoes do not exist in St. Mary Parish and will not be of further consideration for the purposes of this HMPU.

Wildfire Not applicable

Wildfire events of significance have not been recorded in St. Mary Parish and will not be of further consideration for the purposes of this HMPU.

PREVALENT HAZARDS TO THE COMMUNITY

Although many of the hazards in the previous section occur in the parish, it was determined to focus attention and resources on the most prevalent hazards which include the following:

(a) Coastal Erosion
(b) Coastal (Tropical) Storms
(c) Levee failure
(d) Flooding
(e) Hurricanes
(f) Tornadoes

This list was compiled by HMPU committee members in meeting No. 1 and was also included in the former Hazard Mitigation Plan Update (2009). For analysis purposes, the impacts of the critical and prevalent hazards are summarized as follows:

- Coastal erosion resulting from storm surge and wave action
- Wind damage resulting from hurricanes, tropical storms, and tornadoes
- Flooding from riverine sources, stormwater, tropical storms, and hurricanes in the following forms:
  a. riverine (primarily high water related to the Atchafalaya River and the Lake Verret watersheds)
  b. stormwater (rainfall)
  c. surge
  d. back water flooding (as the result of river flooding and surge)
- Levee failure resulting from extreme flood events

Because of the proximity of the parish along the Gulf Coast, the region is highly prone to hurricanes and tropical storms. The parish has a history of wind damage linked to hurricanes and tornadoes. Twelve major hurricane events traced back to 1906 and sixteen tornados since 1961 have caused great damage to the parish. With Hurricane Andrew in 1992, for example, wind damage was the cause of virtually all hurricane induced destruction. Major flood damage was the result of ten of the hurricanes. As such, hurricanes and the resultant wind and flooding damage were designated as a significant hazard to the community. More detailed examples of hurricane flood damage are noted in Attachments c2-10 through c2-18 (pages 69-77). Detailed examples of tornado wind damage are listed in this section.

The issue of flooding was discussed in detail and committee members determined that it is the most prevalent and the most frequent hazard to the parish. Three presidential flood declarations to date validate this hazard. The committee members felt that the issue of flooding should be the main focus during the mitigation planning process. They also determined that it should be listed in the four sub-categories noted above, i.e., riverine, backwater, storm water, and storm surge. By separating the types of flooding into these four categories, the Parish was able to identify specific portions of the parish prone to each type of flooding or hazard event. This approach proved valid in defining both the varying causes of flooding hazards and in determining vulnerability.

4.2.2 §201.6 (c)(2)(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

A general description of specific events and their overall impact to the community is addressed in the following section. A detailed analysis of buildings, infrastructure, values, etc. follows in later sections (c)(2)(ii)(A and B).

HAZARD VULNERABILITY (See Tribal Addendum for more Tribal detail)
A PROFILE of HAZARD EVENTS and HAZARD IMPACTS

As discussed in section §201.6 (c)(2)(i) above, flooding, coastal erosion, levee failure, hurricane/tropical storms, and tornadoes were identified as the prevalent hazards to St. Mary Parish. A wind map is presented as Attachment c2-19 (attachment page 78). Each of the most significant hazard events was profiled and mapped. A base map was created with linked data (ArcView 9.2) collected from USGS topographic maps, digital orthophoto quarter quads, aerial photography, and state maps. An abstract of the base map is displayed in Attachment c2-1.

Flood data was collected from DFIRMs which were obtained from the internet via the FEMA Map Service Center at *www.fema.gov*. The flood map is displayed in Attachment c2-5, p.55. Hurricane data was collected from historical newspaper documents, Louisiana State University Library archives, internet research with particular focus on USGS and Corps of Engineers monitoring sites, and local historical data.

4.2.2.1 FLOODING

Storm water

Storm water excesses caused by large amounts of rainfall in a short period of time occur frequently in this coastal parish. Generally, the most damaging events are related to tropical storms and hurricanes. Primarily low lying areas of the parish suffered damage from recent past events including Hurricane Juan in 1985 and Tropical Storm Allison in 2001. Most of the problems associated with stormwater events occur in the Franklin area (west end of parish), and in the Amelia area (easternmost area of the parish).

Storm surge

Storm surge caused by winds of hurricanes and tropical storms cause inundation of coastal floodplains and through coastal river and drainage systems. In the case of storm surge, southerly winds and high tides rise over and through bayous, drainage canals, and marshlands. Low lying coastal areas of St. Mary Parish are vulnerable to this type of flooding due to its predominate marshland coast and its proximity to the Gulf of Mexico. This type of event occurred during Hurricanes Audrey, Lili, Rita, and Ike. Audrey's storm surge, as well as that of Rita and Ike, came up slowly and fell slowly over several days while the surge with Hurricane Lili was very rapid. The primary difference was that the faster moving surge created not only flood damage but also damage associated with the velocity of the rising water. Though Hurricane Audrey occurred nearly a half-century ago, it remains the highest and most critical measure of storm surge in the parish even though landfall was in Cameron Parish approximately 150 miles away.

Surge affects urban structures and cropland along the lower extremes of the Bayou Cypremort and Bayou Sale ridges nearest the coast and in Franklin where surge flows north into normally south flowing drainage conduits including the Franklin and Charenton Drainage Canals. Surge inundation depths of 6-8' have been recorded. Structures have been destroyed and levees topped damaging sugar cane acreage. Surge has caused the closure of U. S. Highway 90 (Future I-49) in western St. Mary Parish following Hurricanes Rita and Ike.

Backwater flooding

Backwater flooding is normally associated with riverine flooding (Atchafalaya River or Wax Lake Outlet) and is generally indicative of a lack of velocity. Low lying areas, particularly those outside of protection levees, are at risk. Riverine based backwater flooding typically occurs during the spring when the Atchafalaya River is at its highest level. Also, a heavy rainfall event within the Lake Verret watershed portion of the Terrebonne Basin coupled with the swollen river and marsh as well as sustained southerly winds hinders drainage outflow causing backwater flooding to the same areas susceptible to storm surge. This phenomenon generally results in the flooding of eastern areas of the parish with a focus on the Amelia vicinity. A similar flood of this type inundated the entire Amelia area in 1975. Because of its location along Bayou Beouf and lack of levee protection, Amelia is also highly susceptible to backwater flooding when combined with stormwater events in the Lake Verrett watershed. Historically, flooding is generally wide spread but shallow in these areas. No repetitive losses have been recorded, but tremendous expense in sand bagging, additional pumping, and other major "inconveniences" to individual property owners are noted.

Riverine

Riverine flooding, by definition, is river based. In the case of St. Mary Parish, it is the Atchafalaya River that generates the greatest flooding concern. The

modern-day record is the flood of 1973. The flood of 1973 inundated most of the parish lying lower than the higher reaches of the Teche Ridge and not protected by levees, especially along and east of the Bayou Sale Ridge. This flood caused a federally constructed temporary seawall height extension in Morgan City during the flood. A series of federally funded levee heightening and strengthening and the construction of a new seawall to protect Morgan City and Berwick resulted. The map of the flood of 1973 presented in Attachment c2-10 (page 69) at the end of this section depicts the vast impact of river-based flooding in the parish. The Mississippi River flood of 2011 raised the level of the Atachalya River to 11NGVD88. However, according to personal accounts and numerous Federal gages, projected back water levels failed to materialize before or after the installation of a temporary dam placed in Bayou Chene.

4.2.2.2 HURRICANE and TROPICAL STORM CRITICAL EVENTS

Numerous hurricanes and tropical storms have impacted the study area and have the potential to impact the entire parish on a yearly basis. A table summarizing these instances is noted in this section. Information includes dates, names, impact to the area, and dollar damage estimates. The most extreme examples of these hazard events to impact St. Mary Parish are presented in text following the table beginning in 1957 with Hurricane Audrey.

While much of the hazard impact of hurricanes is focused on flooding issues, wind is as much a concern to residents and property owners. While wind was not listed as a hazard in the how-to guide *per se*, it is a major impact of hurricane damage and is therefore addressed as a hazard impact.

St. Mary Parish Presidentially Declared Storm Events (1906-Present)

Year	Storm Name	Impact	Damage ($ Billions) (1)
1906	Hurricane (LA and MS)	Destructive winds and tides	2
1915	Hurricane (LA)	Flooding, high water, and strong winds	2.5
1957	Hurricane Audrey	Storm surge, backwater, tornadoes, high winds	4
1964	Hurricane Hilda	Winds, tornados	2.5
1965	Hurricane Betsy (Grand Isle)	Flooding, winds, and high tides	21
1969	Hurricane Camille (MS, FL)	Flooding, maximum winds	22
1973	River Flood of 1973	Riverine and back-water flooding	n/a
1983	Heavy Rain Event	Heavy rains	n/a
1985	Hurricane Juan	Heavy rains	4
1991	Heavy Rain Event	Heavy rains	n/a
1992	Hurricane Andrew	Heavy rains, tornados	55
1998	Hurricane Georges (LA, MS, AL)	Flooding, high winds, tornados	3.7
2001	Tropical Storm Allison	Heavy rains, tornados	6.5
2002	Tropical Storm Isadore	Heavy rains	0.4
2002	Hurricane Lili	Heavy rains	11
2005	Hurricane Katrina	Heavy rains, high winds	81
2005	Hurricane Rita	Heavy rains, high winds	10
2008	Hurricane Ike	Heavy rains, high winds	20
2008	Hurricane Gustav	Heavy rains, high winds	
2012	Hurricane Isaac	Heavy rains, high winds	1

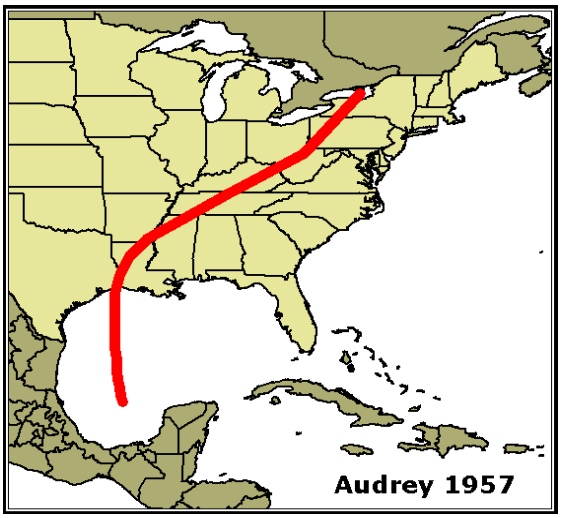
Note (1) Loss estimates for all affected areas 1906-2005, estimates in 2000 dollars
Source: Normalized Hurricane Damage in the United States: 1900-2005, R. Pielke, et al., FEMA Disaster Declarations, Louisiana Economic Development Department

The **Saffir-Simpson Hurricane Scale** is a classification used for Western Hemisphere tropical cyclones that exceed the intensities of tropical depressions and tropical storms. Hurricanes are divided into five categories distinguished by the intensities of their sustained winds. To be classified as a hurricane, a tropical cyclone must have maximum sustained winds of at least 74 mph (33 m/s; 64 kt; 119 km/h). The highest classification in the scale, Category 5, is reserved for storms with winds exceeding 155 mph (69 m/s; 136 kt; 249 km/h). Wind speed is the determining factor in the scale because storm surge values are highly dependent on the slope of the continental shelf and the shape of the coastline in the landfall region. All winds are using the U.S. 1-minute average.

Saffir–Simpson hurricane wind scale

Category	Wind speeds
Five	≥70 m/s, ≥137 knots ≥157 mph, ≥252 km/h
Four	58–70 m/s, 113–136 knots 130–156 mph, 209–251 km/h
Three	50–58 m/s, 96–112 knots 111–129 mph, 178–208 km/h
Two	43–49 m/s, 83–95 knots 96–110 mph, 154–177 km/h
One	33–42 m/s, 64–82 knots 74–95 mph, 119–153 km/h
Additional classifications	
Tropical storm	18–32 m/s, 35–63 knots 39–73 mph, 63–118 km/h
Tropical depression	<17 m/s, <34 knots < 38 mph, <62 km/h

Classifications measure the potential damage and flooding a hurricane will cause upon landfall. The Saffir-Simpson Hurricane Scale is used solely to describe hurricanes forming in the Atlantic Ocean and northern Pacific Ocean east of the International Date Line. Other areas use different classification scales to label these storms, which are called "cyclones" or "typhoons", depending on the area. The planning area (St. Mary Parish unincorporated as well as all of the municipalities) is vulnerable to all categories of hurricanes (1-5) due to its location on the coast. The most significant historical storms are described in the narratives below.



Hurricane Audrey (1957)

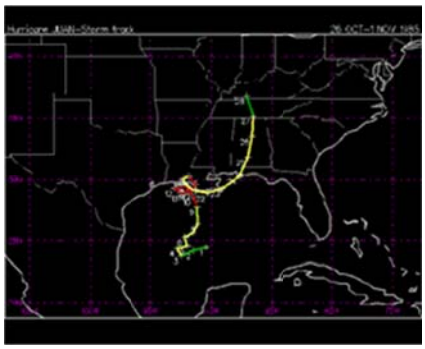
Hurricane Audrey made landfall near Cameron, Louisiana, on June 27, 1957. Although the storm made landfall far to the west of St. Mary Parish, it was responsible for the most significant storm surge, six to eight feet up to 25 miles inland, that the parish had recorded until Hurricane Lili in 2002. The water rose slowly over the entire coastal plain of the parish cresting with a reading of 8.9 on the gage in Morgan City. Until the historic flood of 1973, the reading stood as the record height of the Atchafalaya River in Morgan City. Even though its surge nearly topped the seawall in Morgan City, lands within the levee system were spared of significant damage. Overall, the storm caused 390 deaths, mostly resulting from the storm surge.

The Bayou Sale Ridge and urban areas near the intersection of the Yokley Canal and Franklin Canal were not so fortunate. The Bayou Sale Ridge was completely inundated, severely damaging structures and agricultural land in the area. Crops in the area were lost as well. The area of Franklin near the Yokley Canal and Franklin Canal was inundated by surge. Flood waters came up the Franklin Canal and washed into low lying areas to the north and south. A map of the flood impact area of Hurricane Audrey is shown in Exhibit c2-12 (page 96) at the end of this section. Unfortunately, this type of damage would once again be seen and magnified in Hurricane Lili which occurred in the beginning of October 2002.

Hurricane Juan (1985) and Tropical Storm Allison (2001)

Hurricane Juan and Tropical Storm Allison were very similar coastal storm events. Both storms consisted mainly of large amounts of rainfall dropped over a short period of time. Juan struck the Louisiana coast in the vicinity of Morgan City on October 29, 1985, as a Category 1 hurricane. The storm moved slowly along an erratic track allowing several passes over coastal Louisiana before moving eastward. Rainfall totals for southern Louisiana ranged from 10 to 15 inches accounting for the extreme amount of flooding within the levee systems.

Hurricane Juan



Tropical Storm Allison did not differ much in the resulting damage. Allison made landfall near Freeport, Texas, and slowly drifted to the east leaving a severely drenched Texas and Louisiana in its path. Areas of southern Louisiana received as much as 20" of rain over three days. Allison will be remembered as the costliest tropical storm in U.S. history with 41 deaths and a $6.5 billion price tag associated with the damage. A map of inundation for Tropical Storm Allison and Hurricane Juan illustrates the areas most vulnerable to flash flooding during heavy rainfall events. A map of Hurricane Juan is shown in Attachment c2-12 (page 71) at the end of this section. It is noteworthy that much of the impact is within areas protected by levees.

Tropical Storm Allison

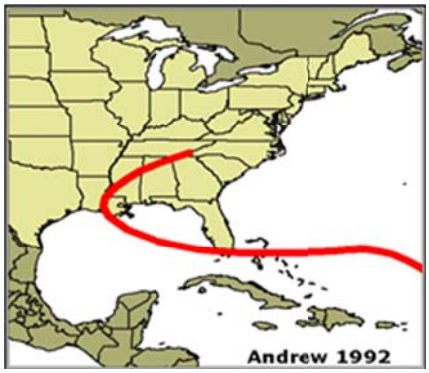
Tropical Storm Allison Flooding

Tropical Storm Allison Flooding

Hurricane Andrew (1992)

Hurricane Andrew came ashore August 26, 1992, as a Category 3 storm on a track that would guide it up the Atchafalaya River system. Damage caused by the storm was catastrophic with few structures in the parish spared of the storm's relentless winds. Storm surge was minimal, though, as the storm followed the coast westward before turning north. The fetch was minimal in that regard unlike Hurricane Audrey which came from the south. Recorded rainfall totaled 9.31" in Morgan City. While this amount of water produced localized flooding, the wind remained the primary damaging factor. Pre-Katrina, Andrew was most often referred to as the most expensive storm in U. S. history with damage totals nearing $55 billion. The coastal geography of the area only added to the potential for wind damage.

Hurricane Andrew



Hurricane Andrew

Hurricane Lili (2002)

Hurricane Lili made landfall in October 2002 near Intracoastal City as a Category 1 storm; however, the designation of the storm is not truly representative of the storm itself. Just prior to making landfall, the storm had a maximum designation of a Category 4, causing all oil production in the central area of the Gulf of Mexico to cease operations. As the storm came ashore, it brought along the most severe storm surge seen in St. Mary Parish since Hurricane Audrey in 1957. The storm surge inundated much of the same areas of the parish as did Audrey with the exception of Amelia. The damage was centered in the western and central portions of the parish which were nearest to the eye and subjected to prolonged south winds. The area of inundation covered the western extent of the parish eastward to the Atchafalaya River. Elevation data collected relative

to H. Lili is noted in the following table. This data and similar data for all extreme hazards and formed the basis of the hazard vulnerability mapping task presented in Section §201.6 (c)(2)(ii).

LILI ELEVATION DATA

Code	X - Nad 27	Y - Nad 27	Lat	Long	High Water Elev	Ground Elev	Diff. (Inund)
STM 104	1943999	353802.96	29 38 22.9	91 30 35.01	7.8	5.44	2.36
STM 105	1935272	349486.77	29 37 40.02	91 32 13.82	10.02	5.5	4.52
STM 106	1934891	345347.86	29 36 59.05	91 32 18.05			0
STM 107	1934503	343119.62	29 36 36.97	91 32 22.41	11.27	4.7	6.57
STM 108	1938535	352468.93	29 38 09.6	91 31 36.9	9.15	5.2	3.95
STM 109	1941924	352987.46	29 38 14.79	91 30 58.51	7.97	5.25	2.72
STM 111	N/A	N/A	N/A	N/A	N/A	N/A	N/A
STM 112	1853732	397467.33	29 45 32.68	91 47 39.93	9.49	4.37	5.12
STM 113	1851340	395430.14	29 45 12.42	91 48 06.98	8.99	2.4	6.59
STM 114	1847143	393166.36	29 44 49.83	91 48 54.48	9.3	3.64	5.66
STM 115	1842465	389672.98	29 44 15.05	91 49 47.38	8.8	3.21	5.59
STM 116	1839485	387719.56	29 43 55.59	91 50 21.09	10.33	4.22	6.11
STM 117	1936344	340980.24	29 36 15.83	91 32 01.51	10.55	4.86	5.69
STM 118	1938860	324562.53	29 33 33.34	91 31 32.69	10.65	3.46	7.19
STM 301	1865047	403553	29 46 33.36	91 45 31.81	8.37	4.78	3.59
STM 302	1827312	381706.51	29 42 55.51	91 52 38.83	8.12	4.58	3.54
STM 303	1829838	383064.42	29 43 09.07	91 52 10.26	9.09	3.08	6.01
STM 304	1832502	383835.86	29 43 16.83	91 51 40.08	8.65	3.17	5.48
STM 307	1907272	425193.88	29 50 08.90	91 37 33.28	3.56	2.88	0.68
STM 308	1906176	425182.54	29 50 08.76	91 37 45.72	3.39	3.1	0.29
STM 309	N/A	N/A	N/A	N/A	N/A	N/A	N/A
STM 310	1873304	406098.53	29 46 58.83	91 43 58.21	9.16	9.16	0

The areas most affected were again the Cypremort and Bayou Sale Ridges and coastal marsh and swamp areas in between. The Cypremort Ridge was completely inundated. The velocity of the storm surge in combination with the winds destroyed many structures while moving some homes several hundred yards from their foundations. The duration of the storm surge was brief with most of the damage caused by velocity and wave action. Compared to Audrey, this storm caused the second largest surge damage in the past 50 years. The Bayou Sale Ridge received extreme damage even though it is enclosed by a levee system. This levee system, with an approximate height of 10'MSL, was topped by Lili's storm surge. The area within the levee system effectively became a bowl which trapped seawater over sugarcane fields. The amount of water trapped in this area far surpassed pumping capacity. To allow runoff, levees were broken.

The Franklin Canal along with other bayous and canals leading north from the Gulf provided surge access to populated areas in the northern reaches of the parish. The area of Franklin near the Yokley and Franklin Canals was again hit the hardest. The storm surge overflowed from the Franklin Canal flooding low lying areas nearby. The Yokley pump station was unsuccessful in removing the water because of the high water levels in the discharge canal thereby effectively circulating water. The extent of the storm surge is displayed in Attachment c2-13 (page 72) at the end of this section. Hurricane Lili is also

responsible for most of the recent erosion seen in the marsh located in the western and central parts of St. Mary's coast. The storm was responsible for severely damaging large areas of the marsh.

Storm surge in the Cypremort Point area

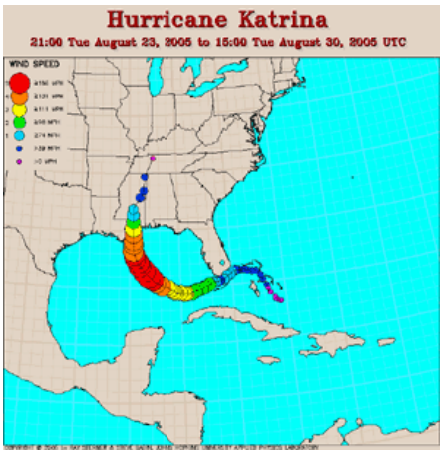
A major highway and throughfare after Lili

Dislocated marsh wildlife (moccasin) swept offshore resting on oilfield structure

Water spouts offshore

Hurricane Katrina (2005)

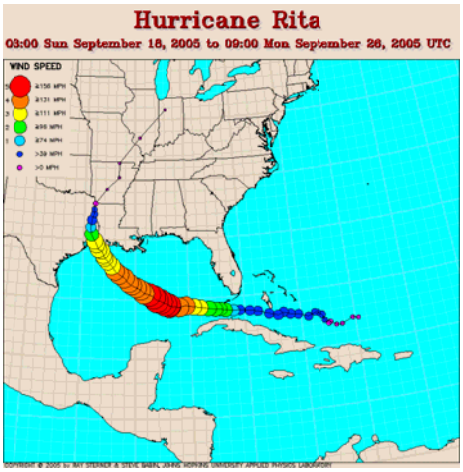
After crossing southern Florida, Hurricane Katrina made landfall for the second time at Grand Isle, Louisiana, on August 29, 2005, with winds speeds at 125 mph as a Category 4. As the following picture shows, Katrina was on a track along the southeastern Louisiana-Mississippi border. Flood damage in St. Mary Parish was minimal. According to the U.S. Department of Housing and Urban Development, 63% of homes in Louisiana were damaged or destroyed by wind. Hurricane Katrina was the most damaging natural disaster in U.S. history with approximately $81 billion dollars worth of damage.



Source: NCDC, 2006

Hurricane Rita (2005)

Hurricane Rita made landfall on September 24, 2005, in Cameron Parish, Louisiana, as a Category 3 storm with sustained winds of 120 mph. As graphically depicted in the following image, Rita followed a path along the western Louisiana-Texas border. St. Mary Parish experienced 5-10 feet of storm surge that inundated the western end of the parish and flooded U.S. Hwy. 90. Most of the damaged structures were along and south of U.S. Hwy. 90, especially near Cypremort Point, Burns Point, and Franklin. The Rita inundation map is presented as Attachment c2-14 (page 73). Hurricane Rita caused $10 billion in damage. Few deaths or injuries were reported. Rita had much more of an effect on St. Mary Parish than did Hurricane Katrina.



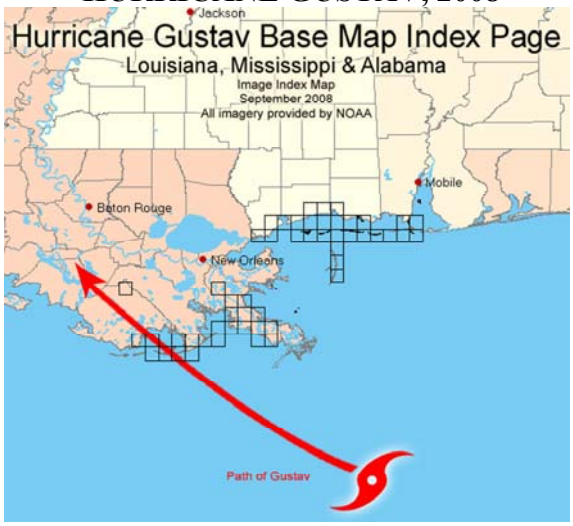
Source: NCDC, 2006

Hurricanes Gustav (Sept. 1) and Ike (Sept. 12-13), 2008

Hurricane Gustav is known as one of the most devastating hurricanes of 2008, causing physical damage and fatalities in multiple countries including Jamaica, the Cayman Islands, Cuba, Haiti, the Dominican Republic, and the United States (namely Louisiana).

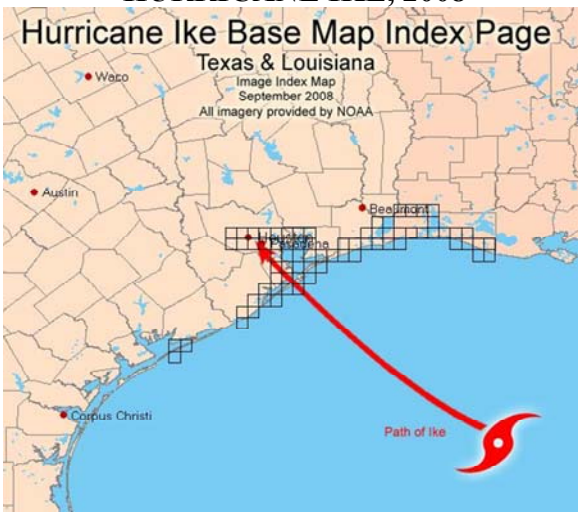
Hurricane Gustav was the first storm in Louisiana's history to necessitate a mandatory evacuation of residents within all at-risk coastal parishes.[1] Over two million people were evacuated from the region.

HURRICANE GUSTAV, 2008



Source: noaa.gov

HURRICANE IKE, 2008



Source: noaa.gov

The hurricane entered the Gulf of Mexico and made its final landfall on September 1, 2008, as a Category 2 hurricane in Cocodrie, Louisiana, a shrimping and crabbing village located in Terrebonne Parish south of Houma. The storm produced maximum sustained winds of 104 miles per hour and inundated the southernmost portion of the parish from the Lower Atchafalaya River to just east of State Route 317 (see attachment c2-15).

Another hurricane impacted Louisiana approximately two weeks after Hurricane Gustav. Though Hurricane Ike made landfall in Galveston Island, Texas, on September 12 and 13, 2008, Category 2 winds from Hurricane Ike produced surges in coastal Louisiana that ranged between three feet and six feet in height in areas east of Grand Isle. Storm surge heights increased west of Grand Isle, reaching a maximum of 10 feet at some locations. These storm surges caused widespread levee overtopping and flooding in St. Mary Parish as observed in Attachment c2-16. Highway 90 (Future I-49) was submerged in flood waters causing restrictions in vehicular traffic flow.

The Louisiana Economic Development Department estimates that Hurricanes Gustav and Ike caused 51 deaths and between $8 and $20 billion in physical damage across the state.

In 2008, St. Mary Parish was awarded over $24 million in grants by the State of Louisiana for hurricane recovery, hazard mitigation, and infrastructure improvements.[2]

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[1] State of Louisiana Governor's Office of Homeland Security and Emergency Preparedness. State of Louisiana After-Action Report and Improvement Plan: Hurricanes Gustav and Ike.

[2] http://gov.louisiana.gov/index.cfm?md=newsroom&tmp=detail&articleID=1634

The Mississippi River Flood of 2011 (April – May)

The combination of springtime snowmelt and rainfall resulting from multiple major storm systems between April 23 and May 2 made 2011 a record-setting year for flooding in the central United States.[3] For the Mississippi River, this caused the most intense river flooding recorded within the past century. The National Oceanic and Atmospheric Administration estimates that economic losses related to the flooding ranged from three to $4 billion.

LAKE PONTCHARTRAIN NEAR BONNET CARRE SPILLWAY, 2011

Source: nola.com

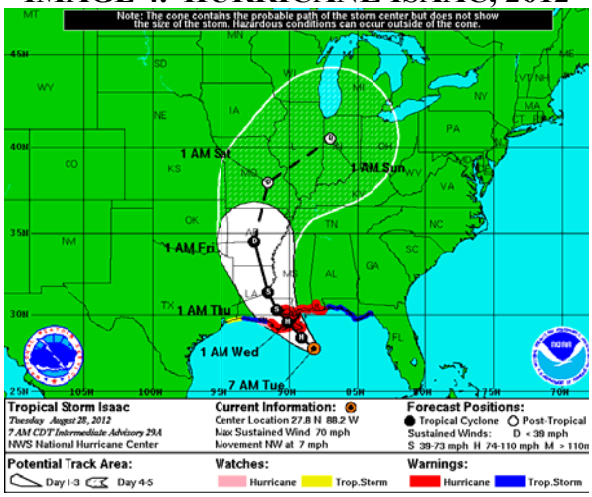
The picture above shows water being diverted from the Mississippi River to Lake Pontchartrain on May 10, 2011 via the Bonne Carre Spillway. Water from the Mississippi River was also diverted to the Atchafalaya River, which resulted in its cresting on May 30, 2011. Businesses that were located beyond the river's concrete floodwall in St. Mary Parish were submerged in flood waters. Attachment c2-17 shows the breadth of flooding in the parish.

[3] http://www.srh.noaa.gov/jan/?n=2011_05_ms_river_flood

Hurricane Isaac Aug. 29, 2012

Hurricane Isaac was a Category 1 hurricane that made landfall in Plaquemines Parish on August 29, 2012.[4] The hurricane generated maximum sustained winds of 80 miles per hour but weakened to a tropical storm and then a tropical depression as it progressed over southeastern Louisiana. Approximately one billion dollars in damage was caused by the hurricane (see Attachment c2-18). Little damage occurred in St. Mary Parish.

IMAGE 4. HURRICANE ISAAC, 2012



Source: noaa.gov

4.2.2.3 COASTAL EROSION

Coastal erosion is a widespread challenge in coastal Louisiana. Fortunately, the rate of coastal and marsh erosion in St. Mary Parish is not comparable to the rates seen east of the Atchafalaya River, an area which is eroding rapidly. The main factor in the lower rate of land loss is the sediment laden waters of the Atchafalaya River which enters the bays of the Gulf of Mexico south of Morgan City and continue to deposit sediments building new land. The Atchafalaya River and associated Wax Lake Outlet are both building deltas as they near the Gulf. Additionally, the finer silts in the river's flow tend to migrate westward.

Nonetheless, specific areas to the west of the Wax Lake Outlet are prone to erosion. One reach in particular is the eastern most bank of East Cote Blanche Bay. According to Parish personnel, the area begins at Point Chevreuil extending northward to approximately the latitude of Ellerslie near the mouth of Yellow Bayou. Parish personnel indicate that the erosion is the result of wave action.

Another area of concern regarding coastal erosion is the area nears the Jaws (Jaws of Little Bay in the northeast corner of West Cote Blanche Bay). The Charenton Drainage

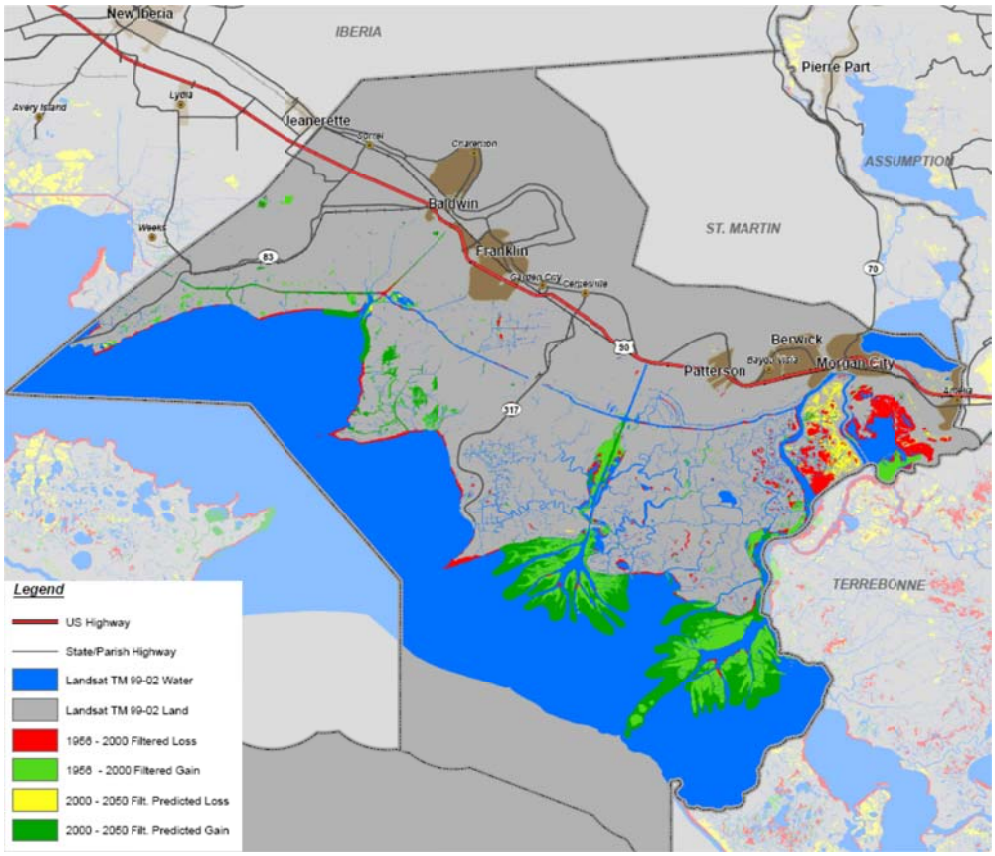
[4] http://www.doa.louisiana.gov/cdbg/DR/Isaac/Isaac_Background.htm

Canal intersects the Gulf Intracoastal Waterway near the Jaws. Funding for a protection project known as the Jaws Sedimentation Trap has been approved and should begin within the next two years.

Evidence obtained from parish data indicates that wave action is also the primary detriment to the shoreline in this area. According to one study, rates of erosion have been estimated at more than 40 linear feet per year in the most erosion-prone areas (St. Mary Land and Exploration with Submar, Inc., Coastal Engineering, and Environmental Consultants, Inc. as provided by the St. Mary Parish government). This study also indicates that wave action causing the most damage is related to coastal storms and hurricanes such as Hurricane Lili which struck this area of the coast in 2002.

However, land loss resulting from normal wave action is also of concern. The following map depicts the unincorporated coastline and area immediately south of Morgan City's limits as most at risk for coastal erosion. While these areas are considered susceptible to erosion, compared to coastal areas east of St. Mary, the susceptibility is relatively minor. As there are no structures/infrastructure located in the erosion risk zones, loss estimates for coastal erosion are not able to be completed for the purposes of this plan. The most devastating impact of coastal erosion is the deterioration in the mappel red areas of the coastline and marsh depicted on the following map. As shoreline land decreases, the storm surge is able to reach more northern areas of the parish, resulting in additional hurricane losses.

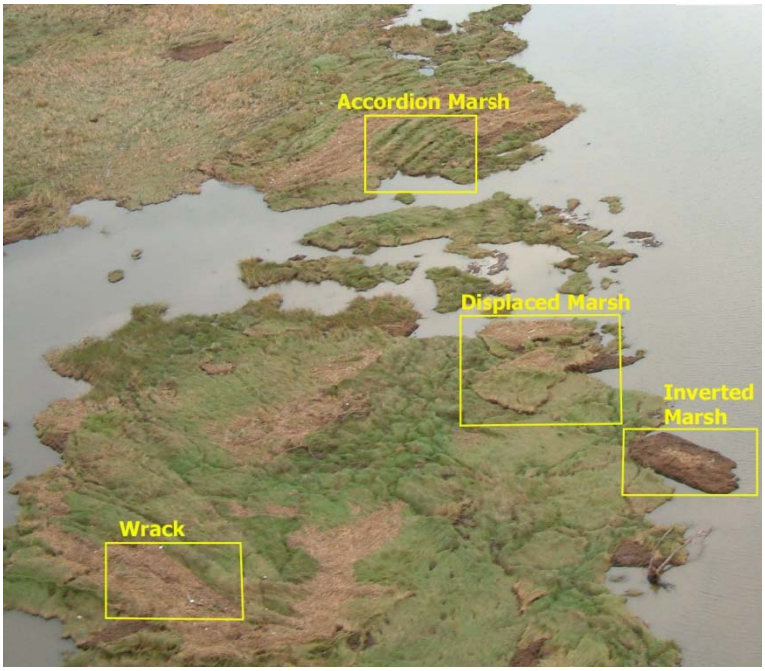
ST. MARY PARISH LAND LOSS



An aerial view of a marsh coastline is shown below depicting varying types of impacts after a significant storm event. Probability of future occurrence is 100% in that coastal erosion is a perpectual, ongoing process. Data relative to coastal restoration and marsh creation projects in the St. Mary Parish is noted on the project list beginning on page 82. From this data, it is evident that mitigation issues are being addressed under other federal programs.

It is also noteworthy that expansive areas of acreation have formed along the St. Mary Parish Coast (green above). Nonetheless, in isolated areas, a focus on coastal erosion mitigation is warranted. Tribal concerns realte to bodily remains and artifacts.

Example of coastline impacts after a major hazard event



4.2.2.4 LEVEE FAILURE (includes floodwalls) and PUMP STATIONS

The failure of a levee or floodwall during any type of high water event would prove catastrophic to the parish, the magnitude of which would be dependent on the location of the break. Probability of at least the overtopping of a levee (as historical data has proven in the Bayou Sale area of the parish) is high. A map depicting all public levees and pump stations was presented previously as Attachment c2-4 on page 54 of the attachments for this section.

Also as noted previously, most levees protecting urban areas were constructed by the U. S. Army Corps of Engineers. These levees are maintained by the St. Mary Levee District (SMLD) and/or drainage districts and inspected annually by Parish and Federal officials.

Pump stations are also a major consideration as pumps are required to remove stormwater that falls within the levee system. A list of pump stations in the parish is noted below.

Pump Station	Responsible Drainage District
Proposed Berwick Borrow Canal Pump Station	Wax Lake East Drainage District
Cotten Road Pump Station	Wax Lake East Drainage District
Possum Bayou Pump Station	Wax Lake East Drainage District
Wax Lake Pump Station	Consolidated Drainage District #1
Maryland Pump Station	Consolidated Drainage District #1
Todd Levee Pump Station	Consolidated Drainage District #1
Tech Ridge Franklin Pump Station	Consolidated Drainage District #1
Yokely Reach Pump Station	Consolidated Drainage District #1
Golden Farms Pump Station	Wax Lake East Drainage District
Utah Street Pump Station	Wax Lake East Drainage District
Berwick South Pump Station	Wax Lake East Drainage District
Cannatas Pump Station	Wax Lake East Drainage District
Plantation Inn Pump Station	Subdrainage District #1 of Drainage #2
Gordy Pump Station	Consolidated Drainage District #1
Pump Station	Consolidated Gravity Drainage District #2
Pump Station	Consolidated Gravity Drainage District #2
Pump Station	Consolidated Gravity Drainage District #2
Pump Station	Drainage District #6
Todd Pump Station	Consolidated Drainage District #1
Yokely Pump Station No. 3	Consolidated Drainage District #1
Yokely Enlargement Pump Station	Consolidated Drainage District #1
Franklin Pump Station No. 1	Consolidated Drainage District #1
Franklin Enlargement Pump Station	Consolidated Drainage District #1
Centerville Pump Station	Consolidated Drainage District #1
Maryland Pump Station	Consolidated Drainage District #1
North Bend Pump Station	Consolidated Drainage District #1
Ellerslie Pump Station	Consolidated Drainage District #1

As a general rule, the responsibility for capital improvements and maintenance of pump stations is assumed by the various drainage districts. Excpet for the Morgan City backwater levee, levee construction is a function of the Corps while levee maintenance is the responsibility of the SMLD. In the case of the Atchafalaya Basin levee system, maintenance responsibility that was facilitated through the Atchafalaya Basin Levee Board, which has a regional, multi-parish jurisdiction, was transferred to the SMLD in 2009.

As previously mentioned, the Parish commissioned Miller Engineers and Associates to collect information to identify flaws within the existing levee system (vulnerability) and to provide cost estimates for both increasing existing levees to +18' MSL and the construction of proposed levees to +18' MSL in select locations. The study was initiated because of concerns that existing levee systems are insufficient to protect St. Mary Parish

from storm surge which is supported by the fact that the western portion of the parish was inundated by Hurricane Rita (Miller Plan). Because Rita was not a direct hit, it is reasonable to presume that the surge impact of a direct hit from a south Gulf-forming hurricane on a northern track would inundate other areas of the parish as well with a western landfall.

Levee failure is a major concern to the parish as all municipalities and the entirety of the unincorporated areas would flood, depending on the location of the break. Locations of all of the levees in the parish are presented in Attachment c2-4. The probability of an actual levee breach in any given year is less than 1%. Levee failure and realted maps are presented as Attachments c2-22.1A – c2-22.7 (pages 87-95). The levee failure maps and associated inundation areas assume that as storm surge approaches the various levees, all levees fail completely and inundate both municipalities and unincorporated areas of the parish. Areas that are inundated by the hypothetical levee failures are as follows:

- Southernmost Atchafalaya River Levee Failure –Inundates Berwick and/or Morgan City depending on specific location
- Fig Street or Hellenic Levee Failure – Inundates most of the northeastern portion of Morgan City
- Levees north or south of Baldwin and Franklin – Inundates southwest corner of Baldwin and most of Franklin and Tribal lands
- Levees south of Patterson – Inundates most of Patterson, Bayou Vista, and Berwick

Throughout the planning process no mention was ever noted of a federal, state, or local plan and implementation for warning, possible devastation, evacuation, timing, vulnerability, rebuidling of the breech, and recovery of the area should a major levee breech or overtopping occur. These issues should be studied and coordinated at the federal, state, and local if not already done.

4.2.2.5 TORNADOES

Although no federal disasters have occurred in St. Mary Parish solely due to tornadoes, the HMPU Committee identified tornadoes as a potential risk throughout the parish.

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm or sometimes as a result of a hurricane and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Tornadoes often form in convective cells like that of thunderstorms or in the right forward quadrant of a hurricane, far from the hurricane eye. The damage from a tornado is the result of high wind speeds and wind-blown debris. Tornadoes can occur at any time of year. Tornado damage severity is measured by the Fujita Tornado Scale based on wind speed and described in the table on the following page.

Fujita Tornado Measurement Scale		
Category	**Wind Speed**	**Examples of Possible Damage**
F0	Gale (40-72 mph)	Light damage. Some damage to chimneys; break branches of trees; push over shallow rooted tress; damage to sign boards
F1	Moderate (73-112 mph)	Moderate damage. Peel surface off roofs; mobil homes pushed off foundations or overturned; moving autos pushed off roads.
F2	Significant (113-157 mph)	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	Severe (158-206 mph)	Severe damage. Roofs and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	Devastating (207-260 mph)	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible (261-318 mph)	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile sized missiles fly though air in excess of 100 yards; trees debarked; incredible phenomena will occur.

Source: http://www.fema.gov/hazards/tornadoes

Note: These precise wind speed numbers are actually guesses and have never been scientifically verified. Different wind speeds may cause similar-looking damage from place to place even from building to building. Without a thorough engineering analysis of tornado damage in any event, the actual wind speeds needed to cause that damage are unknown.

Because of the unpredictability of tornado paths and the destruction of commonly used instruments, direct measurements of wind speeds have not been made in tornadoes. Wind speeds are judged from the intensity of damage to buildings. Based on the table above, St. Mary Parish is vulnerable to all categories (F0-F5) of tornadoes throughout the entirety of the planning area.

High winds are capable of imposing large lateral (horizontal) and uplift (vertical) forces on buildings. Residential buildings can suffer extensive wind damage when they are improperly designed and constructed and when wind speeds exceed design levels. The effects of high winds on a building will depend on the following factors:

- Wind speed (sustained and gusts) and duration of high winds
- Height of building above ground
- Exposure or shielding of the building (by topography, vegetation, or other buildings) relative to wind direction
- Strength of the structural frame, connections, and envelope (walls and roof)
- Shape of building and building components

- Number, size, location, and strength of openings (windows, doors, vents)
- Presence and strength of shutters or opening protection
- Type, quantity, velocity of windborne debris

A tornado watch is issued to alert people to the possibility of a tornado developing in the area. Under a tornado watch, a tornado has not been seen but the conditions are very favorable for tornadoes to occur at any moment. Conditions favorable for a tornado to occur include:

- Dark greenish or orange-gray skies
- Large hail
- Large, dark, low-lying, rotating or funnel-shaped clouds
- A loud roar that is similar to a freight train

A tornado warning is issued when a tornado has actually been sighted or when Doppler radar identifies a distinctive "hook-shaped" area within a local partition of a thunderstorm line that is likely to form a tornado.

People who reside in mobile homes are most exposed to damage from tornadoes. While some mobile home parks are located in each municipality and in the unincorporated areas, most are single units scattered throughout the parish. The following table lists concentrations of mobile homes throughout the parish. Some of the sites shown are mobile home parks while others note concentrations of mobile homes but not in mobile home parks *per se*. Zoning ordinances in many areas of the parish allow mobile homes in single family neighborhoods, so singe units in many neighborhoods is common. This is true in most older neighborhoods. Approximately 15% of the residences in the parish are mobile homes.

ST. MARY PARISH
HAZARD MITIGATION PLAN UPDATE 2014
Mobile Home Parks

Vicinity	Unincor-porated	Appox. Number of Units	Locale
Chitimacha		50	Tunica vicinity
Baldwin		50	Smith Lane
Baldwin		20	Happy Acres
Baldwin		20	Yokely Rd.
Franklin		20	MLK near 9th
Franklin		25	Donna Drive
Franklin		10	near Darce
Franklin		20	Friendship Lane
Franklin		10	Off Lee

Franklin		30	Dixie and Kemper Rds.
Centerville	X	20	Cane Road
Centerville	X	30	Roy's Lane and vicinity
Patterson		100	off Red Cypress (multiple)
Patterson		50	Cleveland and Williams
Patterson		100	Zenor Road
Patterson		30	Martin St.
Bayou Vista	X	250	La. Hwy. 182 (multiple)
Bayou Vista	X	100	Arlington
Bayou Vista	X	25	Saturn
Berwick		100	River Road (multiple)
Berwick		10	Versen St.
Berwick		10	Second St.
Berwick		25	Sixth St.
Morgan City		20	Levee Road
Morgan City		20	Mayon St.
Morgan City		50	Allison St.
Morgan City		30	Grizzaff/East Gate St.
Amelia	X	500	Lake Palourde Road (multiple)

Even if anchored, mobile homes do not withstand high wind speeds as well as permanent, site-built structures. Although mobile homes are most exposed to damage from tornadoes, all structures are vulnerable to some sort of damage, depending on the severity and location of the tornado. All 17,719 structures located throughout the unincorporated areas of St. Mary Parish as well as in all municipalities are vulnerable to some sort of damage from a tornado. Because of the sporadic nature and historically low losses related to tornado damage, detailed loss estimates were not able to be produced.

St. Mary Parish is most vulnerable to the effects of tornadoes during severe tropical storms and hurricanes. Some structural mitigation actions have been identified which will reduce damages caused by tornadoes; however, some wind mitigation actions identified under the hurricane hazard may lessen the effects of tornado-force winds.

The parish has not had any federally declared disasters due to a tornado alone. Climate data from the NOAA reports 16 tornadoes within St. Mary Parish between the years 1958-2008 with an annual probability of thirty-two percent. A list of the tornados and their associated damages is presented on the following page.

St. Mary Parish Tornado History

Date	Category	Injuries	Property Damage
9/10/1961	F1	0	$3,000
9/10/1961	F2	16	$25,000
3/17/1970	F3	2	$250,000
9/16/1971	F2	0	$25,000
3/26/1974	F1	2	$3,000
9/8/1974	F1	0	$25,000
11/21/1977	F	0	$0
7/7/1982	F1	0	$25,000
7/8/1982	F1	0	$25,000
9/12/1984	F1	0	$25,000
5/8/1991	F1	1	$25,000
10/29/1993	F0	0	$0
4/23/1995	F1	0	$30,000
5/12/1995	F1	1	$0
1/2/1999	F1	1	$75,000
6/16/2000	F1	0	$0

Only data relative to the last five tornadoes associated damages could be located. Data relative to the other 10 more historic tornados was not available at the time of this update.

- September 10, 1961- Hurricane Carla touched down in Texas. NOAA recorded that the storm created 10 tornadoes in Louisiana.
- October 29, 1993 – Blew down tree limbs, power lines, and a fence in Morgan City
- April 23, 1995 – Touched down several times, rolled over a mobile home and tore roofs off a house and a mobile home in Baldwin
- May 12, 1995 – Touched down briefly, tore off one roof, and snapped several telephone poles on the east side of Morgan City
- January 2, 1999 – Destroyed one mobile home, several storage buildings and removed the roof from one home southwest of Patterson
- June 16, 2000 – No related structural damage but did blow down tree limbs southeast of Jeanerette

Because tornadoes are so sporadic and have historically caused little damage throughout the parish, one can estimate that the average annual losses for a tornado would not exceed $10,720, based on historical losses from the NOAA. For this reason, the committee agreed to assign the municipalities and the unincorporated area of St. Mary Parish at a

medium risk for tornadoes. All wind related mitigation actions can be found on the project list.

4.2.3 Risk Assessment

The risk assessment process was developed using data from past hazard events, existing and future land use data, parcel data from the parish assessor's office, FEMA flood maps, and FEMA repetitive loss structures. The land use map used for this purpose is displayed in the Attachment c2-7 on page *57 of this section.*

Once all data was compiled and mapped, a final risk assessment map of three separate assessment methodologies was created as a composite. Of the data that could be mapped, flooding was the dominant concern. Coastal erosion issues are localized on the east bank of West Cote Blanche Bay and windstorms, or in this case the winds generated by hurricanes, are a parishwide concern. Levee failure is also a parishwide concern. Additionally, it has been noted that levee failure is a possible threat as illustrated in New Orleans during Hurricane Katrina and small levees near the coast in St. Mary Parish being topped during Hurricane Rita.

The three individual risk assessment analyses are the (1) 100-year flood plain based on DFIRMs and the data included therewith, (2) risk assessment based on past storm events, and (3) FEMA repetitive loss structures. Composite risk assessment maps are displayed as Attachments c2-21.1 - c2-21.7 (pages 80-86) at the end of this section. Hypothetical levee failure maps are displayed as Attachments c2-22.1A - 22.7 (pages 87-95). A summary of the approach utilized in each independent map of the composite series is noted below.

100-Year Flood Plain—FEMA DFIRMs

The 100-year flood plain map was developed using FEMA DFIRM data and GIS software. Since a majority of the parish is within the 100-year flood plain, this mapped data along with the ABFEs was used in evaluation of the parish that is prone to present and future flooding damage. This map depicts which areas of the parish are vulnerable to a 100-year flood regardless of land use and with no regard for the source or type of flooding. A map of the 100-year flood plain is displayed as Attachment c2-6 (page 56) at the end of this section.

Risk Assessment Based on Past Storm Events

The second risk assessment technique utilized in the preparation of this HMPU is based upon past storm events. This approach was developed using data such as specific flood elevations from major past hazard events. The events and data captured to create this image are as follows: the Atchafalaya River flood of 1973 (riverine and backwater flooding), Hurricane Audrey (storm surge), Hurricane Juan (stormwater), Hurricane Andrew (wind damage), Hurricane Lili (surge),

Hurricane Rita (recent surge), Hurricane Gustv (storm surge), and Hurricane Ike (storm surge).

The approach and methodology was found to be useful in determining what specific areas and land uses of the parish are vulnerable to hazards (primarily flooding) and which specific types of flooding are generating or creating that vulnerability. The past storm event assessment maps are displayed in Attachments c2-10- c2-18 at the end of this section (pages 69-77).

Levee Failure

The third risk assessment technique utilized in the preparation of this plan was based on catastrophic levee failure. Two levee failure models were simulated, i.e., that of a parishwide levee failure and that of the Fig Street or Hellenic levee failing in Morgan City. Historical high water levels from the USACE gage data as well as USGS gage data were used to establish theoretical elevation for flood waters that would inundate the parish if all levees were to fail. The inundation area was interpreted using LIDAR to produce water depth levels. Parishwide levee failure maps are presented as Attachments c2-22.1A- c2-22.7 (pages 87-95). The Fig Street levee failure event is presented as Attachment c2-22.1B (page 88).

FEMA Repetitive Loss Structures

The third independent vulnerability assessment mapping task was based on the FEMA repetitive loss structures inventory. According to GOHSEP, St. Mary Parish has a total of 211 repetitive loss structures. This data was useful in (a) determining which residential and commercial properties have been damaged as a result of past hazard events and (b) in focusing on specific losses and groups of losses, especially when common causes were apparent, and (c) insuring that mitigation measures to reduce repitive losses are included in the Hazard Mitigation Plan. The FEMA repetitive loss structure map is displayed as Attachment c2-20 on page 79.

Of noteworthy importance, this map allowed grouping of sets of property damages into separate vulnerable areas based upon actual losses. Findings noted significant vulnerability in the Cypremort Point area in the southwestern extreme of the parish, in the Franklin vicinity (approximately half in the city limits and half outside the city limits), and in Morgan City. Of interest was the fact that the Amelia area is within the 100-year flood plain, and it floods more frequently than many other areas. However, losses are minimal. As noted previously, in Amelia flooding tends to be widespread in the area, but it has not been particularly hazardous. More information is provided on the Amelia situation in section §201.6 (c)(2)(iii).

The final St. Mary Parish Risk Assessment Map is a composite of the three mapped data sets outlined above. As noted in Attachment c2-21.1 on p. 80, with the exception of the

majority of the land comprising the Bayou Teche ridge and lands within the federally constructed levee/seawall system [e.g., Morgan City, and the Wax Lake Drainage District East (Atchafalaya River to Wax Lake Outlet)], the bulk of the parish is within the 100-year flood zone as defined by FEMA's DFIRM maps. When comparing this data to lands in combination with actual flood event data, the southern portion of the Teche ridge and the two minor ridges (Bayou Sale and Bayou Cypremort ridges) are readily discernable. This layered combination shows the vulnerable areas in the parish.

Even with the magnitude of technical data used, the most accurate and objective data inventoried was that of specific repetitive losses. With the exception of a handful of isolated incidents, losses are grouped into three areas—Cypremort Point, Franklin and vicinity, and in Morgan City.

In the Cypremort Point area, the issue is clearly and distinctly a function of storm surge. In the Franklin area, some areas are susceptible to storm surge while others are subject to stormwater concern.

While losses inside the limits of Morgan City have been numerous, part of the area of concern is not within the 100-year flood plain. The problem had been caused by inadequate localized stormwater drainage systems in the community, but recent improvements to the stormwater drainage system have alleviated the problem.

Along the waterfront in Morgan City and Berwick, water-dependent business interests have dealt with flooding since the 1920s when urbanization along the waterfront was initiated. In recent years, the U. S. Army Corps of Engineers has included flood-proofing along the river on the unprotected side of the seawall as part of the Atchafalaya Basin Floodway Project. Considered as a billion dollar federal project, the HMPU committee concluded that the proper authority for continued flood-proofing of the interests along the river should remain with the Corps of Engineers and, therefore, this matter is not addressed in detail in this plan.

4.2.4 §201.6 (c)(2)(ii)(A) The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located on the identified hazard areas;

A general list of assets that could be damaged by a hazard event was developed and mapped using GIS software. This list was collected from sources including local government officials, HAZUS, and the parish tax assessor's office following the guidelines prepared for HMPU preparation. Details and results of that process are noted below.

WORKSHEET #3A

Composite Flood Risk

Inventory of Assets for Entire Parish

Worksheet #3A (Attachment c2-24.1 on page 97 of this section) provides a general overview of the assets of the parish as a whole including Tribal assets. While collecting and researching the data within this table, several information sources were utilized including HAZUS, mapped data from parish, state mapping sources, and mapped and tabular data from the parish assessor's office. For this worksheet and supporting tabular data, a combination of the 100-year flood plain and the past storm event risk assessment map coverage area was used as the hazard area for the entire parish. In the determination of hazard area percentages, a census tract map from HAZUS was overlaid onto the 100-year flood plain and risk assessment maps.

A total of 17,719 structures in the parish with an estimated value of $1,157,834,670 was noted. An estimated 7,082 of these with a value of $472,007,720 are in the hazard area. The total of the residential population within St. Mary Parish is 53,500, and 22,150 of these are in the hazard area.

Residential

The residential classification of St. Mary Parish is the largest building group within the parish. Data indicates 15,276 structures (dwelling units) with an estimated value of $806,126,390. Of these buildings, 38% are located in the hazard area with an estimated value of $278,010,340.

Commercial

Commercial buildings number 1,041 in the parish. The estimated value of these buildings is $225,216,250, and 49% of the buildings are located in the hazard area with and estimated value of $103,032,900.

Industrial

The industrial classification of the parish consists of 393 buildings with an estimated value of $53,306,640. Of the buildings noted, approximately 76% are in the hazard area with an estimated value of $48,317,000.

Agricultural

In the agricultural class, 941 buildings exist with an estimated value of $68,909,660. Of these, approximately 45% are in the hazard area and have an estimated value of $39,515,780. While many of these structures are in the areas classified as agricultural, many are actually residential in use.

Other

Structures classified as other, 58 noted, have an estimated value of $3,872,710. Within this category, 74% are within the hazard area with an estimated value of $2,728,680.

Utilities
Within the utilities classification, 10 buildings and facilities were identified, 100% of the buildings are in a hazard area. The structures have an estimated value of $403,020.

The following iterations of Worksheet 3A are represented as Attachments c2-24.1- c2-24.8 (pages 97-104):

- Levee Failure for the Entire Parish
- Flood, Levee Failure, and Hurricane Risk Assessments
    - Morgan City
    - Berwick
    - Baldwin
    - Franklin
    - Patterson
    - Unincorporated Areas of St. Mary Parish
    - Chitimacha Tribe of Louisiana

Critical Facilities of the Parish

A detailed list of critical facilities for the entire parish is present in Attachment c2-25 (pages 105-109). This list was compiled according to the following pre-defined groups:

- Essential facilities
- Transportation systems
- Lifeline utility systems
- High potential loss facilities
- Other important facilities

This information was gathered from sources including HAZUS, parish tax assessor data, and interviews with St. Mary Parish government officials. After the list of critical facilities for the entire parish was completed, the HMPU committee reviewed the list and made the necessary changes. The critical facility maps are displayed in Attachments c2-8.1 through c2-8.10 (pages 58-67) at the end of this section.

Critical Facilities within Hazard Areas

A list of critical facilities within the hazard area was compiled to identify areas truly at risk. As with critical facilities in the parish, the definition of the hazard area was based on risk assessment determined as a function of past storm events in combination with the FEMA-based 100-year flood plain. All identified facilities within these areas were compiled into a second critical facilities list as seen in Attachment c2-26 (pages 110-113) at the end of this section.

WORKSHEET #3B

Critical Facilities within Hazard Areas That Have Suffered Past Storm Damage

Only one critical facility, the Cypremort Volunteer Fire Department, is recorded to have suffered past flooding damage. The Cypremort Volunteer Fire Department, located just south of the Gulf Intracoastal Waterway along L.A. Hwy. 319, suffered flooding damage during Hurricane Lili. The damage report indicates that the site flooded to a level of three feet and remained flooded six to eight hours. With the flood came silt and debris, causing one month of building inactivity. Electricity was restored within three days, and the fire service was back in operation. The critical facility data was collected by the Cypremort Volunteer Fire Department and St. Mary Parish planning department officials.

The Cypremort Volunteer Fire Department is a single story, 1,200 square foot building with an occupancy load of 50 people. It has a replacement value of $166,800, contents value of $250,200, function value of $67,000, and a displacement cost of $184 per day.

Although this list includes only critical facilities, it was decided that any repetitive loss structures, including residential properties, should also be considered during the mitigation planning. However, the repetitive loss structures would not be listed on the same table as the critical facilities because of the inability to determine values such as contents or function value or displacement costs as needed in the final critical list table. This information is presented in Section (c)(2)(iii).

The Tribe plans to collect data on the the types and numbers of existing and future buildings and infrastructure, in more detail beyond HAZUS, for the next five-year update.

WORKSHEET 4

Using the aforementioned critical facilities list, HAZUS replacement value data, GIS models, and input from HMPU committee members, FEMA Worksheet 4 loss estimates were compiled (as presented in attachments c2-28.1- c2-28.3, pages 121-132) for hypothetical levee failure and composite risk flood events.

Using historical high water marks, the respective areas were inundated and the critical facilities flood levels noted. The flood levels were then compared to FEMA damage estimate models for structure percent damaged, contents loss, and function loss, to come up with a total loss estimate for the parish critical facilities in each event.

The total estimated losses were $6.6 billion for the composite risk area and $26.7 billion for the total structure use and function loss for a levee failure. Detailed cost estimates for each critical facility can be found in attachments c2-28.1- c2-28.3, pages 121-132.

4.2.5 §201.6 (c)(2)(ii)(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(a) of this section and a description of the methodology used to prepare the estimate;

The HMPU Committee planning team used GIS software, HAZUS, interviews with parish officials, and historical data to estimate the potential dollar losses if the parish was to experience a flooding event. The vulnerable structures and facilities were identified earlier in section §201.6 (c)(2)(ii)(A). As seen in Attachment c2-27 (page 114-120) at the end of this section, 101 repetitive loss structures exists within St. Mary Parish. As noted previously, all FEMA repetitive loss data was gathered from GOHSEP and FEMA Region IV. Efforts to identify accurate addresses were exhaustive.

The repetitive loss structures map is displayed in Attachments c2-20 (page 79). Repetitive loss structures are also depicted on all risk assessment maps (Attachments c2-21.1 – c2-21.7). Supporting data was gathered from GOHSEP. The parish used the guidelines in the FEMA document *Understanding Your Risks: Identifying Hazards and Estimating Losses* to develop a cost estimate for damage for the lone critical facility. Information such as function loss, displacement days, function use, and capacity do not apply to residential properties. Therefore, the FEMA average claimed loss value was used in estimating losses for residential structures. The estimated costs are as follows:

Potential Flood Losses:

- **FEMA repetitive loss structures (Residential Properties):** 211 total losses with a total average insurance pay of $73,000 per event.

4.2.6 §201.6 (c)(2)(ii)(C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

A detailed description of land use data is provided in the first section of this report in the section entitled “Introduction.” Physical and cultural aspects of the parish including land use, drainage basins, and the economy were noted. The text below focuses on future land use and its bearing on this Hazard Mitigation Plan.

From 1980 to 2010, the parish experienced periods of population growth and decline. The population declined from 64,253 to 53,500 between 1980 and 2000, and by 2006, the U.S. Census Bureau estimates that the parish’s population declined further to 51,867. The population then grew five percent to 54,650 from 2006 to 2010. The U.S. Census Bureau once again estimates population loss for the parish between the years of 2010 and 2013 to 53,543. Based on the most positive projection of the comprehensive plan completed in 2003, it was envisioned that the decline in population would begin to slow and a positive growth rate will again return to the area. The plan anticipates a 2020 population of

approximately 60,000 residents. However, further analysis into the push and pull factors driving migration to and from the area is needed to determine whether the parish population will gain the twelve percent population gain to meet its anticipated population threshold.

With this in mind, it is anticipated that even with a projected rise in population, residential areas that existed in the 1980s will accommodate most of the expected growth. However, subdivision of land holdings and resulting new home sites have continued to develop at a minimal rate in some areas and a more accelerated rate in others. For the most part, new residential areas have occurred mostly on abandoned agricultural land in the Berwick and Patterson areas. As noted in the introductory section of this HMPU, agricultural lands are located on the highest land in the parish along the Bayou Teche ridge and the two smaller ridges, areas that are not within the 100-year flood plain.

Two exceptions are noteworthy relative to land use. First, along the coast at the southern end of the Cypremort ridge at the westernmost point in the parish, residential units continue to be developed as a high-end market component. Typical units are three stories high with break-away designs on the first floor. The buildings being constructed are in conformance with parish building codes and its flood management ordinance. With the construction of an elevated bridge over the Intracoastal Canal to replace a swing bridge crossing, demand for new housing has increased in this area.

Secondly, a new residential development is proposed in Morgan City. The City and/or the developer have funded, designed, and have partially constructed flood-free lands under pump. Construction on the drainage components of the project and the City's commitment included new retention areas, levees, and pump stations. All new construction in this and other developments will be required to conform the flood zone ordinance of the jurisdiction.

Other urban land use has shown little growth in the past two decades. Therefore, little by way of mitigation options is necessary. Nonetheless, based upon the past several decades of parish development and the management of that development, the St. Mary Parish Government is fully aware of state and federal mandates regarding coastal zone management, flood zone and hazard management, and protecting the valuable coastal areas of the state. The table below from the St. Mary Parish Comprehensive Plan depicts future land use estimates.

Projected Future Urban Land Use

Land Use Category	Existing Developed Land		Acres per 100 persons	Projected Developed Land 2020	
	Acres	Percentage		Projected Acreage	Increase from 2000
Single Family	6,254.81	55.04%	30.66	7,190.98	936.17
Multi Family	14.83	0.13%	0.07	17.05	2.22
Manufactured Homes	812.75	7.15%	3.98	934.40	121.65
Residential Subtotal	7,082.39	62.32%	34.72	8,,142.43	1,060.03
Light Commercial	146.35	1.29%	0.72	168.25	21.90
Heavy Commercial	32.34	0.28%	0.16	37.18	4.84
Commercial Subtotal	178.69	1.57%	0.88	205.44	26.75
Light Industrial	280.64	2.47%	1.38	322.65	42
Heavy Industrial	3,277.26	28.84%	16.07	3,767.77	490.51
Industrial Subtotal	3,557.90	31.31%	17.44	4,090.42	532.52
Public and Institutional	161.44	1.42%	0.79	185.61	24.16
Parks and Recreation	383.58	3.38%	1.88	440.99	57.41
Total Developed Uses	11,364.01	100.00%	55.71	13,064.87	1,700.87

A major segment of the referenced Parish Comprehensive Plan was devoted to the creation of the parish's first comprehensive zoning ordinance and zoning maps. Of significance was the design of a protective zone that minimizes allowed uses in environmentally sensitive and hazard prone areas. In essence, the parish government recently instituted significant preventative measures to minimize the need for mitigation options in future land use decisions. At the municipal level, all incorporated communities have existing zoning ordinances and corresponding maps that conform to FEMA guidelines. Those communities with flood prone areas within their respective jurisdictions will be encouraged to update their zoning ordinances if and when needed to ensure compliance to FEMA regulations and to follow the parish's ordinance if hazard zoning is not as restrictive as the parish plan. The parish government has also adopted the International Building Codes (IBCs) which dictate wind and flood related guidelines.

4.2.7 §201.6 (c)(2)(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

To ensure parishwide coverage of hazard planning, each municipality of the parish participated in the creation of the St. Mary Parish Mitigation Plan Update. As noted previously, elected officials, representatives of pertinent public works departments, and

representatives of the general public from each community participated in the planning process.

The parish encompasses five incorporated municipalities: Baldwin, Franklin, Patterson, Berwick, and Morgan City. Each town or city includes its own independent governing authority and elected officials including a mayor and city/town council. The risk assessment includes each municipality as well as all unincorporated communities of the parish. Information provided below focuses on those communities. Similar to the parish plan, the communities are subjected to the same type of hazards as identified heretofore.

Cypremort Point—Unincorporated Area

Cypremort Point, located in the southwestern most section of the parish, is an unincorporated community prone to storm surge flooding. It is bordered by Vermilion Bay to the west and West Cote Blanche Bay to the east. The surrounding land use is predominately marsh land. There are 74 repetitive loss structures that exist within this community, all of which are older structures built below the required base flood elevation. The parish governing authority has worked for over fifteen years to complete mitigation on these remaining structures.

Chitimacha Tribe of Louisiana—Unincorporated Area, Reservation Lands

The reservation of the Chitimacha Tribe of Louisiana is located on the Teche Ridge west of Baldwin, in Charenton. No repetitive loss structures on the reservation have been recorded. It is not prone to flooding and is outside of the 100-year floodplain. Because the lands of the Tribe are generally the highest in elevation in the parish, mitigation programs are limited to wind hardening projects. Stormwater drainage is adequate, and the tribal lands are above the surge line. Atchafalaya Basin Levee failure would impact the Tribe if the failure were immediately north of the reservation.

Regarding mitigation activity, the Tribe's policy is to enhance infrastructure to withstand hazard events. The Tribe also enforces the International Building Codes. The Tribe maintains the following departments as part of their normal operations which have programs and policies relevant to hazard management: Safety (Tribal Police Department and Tribal Fire Department) and Buildings. The Casino, which is wholly owned and operated by the Tribe, has programs and policies relevant to hazard management.

The Tribe utilizes Bureau of Indian Affairs, CDBG, and other funding to support hazard mitigation projects. Private funding generated from casino and other revenue producing ventures on reservation lands or lands acquired fee title has been discussed for future use.

The need for developing a process for the Tribal government to incorporate the mitigation strategy into other planning mechanisms such as the Tribe's emergency operations plan in the future is recognized. The Tribe will work on this task beginning in the near future.

A more detailed analysis of tribal operations and mitigation is presented in the Tribal Addendum included following the attachments section of this HMPU.

Baldwin

Baldwin, located in the northwestern section of the parish, is not prone to widespread and persistent flood damage. However, according to FEMA there are six repetitive loss structures in the town located southeast of State Route 83. Preventative measures to guard against rising concerns are presented in Section V. Mitigation Strategies.

Franklin

Franklin, the parish seat, is located in the northwestern section of the parish just southeast of Baldwin. The low lying areas of the city are prone to storm water and storm surge flooding. According to FEMA, there are 62 repetitive loss structures in the Franklin area. All structures suffer from flooding that results from intense amounts of rainfall in short periods of time in addition to a few surge flood events affecting various structures. Virtually all the houses that flood within the vicinity of Franklin were built before the local FEMA flood study and enactment of the flood zone ordinance. The base floor elevations of these structures are not up to code in comparison with the current municipal flood ordinance. In 2012, a flood gate and levee was constructed to alleviate the storm surge flooding from Franklin Canal. In 2013, pump stations are being planned and/or constructed to also alleviate flooding.

The Pecan Acres subdivision, located along the Franklin Canal in the southwest section of the city and residents near Cayce Street in the northwest are the most affected areas. These structures are flooded from intense rainfall, storm surge funneled from the bay through the Franklin Canal, and during moderate rain fall events when tides are high because of south winds or river-based flood events. During Hurricane Lili, no flooding occurred until three hours after the event peaked when water from the Franklin Canal began overflowing into the area.

Flooding in the Pecan Acres Subdivision (Franklin) during Hurricane Lili

Flooding on Cayce Street (Franklin) during Hurricane Lili

Patterson

Patterson is located in the central section of the parish with the Atchafalaya River to its immediate east. Flooding from storm water and back water events is limited to areas south of U. S. Highway 90, but this flooding is limited to minor street flooding. According to FEMA, four repetitive loss structures exist. The residential structure within the city limits is located along the western banks of the Atchafalaya River on McGee Drive. This structure suffers flooding because its base floor elevation is lower than that required at the site along Bayou Teche.

Berwick

Berwick is located in the eastern section of the parish just west of Morgan City. Flooding, which is limited to the area south of U. S . Hwy. 90, results from storm water. According to FEMA, two repetitive flood loss structures are located within Berwick. Two are located on Jones Street, and one is located near the river on Belleview Drive. The structure on Jones Street suffers flooding because of inadequate municipal storm water drainage infrastructure. The situation was recently mitigated with the installation of an improved culvert at a critical location. The structure on Bellview Drive was a warehouse which no longer exists. Therefore, no mitigation is needed.

Riverfront issues similar to those noted in Morgan City are pertinent. As on the east bank of the Atchafalaya River, flood-proof issues are a function of ongoing activities of the Corps of Engineers and the Atchafalaya Basin Floodway Protection Plan. St. Mary Parish restricts future development unless in conformance with FEMA guidelines.

Morgan City

Morgan City, located along the Atchafalaya River to the west, the Gulf Intracoastal Canal (GIWW) to the south, the GIWW Alternate to the north, and Lake Palourde and the Lake Verret watershed to the north, lies in the eastern section of the parish just across the river from of Berwick. This community has been prone to flooding caused by all forms of flooding noted in the parish, i.e., riverine, back water, storm water, and storm surge. According to FEMA, 28 repetitive loss structures are located within the city limits of

Morgan City, all of which have been subject to flooding from sormwater events. From an area-wide perspective, the most affected regions have been the Wyandotte subdivision and sites located outside the community's levee and seawall system along the Atchafalaya River and the GIWW.

With 22 of 28 repetitive losses in the city being located outside of the 100-year plain, flooding problems are indicative of inadequate drainage infrastructure. Within the past seven years, drainage improvements affecting the Wyandotte area consisted of enlarging culverts, pipes, and ditches. Engineering analysis indicates that the problems in this section of the city have been mitigated.

Amelia—Unincorporated Area

Amelia, located in the easternmost section of the parish, is an unincorporated community prone to storm water flooding that is often complicated by riverine and backwater flooding. The unincorporated area is bordered by Bayou Boeuf to the west and to the east and Lake Palourde and the Lake Verret watershed to the north. In this area of approximately six square miles, 13 separate drainage areas and respective pump stations have for many years functioned for normal flood protection. In addition to those existing 13 pump stations, one new 12" pump has recently been installed near the recreation complex.

Although Amelia is highly prone to excessive storm water flooding, most homes are built off the ground. As a result, only one FEMA repetitive loss structures was noted. According to HMP committee members and representatives of the drainage district, flooding largely affects properties along Bayou Boeuf and in the Inglewood Industrial Park Complex. The latter is located on the corner of Lake Palourde Bypass and La. Hwy. 182. According to Amelia Drainage District officials, four businesses suffered flooding damage during Tropical Storm Allison, all of which are in the Inglewood Industrial Park Complex. Each of these structures experienced an average flood depth of 1.5 feet. The recently completed *Amelia Flood Protection Improvements Plan* (2006) contains projects that have been incorporated into this HMPU as presented in Section VI. Mitigation Strategies.

Because of the geographic and manmade features of St. Mary Parish, the risk associated with each type of hazard event differs based on any given locale within the parish. To assess the varying levels of risk, the following summary table is provided to establish the various levels of risk across each incorporated and unincorporated area of the parish.

Multi-jurisdictional Risk Assessment for Hazard Events in St. Mary Parish

Hazard Event	Area						
	Morgan City	Berwick	Patterson	Franklin	Baldwin	Chitimacha	Unincorporated
Avalanche	NR	NR	NR	NR	NR	NR	NR
Coastal Erosion	Med	Low	Low	Low	Low	Low	High
Coastal (Tropical Storm)	High	High	High	High	High	High	High
Levee (Dam) Failure	High	High	High	Med	Med	Low	Med
Drought	Low	Low	Low	Low	Low	Low	Low
Earthquake	NR	NR	NR	NR	NR	NR	NR
Expansive Soil	Med	Med	Med	Med	Med	Med	Med
Extreme Heat	Low	Low	Low	Low	Low	Low	Low
Flood	High	High	Med	High	Med	Low	High
Hail Storm	Low	Low	Low	Low	Low	Low	Low
Hurricane	High	High	High	High	High	High	High
Land Subsidence	Med	Med	Med	Med	Med	Med	Med
Landslide	NR	NR	NR	NR	NR	NR	NR
Severe Winter Storm	Low	Low	Low	Low	Low	Low	Low
Tornado	Low	Low	Low	Low	Low	Low	Low
Tsunami	NR	NR	NR	NR	NR	NR	NR
Volcano	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wildfire	Low	Low	Low	Low	Low	Low	Low

NR = No Hazard Events Historically Recorded
N/A = Not Applicable

Key

	High
	Medium
	Low/ N/A/ N/R

As previously established in Section 201.6(c) (2) (ii) of this HMPU, flooding associated with various storm events (hurricanes and tropical storms) represent a major risk for the entire planning area. The effects of historical storm events and the 100-year flood plain have been combined to create a composite risk map. Several versions of the map were created to provide sufficient detail and to illustrate what areas of the parish are at risk. The maps represent each municipality, the Chitimacha Tribe, and the unincorporated areas of St. Mary Parish and are included as Attachments c2-21.1- c2-21.7 on pages 80-86.

In addition, various iterations of the previously described Worksheet #3A have been created to provide risk assessments for flood events, levee failure, and hurricanes within these different areas of the parish. The information presented in the worksheets represents estimates intended to provide a general overview of the number and value of structure types located in each jurisdiction of the parish and the proportion located within the hazard area of each jurisdiction. The following summary table represents the

information provided in the worksheets. As described earlier in this section, the data illustrating highest hazard vulnerability is reported in the summary table. For additional detail, refer to the worksheets included as Attachments c2-24.1- c2-24.8 on pages 97-104.

Multi-jurisdictional Summary of Worksheet #3A for St. Mary Parish

Statistic	Area						
	Baldwin	Chitimacha	Franklin	Patterson	Berwick	Morgan City	Unincorporated
Total Structures	595	*197	3,042	1,889	1,347	4,835	6,011
Total Value of Structures (millions)	$25,135,570	*$24,869,000	$156,842,340	$119,248,680	$113,550,750	$325,309,070	$417,748,260
Structures in Hazard Area	103	*47	2,005	126	577	427	3,842
Value of Structures in Hazard Area (millions)	$3,828,130	*$5,968,560	$111,142,530	$6,487,120	$33,452,220	$31,761,990	$285,280,830
Residential Population of Area	536	*190	2,678	1,274	1,229	4,281	4,777
% of Population in Hazard Area	15%	*24%	64%	7%	40%	6%	66%

* Denotes Hurricane Values

5.0 §201.6 (c)(3) HAZARD MITIGATION STRATEGIES

§201.6 (c)(3) ….A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include the following:

Blueprints for reducing the potential losses identified in the risk assessment are similar for the unincorporated areas of the parish, the five municipalities, and the Tribe. This conclusion was determined based on the input resulting from distribution, coordination, and review of the HazMit Plan capabilities worksheet (Worksheet 4.1). Each jurisdiction and the Parish were presented a draft worksheet for review.

With the collected data being similar and/or repetitive, the worksheet was expanded to be inclusive of all jurisdictions represented in this hazard mitigation plan. A copy of the composite worksheet for all jurisdictions is presented on the following two pages. Tribal data is also included. However, because of the particular differences in the Tribal HMPU requirements, a more detailed capacity analysis is provided in the Tribal Addendum.

The parish government is a political subdivision of the State of Louisiana as are the municipalities which are all incorporated communities. As such, each has all the powers and authority vested in them by the State of Louisiana typical of all other incorporated municipalities and counties throughout the country. This authority includes the ability to tax, incur debt, enter into bonded indebtedness, regulate, plan, make and enforce laws, etc. This authority is also vested in the Tribe by the U.S. Government.

Capabilities evaluated for this planning effort include the planning handbook referenced categories: Planning and Regulatory, Administrative and Technical, Financial, and Education and Outreach. Each is summarized below and detailed more in the Tribal addendum for Tribal update purposes.

PLANNING AND REGULATORY
The following text addresses capabilities relative to Plans; Building Codes, Permitting, and Inspections; and Land Use Planning and Ordinances

Plans
As can be evidenced in a quick scan of the capabilities worksheet, the Parish has accomplished more planning than has the municipalities. However, the municipalities share in the Parish planning initiatives as the planning is often parishwide (e.g., coastal zone management, economic development plan, EOP, comprehensive plan) or by drainage basin (e. g., stormwater management by drainage districts which are parish created entities). While the Chitimacha Tribe is a federal jurisdiction, it also shares in parish planning efforts as well as develops its own plans per se as noted in the Tribal Addendum.

Because of the nature of the Hazard Mitigation Planning, the EOP, and other planning efforts at the parish level, the noted plans encompass hazards, identify projects that include mitigation strategies, and can be used to implement mitigation actions.

ST. MARY PARISH HAZARD MITIGATION PLAN UPDATE 2014

5.0 β201.6 (c)(3) Hazard Mitigation Strategies
ELEMENT C. Mitigation Strategy (Local Mitigation Plan Review Guide, p. 22-23): Section C1. Capabilities
Worksheet 4.1 (Local Mitigation Planning Handbook, pgs. A-18 thru A-22)

PLANNING AND REGULATORY

PLANS	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Does the plan address hazards? Does the plan identify projects to include in the mitigation Strategy? Can the plan be used to implement mitigation actions?**
Comprehensive/Master Plan	Y	Y	N	N	N	N	Y	*All jurisdictions utilize the Hazard Mitigation Plan to address hazards. The parish comp plan*
Capital Improvements Plan	Y	Y	Y	Y	Y	Y	Y	*incorporates hazards and mitigation. Capital outlay plans have a strong emphasis on hazard*
Economic Development Plan	Y	N	N	N	N	N	Y	*mitigation including levee construction and maintenance, drainage, pumps, etc.*
Local Emergency Operations Plan	Y	N	Y	Y	Y	Y	Y	*Communities do not have economic development plans per se but economic development planning is incorporated*
Continuity of Operations Plan	Y	N	N	N	N	N	N	with annual budgets and other similar planning tools.
Transportation Plan	Y	Y	Y	Y	Y	Y	Y	*Roadway maintenance planning as well as short- and long term transportation upgrades are updated annually.*
Stormwater Management Plan	Y	Y	Y	Y	Y	Y	Y	
Community Wildfire Protection Plan	N	N	N	N	N	N	N	
Other special Plans (CZM)	Y	Y	Y	Y	Y	Y	Y	

BUILDING CODE, PERMITTING, AND INSPECTIONS	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	Version/Year:	**Are codes adequately enforced?**
Building Code	Y	Y	Y	Y	Y	Y	Y	*Current*	*Yes, codes are adequately enforced.*
Floodplain Management	Y	Y	Y	Y	Y	Y	Y		*All jurisdictions subscribe to the parish floodplain management program regarding building heights etc.*
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	5	N	N	N	N	N	*Current*	*In the parish, only Morgan City has a BCEG score rated by the Property Insurance Rating Association of Louisiana.*
Fire Department ISO Rating	4 - 9	3	4	4	5 - 6	5	4	*Current*	*Unicorporated varies from 4 in Byu Vista to 9 down at Cypremort Point.*
Site plan review requirements	Y	Y	Y	Y	Y	Y	Y		

LAND USE PLANNING and ORDINANCES	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Is the ordinance an effective measure for reducing hazard impacts? Adequately administered and enforced?**
Zoning Ordinance	Y	Y	Y	Y	Y	Y	N	
Subdivision Ordinance	Y	Y	Y	Y	Y	Y	Y	
Floodplain Ordinance	Y	Y	Y	Y	Y	Y	N	The Tribe complies with Parish floodplain ordinance on fee title lands. Reservation lands are not in the floodplain.
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Y	Y	Y	Y	Y	Y	Y	
Flood insurance rate maps	Y	Y	Y	Y	Y	Y	Y	*The referenced ordinances are an effective measure for reducing hazard impacts.*
Acquisition of land for open space and public recreation use	Y	Y	Y	Y	Y	Y	Y	*The referenced ordinances are adequately administered and enforced.*
How can these capabilities be expanded and improved to reduce risk?	*These capabilities are not in need of being expanded or improved to reduce risk.*							

ADMINISTRATIVE AND TECHNICAL

ADMINISTRATION	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Describe cabability. Is coordination effective?**
Planning Commission	Y	Y	Y	Y	Y	Y	Y	*All jurisdictions have planning commissions, and all have representatives on the HazMit Comm.*
Mitigation Planning Committee	Y	Y	Y	Y	Y	Y	Y	*All use the Multi-jurisdictional plan for this purpose.*
Maintenance programs to reduce risk, e. g., tree trimming, clearing drainage systems)	Y	Y	Y	Y	Y	Y	Y	*All have public works departments that serve these purposes, and all work closely within the parish in sharing resources.*
Mutual aid agreements	Y	Y	Y	Y	Y	Y	Y	*All have decades of effective capability in accordance with their respective community ordinances.*

STAFF	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?**
Chief Building Official	Y	Y	Y	Y	Y	Y	Y	
Floodplain Administrator	Y	Y	Y	Y	Y	Y	Y	*Staff is adequate to enforce regulations. Select staff is trained on hazards and mitigation.*
Emergency Manager	Y	Y	Y	Y	Y	Y	Y	*Coordination between agencies and staff is effective.*

Community Planner	Y	Y	Y	Y	Y	Y	Y	Community planning is typically the responsibility of the planning department and permit staff.
Civil Engineer	Y	Y	Y	Y	Y	Y	Y	*Parish has civil a engineer on staff. Parish as well as all other jurisdictions use consultanting engrs.*
GIS Coordinator	Y	Y	Y	Y	Y	Y	Y	*Parish tax assessor facilitates GIS for all jurisdications.*
Other	NA	NA	NA	NA	NA	NA	NA	

TECHNICAL	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Describe Capability. Has capacity been used to assess/mitigate risk in the past?**
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Y	Y	Y	Y	Y	Y	In parishwide use is the First Call Emergency Notification (approximately 29,553 contact telephone numbers) that is used to ALERT all parish, municipal, and tribe citizens.
Hazard data and information	Y	Y	Y	Y	Y	Y	Y	Coordinated by way of HazMit Plan via input from all jurisdictions.
GIS	Y	Y	Y	Y	Y	Y	Y	The Tribe also has its own independent GIS system.
Grant writing	Y	Y	Y	Y	Y	Y	Y	Alll jurisdictions hire consultants or have in-house staff to perform grant writing duties.
HAZUS analysis	Y	Y	Y	Y	Y	Y	Y	HAZUS is a function of the HazMit Plan.
Other	NA	NA	NA	NA	NA	NA	NA	*This capacity has been used to assess/mitigate risk in the past using the HazMit multi-jurisdictional approach.*
How can these capabilities be expanded and improved to reduce risk?	*These capabilities are not in need of being expanded or improved to reduce risk.*							

FINANCIAL	Access/Egibility(Yes/No)							
FUNDING RESOURCE	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Has the funding resource been used in past and for what type of activity?**
Capital improvements project funding	Y	Y	Y	Y	Y	Y	Y	**Could the resource be used to fund future mitigation actions?**
Authority to levy taxes for specific purposes	Y	Y	Y	Y	Y	Y	Y	*All political jurisdictions have the capabilities noted, they have since the initial formation, and the resources could and are used for past, present, and future mitigation activities.*
Fees for water, sewer, gas, or electric services	Y	Y	Y	Y	Y	Y	N	The Tribe has no utility revenues internally. With the exception of sewerage, utilities are from external sources.
Impact fees for new development	N	N	N	N	N	N	N	
Stormwater utility fee	N	N	N	N	N	N	N	*A"stormwater utility fee"is not paid per se, property owner pay taxes support the utility district.*
Incur debt through bonds or special tax bonds	Y	Y	Y	Y	Y	Y	N	
Incur debt through private activities	Y	Y	Y	Y	Y	Y	Y	
Community Development Block Grant	Y	Y	Y	Y	Y	Y	Y	
Other federal funding programs	Y	Y	Y	Y	Y	Y	Y	
State funding programs	Y	Y	Y	Y	Y	Y	Y	
Other	NA	NA	NA	NA	NA	NA	NA	
How can these capabilities be expanded and improved to reduce risk?	*These capabilities function well and have done so for decades. No expansion or improvement is anticipated at this time.*							

EDUCATION AND OUTREACH								**Describe program/organizatlon and how relates to disaster resilience and mitigation.**
PROGRAM/ORGANIZATION	Uninc.	MC	Berwick	Patterson	Franklin	Baldwin	Chitimacha	**Could the program/organizaton help implement future mitigation activites?**
Local citizen groups/NPO focused on environmental protection, emergency preparedness, access and functional needs, populations, etc.	Y	Y	Y	Y	Y	Y	Y	*The local news media, i.e., the local television station, newspaper, and radio stations serve in this capacity. All meeting of the noted political jurisdications as well as the parishwide levee district and the various other political subdivisions such as drainage and levee district serve in this capacitiy.*
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Y	Y	Y	Y	Y	Y	
Natural disaster or safety related school programs	Y	Y	Y	Y	Y	Y	Y	
StormReady certification	N	N	N	N	N	N	N	*The Parish OEP has submitted an application to the StormReady certification program.*
Firewise Communities certification	N	N	N	N	N	N	N	*Firewise Communities Certification is not applicable to this lowland coastal county.*
Public-private partnership initiatives addressing disaster-related issues	Y	Y	Y	Y	Y	Y	Y	
Other	NA	NA	NA	NA	NA	NA	NA	
How can these capabilities be expanded and improved to reduce risk?	*These capabilities function well in the parish and respective jurisdictions.*							

5.1 §201.6 (c)(3)(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The St. Mary Parish Hazard Mitigation Committee reviewed and analyzed the risk assessment evaluation performed for the parish as well as goals reflective of that risk assessment. Goals and action items were determined to be those that would have the greatest benefit in reducing or eliminating hazard damage to the parish. The evaluation criteria used in determining these goals and action items are as follows:

- **Social**—Is the mitigation strategy socially acceptable?
- **Technical**—Is the proposed action technically feasible and cost effective? Does it provide the appropriate level of protection?
- **Administrative**—Does the parish have the capability to implement the action? Is the lead agency capable of carrying out oversight of the project?
- **Political**—Is the mitigation action politically acceptable?
- **Legal**—Does the parish have the authority to implement the proposed measure?
- **Economic**—Does the economic base, protected growth and opportunity costs justify the mitigation project?
- **Environmental**—Does the proposed action meet statutory considerations and public desire for sustainable and environmentally healthy communities?

After vigorous review of each goal from the original HMP (2005) and the HMP (2009), the committee established a consensus on the validity of the goals by the second meeting; therefore, the goals remained unchanged. The goals to reduce or avoid long-term vulnerabilities to the identified hazards are listed below:

Goal 1:
Eliminate the threat of catastrophic flood loss that could result from levee failure and lessen the need for new levee systems parishwide and insure that all levee systems are certified to protect from the critical 100-year storm event thus giving 100-year base flood elevation protection

Goal 2:
Ensure that each drainage district or other entity responsible for operations and maintenance of the respective drainage systems in the parish maintains existing facilities, upgrades facilities where needed, continues with current plans for expanding infrastructure, and considers future land use in areas of the parish experiencing urban growth ensuring protection inclusive of 100-year base flood elevation

Goal 3:
Reduce repetitive flood damage in St. Mary Parish including all unincorporated areas, municipalities, and/or drainage districts

Goal 4:
Facilitate responsible future development in the parish to reduce or eliminate the potential impacts of disasters

Goal 5:
Minimize property damage resulting from wind storms (i. e., hurricane force winds)

Goal 6:
Continue state and federal efforts to restore and preserve the parish coastal shoreline particularly as it relates to Coastal Wetland Planning, Protection, and Restoration Act (CWPPRA), Louisiana Department of Natural Resources Coastal Zone Management, and the U. S. Army Corps of Engineers

Goal 7:
Multi-jurisdictional participation in the FEMA Community Rating System Program

Goal 8:
Enhance public awareness

5.2 §201.6 (c)(3)(ii) The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

The St. Mary Parish Hazard Mitigation Plan Update Committee identified several projects that would reduce and/or prevent future damage from naturally occurring hazard events. This coordinated effort, which included the planning committee, the consultant team, and other engineering representatives, was accomplished with frequent and open communications including committee meetings, telephone conversations, emails, and

face-to face-meetings with mayors, public works officials, etc. The planning team focused on a comprehensive range of specific mitigation actions and projects.

The projects and resulting action items relate to community goals which are presented immediately following the Project List attachment. Projects were initially filtered to only include those projects that were eligible under FEMA's HMG program and those of the highest local priority. However, to ensure a comprehensive list of mitigation projects, non-HMPG eligible projects and those from the original hazard mitigation plan (2005) and the first update (2009) are included. In contrast, projects identified in previous hazard mitigation planning efforts that have been constructed or otherwise implemented are listed in a complementary project list table shown immediately following the Project List attachment. The projects are listed on pages 80-85. As a means to organize the project list in its most useable format, projects are listed geographically from east to west in the parish. Projects are color coded to reflect the affected area then subcategorized by responsible jurisdiction. To minimize horizontal space, multiple legends were utilized (as shown at the beginning of the project list).

The following separate categories of data shown in the project list table are presented below. The categories of data sets reflect the column headings in the Project List attachment.

a. The source of the data and/or recommended project—This source data originated in the preparation of the original hazard mitigation plan (2004, extends through the 2009 update, ESF-14 post Katrina-Rita projects, and is current through projects recommended recently via this multi-jurisdictional planning effort.

b. ID—Identifies each project in numerical order to track the number of projects

c. Project Description—A brief description of the project

d. Miscellaneous—additional description where appropriate

e. Status

f. Type—Drainage, safe room, levee, generator, water supply, hardening, etc.

g. HMGP Eligibility—All projects were identified and listed regardless of HMGP eligibility, but for the benefit of the respective jurisdictions, eligibility was noted.

h. Goal—Identifies the goals as per those identified in this section

i. Local Priority—While the projects are listed geographically from east to west, projects were included for each of the represented jurisdictions, e.g., parish, five municipalities, the Tribe, levee districts, drainage districts, etc.

Color coding was used as was an abbreviation (see legends) to group the projects by area. The priority for each jurisdiction was assigned by the responsible jurisdiction.

j. Affected Area—Identifies the affected geographical area. In the case of the unincorporated areas, each sector of the parish was given a community or regional designation.

k. Responsible Jurisdiction—These jurisdictions include subdivisions of the parish, i. e, drainage districts, the St. Mary Levee District, etc., as well as municipalities and the Chitimacha Tribe.

l. Critical Event—This category identifies the type of hazard that the projects mitigates. Examples include stormwater, riverine events, saltwater intrusion, surge, erosion, or wind events. In some cases, the identified projects cover all events.

The projects identified during plan development that relate directly to the Chitimacha Tribe are listed in cells highlighted in light blue. This data reflects input from Tribe members on the planning committee from input offered during committee meetings and during face-to-face planning meetings held on the reservation.

- **Goal 1: Eliminate the threat of catastrophic flood loss that could result from levee failure and lessen the need for new levee systems parishwide and insure that all levee systems are certified to protect from the critical 100-year storm event thus giving 100-year base flood elevation protection**

  - **Objective 1.1:** Protect all of St. Mary Parish's citizens from storm surge flood events

    Action 1.1.1: Maintain and expand existing levee protection according to *St. Mary Parish Storm Surge Protection Study* .

    - Timeframe: Ongoing
    - Funding: Local, regional, and federal
    - Staff: Existing designated full-time personnel in public works and planning departments
    - Project List Location Identifier: ID 10, 12, 15, 54, 66, 70, 71, 72, 73, 76, 77, 78, 80, 114, 116, 125

    Action 1.1.2: Construction of Amelia Levee – Statewide flood control project.

    - Timeframe: Ongoing
    - Funding: State
    - Staff: SMLD and Drainage District No. 6
    - Project List Location Identifier: ID 4

- **Goal 2: Ensure that each drainage district or other entity responsible for operations and maintenance of the respective drainage systems in the parish maintains existing facilities, upgrades facilities where needed, continues with current plans for expanding infrastructure, and considers future land use in areas of the parish experiencing urban growth ensuring protection inclusive of 100-year base flood elevation**

  - **Objective 2.1**: Improve existing drainage infrastructure

    Action 2.1.1: Widen drainage ditches, upgrade culverts and upgrade trestle between Cannata's Pump Station and the 18-foot ditch in the community of Bayou Vista
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP, local, and regional
    - Staff: Existing designated full-time personnel in public works and drainage district
    - Project List Location Identifier: ID 44

    Action 2.1.2: Widen drainage canal along railroad tracks, Young's Road Industrial Park, and Oceaneering in Morgan City, Louisiana
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP, local, and regional
    - Staff: Existing designated full-time personnel in public works and drainage district
    - Project List Location Identifier: ID 14

    Action 2.1.3: Enclose open drainage canals in Morgan City, Louisiana, including the Maple Street Canal, the canal behind Cypress Gardens subdivision, and Marquee Manor Canal, to lessen maintenance costs
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP, local, and regional
    - Staff: Existing designated full-time personnel in public works and drainage district
    - Project List Location Identifier: ID 13

    Action 2.1.4: Enclose West End drainage Ditch
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP, local, and regional
    - Staff: Existing designated full-time personnel in public works and drainage district
    - Project List Location Identifier: ID 37

    Action 2.1.5: Upgrade culverts at Highway 90 and the Tupelo Street Ditch
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP, local, and regional
    - Staff: Existing designated full-time personnel in public works and drainage district
    - Project List Location Identifier: ID 19

    Action 2.1.6: Enclose Middle Road Ditch in Bayou Vista, Louisiana
    - Timeframe: 1-5 years, as funding permits

- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 40

Action 2.1.7: Dredge Bayou Teche along Victoria Riverside Road and the borrow canals

- Timeframe: 1-5 years, as funding permits
- Funding: local and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 123

Action 2.1.8: Upgrade culverts under Highway 90 near Hollywood Casino and Ryan's in Bayou Vista, Louisiana

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 45

Action 2.1.9: Complete lining of Patti Drive ditch with concrete in Berwick, Louisiana

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 36

Action 2.1.10: Line Lucia ditch with concrete and increase slope in Patterson, Louisiana

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 59

Action 2.1.11: Upgrade culverts and enclose or line influent ditch from Boudreaux Street to Gilmore Street in Berwick, Louisiana

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 27

Action 2.1.12: Upgrade bar grates at pump stations, including Cypress Gardens and #6 in Morgan City and 2 and 2A in Amelia, Louisiana

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 6

Action 2.1.13: Upgrade pump station capacity and upgrade drainage ditches in Berwick, Louisiana and west of the Wax Lake Outlet

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier: ID 28, 29, 30, 31, 34, 37, 38, 67, 68, 74, 122, 123

Action 2.1.14: Widen Opperman Canal

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing designated full-time personnel in public works and drainage district
- Project List Location Identifier:ID 43

Action 2.1.15: Stabalize all Morgan City pump station pits and canals

- Timeframe: Ongoing
- Funding: Local, regional
- Staff: Drainage Distrcit No. 2
- Project List Location Identifier: ID 18

Action 2.1.16: Install box culverts at RR spur across from Port of Mogan City on Youg's Road.

- Timeframe: 1-5 years, as funding permits
- Funding: Local, regional , and federal
- Staff: Port Staff
- Project List Location Identifier: ID 26

Action 2.1.17: Install culvert under US 90 at Juniper Street

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Sub-Drainage District No. 1 of Drainage District No. 2
- Project List Location Identifier: ID 41

Action 2.1.18: Upgrade drainage canals and arterites within the Wax Lake East Drainage Distrcit (include Patterson Byu Dynamite Canal from US 90 to Borrow Pit).

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Wax Lake East
- Project List Location Identifier: ID 47

Action 2.1.19: Upgrade drainage at North and South Borrow Canals and bayous

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Wax Lake Outlet
- Project List Location Identifier: ID 50

Action 2.1.20: Install New Pump Station on Northwest Side of System

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Wax Lake Outlet
- Project List Location Identifier: ID 52

Action 2.1.21: Improve Flood Control Pump Stations East of Wax Lake –WLE

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Wax Lake Outlet
- Project List Location Identifier: ID 53

Action 2.1.22: Bayou Teche Drainage Improvements – Patterson to Jeanerette

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Wax Lake Outlet, Drainage District No. 1, and Patterson
- Project List Location Identifier: ID 55

- **Objective 2.2**: Elevate existing infrastructure to protect from flood damage

Action 2.2.1: Elevate sewer lift stations in Franklin, Louisiana

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing municipal and parish administration
- Project List Location Identifier: ID 60

Action 2.2.2: Elevate electrical components in lift stations in Sewer and Water District No. 5

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing sewer and water district personnel
- Project List Location Identifier: ID 126

Action 2.2.3: Elevate Generators at Morgan City Police Station

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP
- Staff: City of Morgan City
- Project List Location Identifier: ID 21

Action 2.2.4: Elevate Pump Stations to above BFE

- Timeframe: 1-10 years, as funding permits
- Funding: HMGP
- Staff: Drainage District No. 1
- Project List Location Identifier: ID 120

- **Objective 2.3:** Create new infrastructure to protect from flood damage

Action 2.3.1: Construct new floodgates in Bayou Beouf (Amelia), the Baldwin Canal (Baldwin), Bayou Chene, Hanson Canal/Yellow Bayoum Charenton Canal, and Bayou Teche.

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Existing municipal and parish administration, drainage district personnel, and SMLD
- Project List Location Identifier: ID 72, 73, 76, 113, 125, 127

Action 2.3.2: Construct alternate potable water intake for Morgan City inside Lower Atchafalya River System (Bayou Teche)

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: City of Morgan City

- Project List Location Identifier: ID 20

Action 2.3.3: New Pump Station for Country Club South of Civic Center and Franklin Canal Pump Station

- Timeframe: 1-10 years, as funding permits
- Funding: Local, regional, and federal
- Staff: Town of Berwick, Drainage District No. 1, Wax Lake East, and SMLD
- Project List Location Identifier: ID 35, 69

- **Objective 2.4:** Ensure pump stations and potable water intakes have an adequate power supply in case of a flood event

Action 2.4.1: Install generators at all pump stations

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing drainage district personnel
- Project List Location Identifier: ID 5, 39, 63

Action 2.4.2: Install generators at all potable water intakes

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing water and sewer district personnel
- Project List Location Identifier: ID 112

Action 2.4.3: Install generators at water pump at Water & Sewer Commission No. 4

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP, local, and regional
- Staff: Existing Water and Sewer Commission No. 4 personnel
- Project List Location Identifier: ID 79

Goal 3: Reduce repetitive flood damage in St. Mary Parish including all unincorporated areas, municipalities, and/or drainage districts

- **Objective 3.1**: Mitigate all repetitive losses in St. Mary Parish

Action 3.1.1: Elevate, acquire, or pilot reconstruct all RL and SRL structures in St. Mary Parish (see attachment c2-27 on page 114-120).

- Timeframe: 1-5 years, as funding permits
- Funding: HMGP
- Staff: Existing municipal and parish administration
- Project List Location Identifier: ID 97, 124

- **Objective 3.2:** Initiate drainage and/or surge flooding studies

Action 3.2.1: Initiate problem solving initiatice focusing on backflow surge up the Charenton Canal and the Franklin Canal affecting Bayou Teche west of Wax Lake Outlet (Calumet Cut) as well as the Franklin repetitive loss area

- Timeframe: 1-5 years, as funding permits
- Funding: Local, regional, and federal

- Staff: Drainage Distrcit No. 1
- Project List Location Identifier: ID 64

- **Goal 4: Facilitate responsible future development in the parish to reduce or eliminate the potential impacts of disasters.**

  - **Objective 4.1:** Promote and permit commercial and industrial development, including public critical facilities, outside of hazard areas to limit business interruption, property damage, and impairment to critical facilities in strict accordance with the parish zoning, flood management, and other applicable state and federal regulations.

    Action 4.1.1: Ensure that future development does not increase hazard losses
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: One full-time member of each municipality and the parish planning department
    - Project List Location Identifier: ID 97 & 124

    Action 4.1.2: Guide future development away from hazard areas while maintaining other parish goals such as economic development and improving the quality of life
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: One full-time member of the parish planning department and each municipality

    Action 4.1.3: Enforce the International Building Code requirements for all new construction to strengthen buildings against high wind damage
    - Timeframe: Ongoing
    - Funding: Not additional funds required
    - Staff: One current full-time member of the parish districts and each municipality

    Action 4.1.4: Provide safe locations for files, records, and computer equipment
    - Timeframe: Ongoing
    - Funding: HMGP/FMA
    - Staff: One current full-time member of the parish, the drainage districts, and each municipality

    Action 4.1.5: Install generators at all Critical Facilities
    - Timeframe: Ongoing
    - Funding: HMGP
    - Staff: Parish and Municipal
    - Project List Location Identifier: ID 25, 51, 62, 63

  - **Objective 4.2**: Promote preservation and/or conservation of flood prone areas for parish parks, recreation areas, and general flood plain management

    Action 4.2.1: Participate in existing programs at the state and federal levels oriented to environmental enhancement and conservation
    - Timeframe: Ongoing

- Funding: local, regional, and federal
- Staff: One current full-time member of the parish

- **Goal 5: Minimize property damage resulting from wind storms (i. e., hurricane force winds)**

  - **Objective 5.1**: Protect parish, city and tribal buildings from hurricane/coastal/tropical storm damage

    Action 5.1.1: Wind Retrofit St. Mary Parish 911 Center
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP
    - Staff: parish administrative staff
    - Project List Location Identifier: ID 111

    Action 5.1.2: Wind Retrofit Chitimacha Critical Facilities
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP
    - Staff: tribal administrative staff
    - Project List Location Identifier: ID 81-96

    Action 5.1.3: Wind retrofit municipal and other parish facilities
    - Timeframe: 1-10 years, as funding permits
    - Funding: HMGP
    - Staff: Parish and Municipal Staff
    - Project List Location Identifier: ID 22-24, 46, 61, 121

  - **Objective 5.2:** Protect Pump Station Employees from hurricane/coastal/tropical storm and tornado events

    Action 5.2.1: Construct Safe Room for Cypress Gardens Pump Station in Morgan City
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP
    - Staff: drainage district administrative staff
    - Project List Location Identifier:ID 16

    Action 5.2.2: Construct Safe Room for Pump Station #6 in Morgan City
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP
    - Staff: drainage district administrative staff
    - Project List Location Identifier:ID 17

    Action 5.2.3: Construct Safe Room for Pump Stations 2 and 2A in Amelia
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP
    - Staff: drainage district and parish administrative staff
    - Project List Location Identifier: ID 2

    Action 5.2.4: Install safe rooms at other critical facilities
    - Timeframe: 1-5 years, as funding permits
    - Funding: HMGP
    - Staff: drainage distict and parish administrative staff
    - Project List Location Identifier: 48, 49, 56, 57, 65, 119

- **Goal 6: Continue state and federal efforts to restore and preserve the parish coastal shoreline particularly as it relates to Coastal Wetland Planning, Protection, and Restoration Act (CWPPRA), Louisiana Department of Natural Resources Coastal Zone Management, and the U. S. Army Corps of Engineers**

  - **Objective 6.1:** Maintain dialogue with state and federal authorities

    Action 6.1.1: Keep contact and mailing lists current
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel with media representatives

    Action 6.1.2: Attend meetings at the state and federal levels
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel

  - **Objective 6.2:** Report condition updates to pertinent state and federal authorities.

    Action 6.2.1: Ensure that staff and general public are aware of the problem and the need to keep parish authorities updated
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: Parish engineering, public works, administrative, planning, and zoning staff, drainage district personnel, and city administrative and/or planning personnel with media representatives

    Action 6.2.2: Report updated findings
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: Parish engineering, public works, administrative, planning, and zoning staff; drainage district personnel, and city administrative and/or planning personnel with media representatives

  - **Objective 6.3:** Continue to seek CWPPRA, other federal, and state funds for coastal erosion mitigation

    Action 6.3.1: Maintain close liaison with the various programs and persons assigned to those programs at the various levels of government
    - Timeframe: Ongoing
    - Funding: No additional funds required
    - Staff: Parish engineering, public works, administrative, planning, and zoning staff; drainage district personnel, and city administrative and/or planning personnel

Action 6.3.2: Report updated findings

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Parish engineering, public works, administrative, planning, and zoning staff; drainage district personnel, and city administrative and/or planning personnel with media representatives

- **Objective 6.4:** Continue coastal protection projects to help reduce coastal erosion

Action 6.4.1: Increase Sediment Transport from Atchafalaya River down Wax Lake Outlet for Marsh enhancement and restoration

- Timeframe: Ongoing
- Funding: CPRA
- Staff: Parish engineering, public works, administrative, planning, and zoning staff; drainage district personnel, and city administrative and/or planning personnel

Action 6.4.2: Stabilize shoreline along Vermilion Bay and West Cote Blanche Bay

- Timeframe: Ongoing
- Funding: CPRA
- Staff: Parish engineering, public works, administrative, planning, and zoning staff; drainage district personnel, and city administrative and/or planning personnel
- Project List Location Identifier: ID 115

Goal 7: Multi-jurisdictional participation in the FEMA Community Rating System program (CRS)

- **Objective 7.1:** Encourage all political jurisdictions in the parish to join the FEMA Community Rating System Program

Action 7.1.1: Add new Regulations reducing development density in flood plains.

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel
- Project List Location Identifier: ID 110

Action 7.1.2: Each political subdivision to join the CRS

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel.

Action 7.1.3: All jurisdictions continue to participate in the NFIP—St. Mary Parish, Morgan City, Berwick, Patterson, Franklin, and Baldwin (Chitimacha Tribe covered under unincorporated St. Mary Parish)

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Municipal and Parish administrative staff

Action 7.1.4: Establish a public outreach campaign to ensure all homeowners in floodplains are aware of the various types of coverage options under the NFIP

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Municipal and Parish administrative staff

Action 7.1.5: Establish homeowner education program on flood mitigation measures

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Municipal and Parish administrative staff

▪ Goal 8: Enhance public awareness

- o **Objective 8.1:** Keep flood plain management in the consciousness of the general citizenry particularly regarding hazardous areas and measures to avoid potential damage and injury

Action 8.1.1: Notify the media of hazard mitigation measures and plans

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel with media representatives

Action 8.1.2: Make presentations to civic organizations

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel.

- o **Objective 8.2:** Provide public education for all hazards

Action 8.2.1: Notify the media of hazard mitigation measures and plans

- Timeframe: Ongoing
- Funding: No additional funds required
- Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel with media representatives

Action 8.2.2: Provide educational brochures to libraries, schools, and other public facilities including mitigation measures for all hazards including hurricanes, tornados, coastal/tropical storms, levee failure

- Timeframe: Ongoing
- Funding: No additional funds required

- Staff: Parish administrative and planning and zoning staff, drainage district personnel, and city administrative and/or planning personnel

2014 St. Mary Parish
Hazard Mitigation Plan Update
Project List

The St. Mary Parish PROJECT LIST resulting from the 2014 HMPU is presented on the following four pages. Projects removed from the 2008 update are included following the project list.

ST. MARY PRISH HAZARD MITIGATION PLAN UPDATE 2014
WORKING PROJECT LIST

LEGEND CODES….. RED, GREEN, and BLUE TEXT

Source		Affected Area		Responsible Jurisdiction		Critical Event	
A	St. Mary Comp Plan	A	Amelia	B	Berwick, Town of	A	All
B	Coastal Wetlands Planning, Protection, ,and Restoration Act	B	Berwick, Town of	Ba	Baldwin, Town of	E	Erosion
C	Coastal Impact Assistance Program	Ba	Baldwin, Town of	C	Chitimacha Nation	R	Riverine
D	Louisiana Comprehensive Master Plan fro a Sustainable Coast	Bv	Bayou Vista	DD1	Consolidated Drainag District No. 1 West of Wax Lake	Sw	Stormwater
E	Coastal Protection and Restoration Authority	C	Chitimacha Nation	DD2	Consolidated Drainage District No. 2 Morgan City	S	Surge
F	ESF 14	D	Delete from Program as NA		(back water levee to Siracusaville including pump stations)	Sli	Salt Water Intrusion
G	St. Mary Hazard Mitigation Plan 2004	F	Franklin, City of	DD6	Amelia and vicinity	W	Wind
H	St. Mary Parish Storm Surge Protection Study (Miller Plan??)	M	Morgan City, City of	M	Morgan City, City of		
I	1603/1606 Project Allocations	Pa	Patterson, City of	MPC	Morgan City Port Commission		
J	St. Mary Hazard Mitigation Plan 2009	Pw	Parishwide	Sd 1 of DD2	ByuVista and vicinity		
K	St. Mary Hazard Mitigation Plan 2014	T	Terrebonne Parish	F	Franklin, City of		
M	St. Mary Levee District	U	Unincorporated	Pw	St. Mary Parish Government		
		W	West of Wax Lake Outlet	Pa	Patterson, Town of		
				WLE	Wax Lake East Drainage Dist. (Atch. River to the Wax Lake Outlet)		
				Wds1, 2, 4, 5	Water & Sewer Commission Nos. xx		
				SMLD	St. Mary Levee District		

GOALS

1 Eliminate the threat of catastrophic flood loss that could result from levee failure and lessen the need for new levee systems parishwide by ensuring that all levees are brought up to certifiable standard in accordance with 100-year elevations

2 Ensure that each drainage district or other entity responsible for operations and maintenance of the respective drainage systems in the parish maintains existing facilities, upgrades facilities where needed, continues with current plans for expanding infrastructure, and considers future land use in areas of the parish that experience urban growth

3 Reduce repetitive flood damage in St. Mary Parish including all unincorporated areas, municipalities, and/or drainage districts

4 Facilitate responsible future development in the parish to reduce or eliminate the potential impacts of disasters

5 Minimize property damage resulting from wind storms (i.e., hurricane force winds)

6 Continue state and federal efforts to restore and preserve the parish coastal shoreline particularly as it relates to Coastal Wetland Planning, Protection, and Restoration Act (CWPPRA); Louisiana Department of Natural Resources Coastal Zone Management; and the U.S. Army Corps of Engineers

7 Actively pursue multi-jurisdictional participation in the FEMA Community Rating System Program including the parish, all municipalities, and the Chitimacha Tribe

8 Enhance public awareness

xOrig ID	Source	ID	Project Description	Miscellaneous	Status	Type	HMGP Eligible	Goal	Local Priority	Affected Area	Responsible Jurisdiction(s)	Critical Event
8	J	1	Drainage Improvement - Upgrade Culverts across Hwy 182 in Amelia	Drainage Improvements and Safe Room Construction are both eligible for HMGP funding	10%	Drainage	Y	2	1A	AU	DD6	A
	K	2	Safe room--Pump Stations 2 and 2A	Move behind Pump Station	10%	Safe Rm	Y	2	2A	AU	DD6	A
4	K	3	Rehabilitate No. 6 Pump and Sump at Bayou Ramos (near electric substation)	Larger pump needed; erossion control also		Pump Sta.	Y	2	3B	AU	DD6	Sw
13	K	4	Amelia Levee Construction--Statewide flood control project	New Levee	1%	Levee	N	1	4B	AU	DD6	Sw, R
10	J	5	Generators -- All Amelia Pump Stations	Generators are eligible for 5% initiative funding	10%	Gen.	Y	2	6B	AU	DD6	A
	K	6	Drainage Improvements--New Bar Gates for Pump Station Nos. 2 and 2A in Amelia	Rehab		Drainage	Y	1	5B	AU	DD6	Sw
5	K	7	Install Backwash gate at Bayou Ramos pump station	Upgrade		Pump Sta.	Y	1	7C	AU	DD6	S
44	K	8	Improve Flood Control Pump Stations East of MC--Gravity Drainage District No. 6	Increase Capacity		Pump Sta.	Y	2	8C	AU	DD6	Sw
2		9	Install Water Intake Pump Generator--Water & Sewer Comm. No. 1			Gen.	Y	2	A	AU	Wsd1	A
1	H	10	Morgan City/Amelia Levee Alignment 2 (Miller Drawing No. 12281-8)--Levee construction and Bayou Chene flood control structure	Design and Additional Study	1%	Levee	N	1	B	AMUT	SMLD	R
3	H	11	Morgan City/Amelia Levee Alignment 1 (Miller Drawing No. 12281-7)--Levee construction and 15,775 linear foot steel sheet pile wall along Bayou Boeuf	Large Scale projects not eligible for HMGP funds		Levee	N	1	B	AMUT	SMLD	S, R
90	K	12	Upgrade MC backwater levees to certifiable standard	Siracusaville to LA70 Atchafalaya Levee	Ongoing	Levee	N	1	1	M	M, SMLD ,DD2, P	S
92	J	13	Drainage Improvement -- Enclose open drainage canals -- Maple Street Canal, Canal behind Cypress Gardens, MarquisManor Canal	Drainage Improvements are Eligible for HMGP funds		Drainage	Y	2	2	M	M, DD2	SW
91	J	14	Drainage Improvement -- Improve Drainage along RR Tracks, Young's Road Industrial Park, Oceaneering (M. Loupe)	Drainage Improvements are Eligible for HMGP funds		Drainage	Y	2	3	M	M, DD2	SW
93	J	15	Flood Protection -- New 500' Berm at Lake End Park	Berm construction is eligible for HMGP funding		Levee	Y	1	4	M	M, DD2	S
94	J	16	Drainage Improvement and Safe Room -- New bar grates and safe room at Cypress Gardens Pump Station in Morgan City	Drainage Improvements and Safe Room Construction are both eligible for HMGP funding		Drainage	Y	2	5	M	M, DD2	Sw,W
95	J	17	Drainage Improvement and Safe Room -- New bar grates and safe room at Pump Station #6 in Morgan City	Drainage Improvements and Safe Room Construction are both eligible for HMGP funding		Drainage	Y	2	6	M	M, DD2	Sw,W
97	K	18	Stabilization of all MC pump station pits and canals (foundations being undermined)	Study to assess magnitude of problem		Pump Sta.	Y	2	7	M	DD2	Sw
96	J	19	Drainage Improvement -- Culvert Upgrade at Highway 90 on Tupelo Street Ditch	Drainage Improvements are Eligible for HMGP funds		Drainage	Y	2	8	M	M, DD2	Sw
102	J	20	Alternate Potable Water Intake for Morgan City inside Lower Atchafalaya River system (Bayou Teche)	New Water Intakes not eligible for HMGP funding		Water supply	N	2	9	M	M	Sli
99	K	21	Elevate Generators at MC Police Station			Hardening	Y	2	10	M	M	SSw
98	K	22	Hardening of MC Police Department/City Court			Hardening	Y	2	11	M	M	A
101	K	23	Hardening of MC Municipal Auditorium (Evacuation Shelter)			Hardening	Y	2	12	M	M	A
100	K	24	Hardening of MC City Hall			Hardening	Y	2	13	M	M	A

103	K	25	Generator for new port emergency ops center			Gen.	Y	2	1	M	MPC	W
104	K	26	Box culvert at RR spur across from port office			Drainage	Y	4	2	M	DD2	Sw
17	J	27	Drainage Improvement -- Upgrade Box Culverts and enclose or line influent ditch from Boudreaux Street to Gilmore Street in Berwick		10%	Drainage	Y	2	NA	B	B	Sw
18	J	28	Upgrade of Pump Station Capacity -- Replace 2 30" pumps with new modern and efficient 36" lift pumps (Berwick)--Golden Farms pump station		10%	Pump Sta.	Y	2	NA	B	B	Sw
22	J	29	Enlarge outlets under RR track where Thorguson, Patty Drive, and Guidry ditches flow south	Drainage Improvements are Eligible for HMGP funds		Drainage	Y	2	1	B	B	Sw
23	J	30	Enlarge outfall ditches south of RR track to Wax Lake East Drainage pumps			Drainage	Y	2	2	B	B	Sw
25	J	31	Redirect outfall ditch--Cannata Pump Station in Byu Vista that intersects with Guidry Ditch			Drainage	Y	2	3	B	B	Sw
27	J	32	Wind retrofit town hall, fire stations, and public works buildings			Drainage	Y	2	4	B	B	W
26	J	33	Construct Safe Rooms at all drainage pump stations (2)			Hardening	Y	2	5	B	B	Sw
24	J	34	Enlarge outfall ditches and/or construct retention ponds	Fr Cameron Iron facility that flow so. to Guidry Lake		Drainage	Y	2	6	B	B	Sw
19	J	35	Pump station for Country Club south of Civic Center			Pump Sta.	Y	2	7	B	B	Sw
15	J	36	Drainage Improvement -- Finish Covering Patti Drive Ditch with Concrete (Berwick)			Drainage	Y	2	8	B	B	Sw
14	J	37	Drainage Improvement -- West End Ditch: Enclose, concrete line, and/or replace metal culverts w/ concrete culverts		10%	Drainage	Y	2	9	B	B	Sw
20	J	38	Enlarge and concrete line Hogan St. ditch			Drainage	Y	2	10	B	B	Sw
16	J	39	Generators -- Pump Stations in Berwick			Gen.	Y	2	11	B	B	Sw
47	G	40	Drainage improvements of the Bayou Vista Middle Road ditch	Soft Project--Implementation of Drainage Improvements not covered by HMGP Funds	10%	Drainage	Y	2	A	Bv	Sd1 of 2	Sw
48	G	41	Culvert under US 90 at Jupiter Street (HMGP)	Bayou Vista	Begun	Drainage	Y	2	A	Bv	Sd1 of 2	Sw
49	I	42	Drainage Improvement -- Culvert Upgrades at Highway 90	Cannata's, Middle Road, SE Blvd., Delmar, etc.		Drainage	Y		A	Bv	Sd1 of 2	Sw
50	I	43	Drainage Improvement -- Widen Opperman Road Drainage Canal			Drainage	Y		A	Bv	Sd1 of 2	Sw
53	J	44	Drainage Improvement -- Widening of Drainage ditch and Upgrading of Culverts and Trestle at Cannata's Pump Station and 18 Foot Ditch			Drainage	Y	2	A	BvU	WLE	Sw
55	J	45	Drainage Improvement -- Enlarge and Widen Culverts near Hollywood Casino (Bayou Vista)			Drainage	Y	2	A	BvU	WLE	Sw
	K	46	Harden Harry P. Williams Airport FBO facility	Office and Hangar Complex where applicable		Hardening	Y	2	B	PaU	P	
52	G	47	Upgrade drainage canals and arteries within the Wax Lake East Drainage District (include Patterson Byu Dynamite Canal from US90 to Borrow Pit)			Drainage	Y	2	A	BPaBvU	WLE	Sw
39	M	48	Install Safehouse at Berwick Borrow Canal Pumping Station	All land areas within WLE Levee System		Safe Rm	Y	5	A	BPaBvU	SMLD, WLE	W
40	M	49	Install Safehouse at Possum Bayou Pumping Station	All land areas within WLE Levee System		Safe Rm	Y	5	A	BPaBvU	SMLD, WLE	W
41	M	50	Drainage Improvements--North and South Borrow Canals, bayous, and canals	All Drainage Arteries with WLE System		Drainage	Y	5	B	BPaBvU	SMLD, WLE	Sw
42	M	51	Provide Portable Stand-by/back-up Generator	Capable of being transported within WLE System		Gen.	Y	2	B	BPaBvU	SMLD, WLE	Sw
43	K	52	Install New Pump Station on Northwest Side of System	Just north of east Calumet Lock at Byu Teche; discharge into Wax Lake Outlet		Pump Sta.	Y	2	B	BPaBvU	SMLD, WLE	Sw
44	K	53	Improve Flood Control Pump Stations East of Wax Lake--WLE	Increasing capacity of pump stations not covered by HMGP funds		Pump Sta.	Y	2	A	BPaBvU	WLE	Sw
45	H	54	Calumet/Patterson/Bayou Vista/Berwick Levees (Miller Drawing No. 12281-6)--Approx. 12 miles of levee improvements south of the referenced communities	Large Scale projects not eligible for HMGP funds	Permitting	Levee	N	1	A	BPaBvU	SMLD	S,R
109	F	55	Bayou Teche Drainage Improvements--Patterson to Jeanerette	Dredging not eligible for HMGP funds		Drainage	N	2	C	PaFBU	DD1, WLE, P	Sw
107	K	56	Safe House Patterson Volunteer Fire Department			Hardening	Y	2	1	Pa	Pa	A
106	K	57	Safe Housing Complex for Patterson Public Works Department			Hardening	Y	2	2	Pa	Pa	A
105	K	58	Communications tower at central parish location	Parish OEP Coordination		Comm.	Y	2	3	Pa	Pa	A
108	J	59	Drainage Improvement -- Line Lucia Ditch with concrete and/or increase slope/cross section	Drainage Improvements are Eligible for HMGP funds		Drainage	Y	1	4	Pa	Pa, WLE	Sw
74	J	60	Elevate Franklin Sewer Lift Stations	Elevations to or above BFE are Eligible for HMGP funds		Elevate	Y	2	1	F	F	SW, S
28	J	61	Wind retrofit--Baldwin police & fire stations, city hall, public works building, and water plant			Hardening	Y	2	1	Ba	Ba	A
2	K	62	Generator--Baldwin Fire Station			Gen.	Y	2	2	Ba	Ba	A
	K	63	Generators--Baldwin Sewer Lift Stations			Gen.	Y	2	3	Ba	Ba	A
82	G	64	Initiate problem solving initiative focusing on backflow surge up the Charenton Canal and the Franklin Canal affecting Bayou Teche west of Wax Lake Outlet (Calumet Cut) as well as the Franklin repetitive loss area	Soft Project--Initiative not covered by HMGP Funds	Ongoing	Study	N	2	A	FU	DD1	S
85	J	65	Yokely Pump Station Safe Room			Pump Sta.	Y	2	A	FU	DD1	A
33	H	66	Franklin Levees (Miller Drawing No. 12281-3)--Levee improvements west and south of Franklin. Levee construction = $30,590,000; Charenton Canal flood control structure = $35,000,000	New flood control structures not eligible--See 3A		Levee	N	1	B	FU	DD1	S
77	F	67	Improve Flood Control Pump Stations West of Wax Lake--Consolidated Drainage District 1	Increasing capacity of pump stations not covered by HMGP funds		Pump Sta.	N	2	B	FBaU	DD1	Sw
81	F	68	Increase Capacity of Flood Control Pump Stations West of Wax Lake Outlet--Gordy, Maryland, Wax Lake, Franklin, Centerville, Ellerslee, North Bend, and Todd	Increasing capacity of pump stations not covered by HMGP funds		Pump Sta.	N	2	B	FU	F, DD1	Sw
87	K	69	Franklin Canal Pump Station	New Pump Station		Pump Sta.	Y	1	A	FU	SMLD	Sw

88	K	70	Yokeley Levee Improvements	Tie into western end of existing levee and constructing new levee north to southern pacific railroad	CDBG Ongoing	Levee	N	1	A	FU	SMLD	Sw
79	J	71	Surge Protection -- Wax Lake Outlet to New Iberia Hurricane Protection	New Construction is not eligible for HMGP funding		Levee	Y	1	B	FBaCU	SMLD	S, R
89	K	72	HansonCanal and Yellow Bayou Floodgates and Pump Stations	Levee Improvements, Floodgate and floodwall (Hanson), sluice gates, floodwall, and pump station (Yellow Byu)	Apr-14	Floodgate	Y	1	A	FU	P	Sw
		73	Hanson Canal flood control structure	In Design	10%	Floodgate	Y		A	FU	DD1	
31	F	74	Bayou Choupique Channel Drainage Improvements	Storm Surge Protection--New Construction of higher capacity drainage structure not eligible for HMGP funding		Drainage	N	2	A	BaCU	DD1	Sw
		75	Install Natural Gas Pipeline to Franklin Pump Station (Corps) on the Hanson Canal	Provide uninterrupted service		Pump Sta.		2	A	FU	DD1	Sw
36	J	76	Flood Protection -- Charenton Floodgate	New Construction is not eligible for HMGP funding		Floodgate	N	1	B	BaCU	DD1	S
35	J	77	Flood Protection -- New Floodgate at Baldwin from Miller Plan	New Construction not eligible for HMGP funds		Floodgate	Y	2	B	BaU	DD1	S
37	H	78	Centerville/Ricohoc Levees (Miller Drawing No. 12281-4)--Levee improvements south of U.S. Hwy 90 and the communities of Centerville and Ricohoc	New flood control structures not eligible		Levee	N	1	B	WU	DD1	S
32	J	79	Generator for Water Pump at Water & Sewer Commission No. 4			Gen.	Y	2	A	BaCU	Wsd4	A
34	K	80	Bayou Choupique Flood Protection Ring Levee		Ongoing	Levee	N	2	A	BaU	Ba, SMLD	S
72	J	81	Wind Retrofit -- Chitimacha Tribal School	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	1	C	C	W
59	J	82	Wind Retrofit -- Chitimacha Police Department	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	2	C	C	W
59	J	83	Wind Retrofit -- Chitimacha Fire Department	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	3	C	C	W
65	J	84	Wind Retrofit -- Chitimacha Health Clinic	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	4	C	C	W
63	J	85	Wind Retrofit -- Chitimacha Museum	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	5	C	C	W
60	J	86	Wind Retrofit -- Chitimacha Trading Post	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	6	C	C	W
71	J	87	Wind Retrofit -- Chitimacha Administrative/Main Office	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	7	C	C	W
66	J	88	Wind Retrofit -- Chitimacha Tribal Courthouse/Records Building	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	8	C	C	W
67	J	89	Wind Retrofit -- Chitimacha Rivercane Assisted Living Center	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	9	C	C	W
62	J	90	Wind Retrofit -- Chitimacha Human Resource/CECHP Building	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	10	C	C	W
62	J	91	Wind Retrofit -- Chitimacha Kaxgi Building	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	11	C	C	W
61	J	92	Wind Retrofit -- Development Building	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	12	C	C	W
70	J	93	Wind Retrofit -- Chitimacha Public Works Building	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	13	C	C	W
64	J	94	Wind Retrofit -- Raintree Market	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	14	C	C	W
68	J	95	Wind Retrofit -- First National Bank of Jeanerette (owned by Tribe)	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	15	C	C	W
69	J	96	Wind Retrofit -- Chitimacha Recreation Department	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	16	C	C	W
		97	Wind Retrofit--Housing Authority	Wind Retrofits are eligible for HMGP funding		Hardening	Y	5	17	C	C	W
118		98	Mitigation of Repetitive Losses Parishwide		Ongoing	Rep. Loss	Y		A	Pw	P	A
119	J	99	Drainage Improvement -- Dredge Borrow Canals North of Bayou Teche/Lwr. Atch.	Dredging not eligible for HMGP funds	Ongoing	Drainage	N	2	B	Pw	WLE	Sw
120	B	100	Mitigate Coastal Erosion	CIAP, CPRA, etc.	Ongoing	Coastal	N	6	C	Pw	P	E
121	B	101	Atchafalaya Sediment Delivery to enhance natural delta growth	Coastal Protection	Ongoing	Coastal	N	6	C	Pw	P	A
122	B	102	Big Island Mining--dredging and placing dredged material on natural delta lobes	Mining and Dredging not covered by HMGP funds		Coastal	N	6	C	Pw	P	NA
123	B	103	Castille Pass Channel Sediment Delivery--dredging and extending Castille Pass to promote sub delta development	Dredging not covered by HMGP Funds		Coastal	N	6	C	Pw	P	E
124	B	104	Bayou Sale Shoreline Protection to reduce and/or reverse shoreline erosion and create marsh			Coastal	N	6	B	Pw	P	E
125	B	105	Avoca Island Diversion and Land Building to create and protect 143 acres of emerging wetland			Coastal	N	6	B	Pw	P	E
126	B	106	Sediment Trapping at "The Jaws" to create emergent vegetated wetlands			Coastal	N	6	A	Pw	P	E
127	F	107	Restoration of Barrier Reef--East Cote Blanche Bay			Coastal	N	6	B	Pw	P	
128	F	108	Shoreline Protection/Restoration- Cypremort Point			Coastal	N	6	C	Pw	P	E
129	F	109	Interconnection of potable water systems	Upgrade current supply for additional storage, supply and distribution in the case of emergency	Ongoing	Water supply	N	2	A	Pw	P	Sli
130	F	110	N-S Evac. Route Along Atchafalaya Basin Levee	New Construction not covered by HMGP funds		Evacuation	N	6	A	Pw	P	A
132	J	111	Public Policy -- All municipalities to apply Community Rating System (CRS)	Public Policy not Eligible for HMGP funds		Policy	N	7	B	Pw	B, P, F, Ba, P	A
138	J	112	Wind Retrofit -- 911 Center plus Safe Room	Repeated in 1603/1607		Hardening	Y	5	A	Pw	P	A
139	J	113	Generators -- All Drinking Water Intakes	Generators are eligible for 5% Initiative Funding		Gen.	Y		A	Pw	P	A
140	K	114	Bayou Teche Recon Study and Modeling for Floodgate			Study	N		A	Pw	SMLD	SW
141	H	115	Ivanhoe Canal/Glencoe Levees (Miller Drawing No. 12281-1)--construction of approx. 16 miles of new levees north and south of LA Hwy. 83	New Levee Construction not eligible for HMGP funding		Levee	N	1	C	WU	DD1	S
151	E	116	Shoreline Stabilization along Vermilion Bay and West Cote Blanche Bay	Not Mitigation--Coastal Protection not eligible for HMGP funds		Coastal	N	6	C	U	P	E
153	E	117	Morgan City to Gibson Hurricane Protection--Alignment will follow the Federal Lower Atchafalaya River Barrier Plan, which is designed to alleviate Atchafalaya River backwater flooding (MRT petition)	New Construction not covered by HMGP funds		Levee	N	6	B	U	P	R, S
154	F	118	Bayou Chene Flood Control Structure	New Construction not covered by HMGP funds			N	2	B	U, T	SMLD	B
155	H	119	Bayou Sale Levees (Miller Drawing No. 12281-5)--Approx. 18 miles of Levee improvements east and west of Hwy. 317 south of the Intracoastal Waterway and ending near Bayou Sale. Total project cost = $32,700,000.	Large Scale projects not eligible for HMGP funds		Levee	N	1	B	U	SMLD	S

156	J	120	Wax Lake Pump Station Safe Room			Hardening	Y		A	U	DD1	ALL
157	J	121	Elevation -- Pumps in Drainage District 1 to above BFE (4 in process)	Elevations to or above BFE are Eligible for HMGP funds	HMGP 2015	Pump Sta.	Y	2	A	U	DD1	S
158	J	122	Wind Retrofit--Consolidated DD No. 1 Office			Hardening	Y		A	U	DD1	W
		123	Drainage Upgrade--Faye Coulee	Worsening drainage at Sorrell Estates subd.		Drainage		2	B	U	DD1	Sw
160	J	124	Drainage Improvements -- N. of Bayou Teche/Lwr. Atch. along Victoria Riverside Road Berwick to Calumet	Maintenance and Dredging not eligible for HMGP funds		Drainage	Y	2	B	UP	WLE, P	Sw
161	I	125	Mitigation of Repetitive Losses -- Elevation (1 remaining)		Ongoing	Rep. Loss	Y		A	UP	P	S, Sw
163	H	126	Four Corners/Baldwin Levees (Miller Drawing No. 12281-2)--construction of approx. 10 miles of new levees south of LA Hwy. 83 and the communities of Four Corners and Baldwin. Scott Canal flood control structure	New Levee and flood control structure Construction not eligible for HMGP funding		Levee	N	1	C	WBaU	SMLD	S
165	J	127	Elevation -- Sewer and Water District 5 Lift Station Electrical	Elevation is an eligible HMGP activity		Hardening	Y	2	B	WU	Wsd5	Sw
37	H	128	Yellow Bayou flood control structure	New flood control structures not eligible	25%		N	1	A	WU	DD1	S

PREVIOUSLY LISTED PROJECT REMOVED AS COMPLETED, SUBSTANTIALLY IN PROGRESS, OR FOR OTHER REASONS

7	J		Flood Protection -- New Floodgate at Amelia	New Construction not eligible for HMGP funds	Delete	Floodgate		2		AU	SMLD, P	?
11	E		Floodgate at Bayou Beouf Locks	New Construction not covered by HMGP funds	Delete	Floodgate		1		AU	SMLD, P	?
12			Floodgate in Bayou Boeuf at Amelia	New Construction not covered by HMGP funds	Delete	Floodgate		1		AU	SMLD, P	?
6	J		Flood Protection -- New Floodgate at Bayou Beouf Locks	New Construction not eligible for HMGP funds	Delete	Floodgate		2		AU	P	?
9	J		Drainage Improvement -- New Pump Station on Domino Property in Amelia	New Construction is not eligible for HMGP funding	Delete	Drainage		1		AU	P	Sw
38	M		Install Second Water Intake Structure to Berwick-Byu Vista Water Plant	Joint Town-Water District collaboration		Water supply	Y		A	BBv	B, Wsd2	Sli
33	H		Franklin Canal flood control structure		Completed			1		BaFU	DD1	S
46	G		Address concern expressed for replacement of Plantation Pump Station in the Bayou Vista area (Sub-drainage District No. 1 of Drainage District No. 2 - note: names appear not to fit logic because of consolidation of districts in years past)	Soft Project--Addressing Concern for Replacing Pumps not covered by HMGP Funds	Completed			2		Bv	Sd1 of 2	Sw
54	J		Drainage Improvement -- Enclose Bayou Vista Middle Road Ditch	Drainage Improvements are eligible for HMGP funding	Ongoing			2		BvU	WLE	Sw
84	J		Flood Protection -- New Floodgate on Franklin Canal	New Construction is not eligible for HMGP funding	Ongoing			2		FU	DD1	S,R
164	J		Upgrade of Pump Station Capacity -- West of Wax Lake Outlet	Drainage Improvements are Eligible for HMGP funds	Ongoing			2		WU	DD1	Sw
110	A		Organize a watershed management initiative to address drainage and flooding issues	Soft Project--Organization not eligible for HMGP funds	Complete			4		Pw	P	DONE
111	A		Identified floodplains and other natural features to evaluate sites most appropriate for development	Soft Project--Floodplain identification not eligible for HMGP funds	Complete			4		Pw	P	DONE
112	A		Develop community based wetland restoration programs	CIAP, CPRA, etc.	Complete					Pw	P	NA
113	F		St. Mary Parish All Hazards Emergency Preparedness Plan	Soft Project--Emergency Preparedness Plans not covered by HMGP funds	Complete			n/a		Pw	P	NA
114	F		Expedite the Implementation of I-49 South	Evacuation Rouge				n/a		Pw	P	A
115	A		Designated wetland districts (land not appropriate for development)	Soft Project--Designation of districts not eligible for HMGP funds	Complete			4		Pw	P	DONE
116	A		Establish an entity dedicated to the protection and enhancement of natural areas (CZM, COE)	Soft Project--Coastal Protection not eligible for HMGP funds	Complete			3, 6		Pw	P	DONE
117	A		Organize management strategies to minimize the adverse effects of development projects	Soft Project--Not eligible for HMGP funds	Complete			6		Pw	P	DONE
131	I		Retrofit -- Courthouse		Bid 04.14			2		Pw	P	ALLw
133	J		Elevation--Underground Fuel Tank, Radiator for Generator, Outside Condensing Unit, Generator Switch, Critical Electric Infrastructure, and Transformer Bank at Parish Courthouse--BECAME FLOODWALL	Repeated in 1603/1607	Bid 04.14			2		Pw	p	A
134	J		Parishwide Warning System	Warning Systems are eligible for 5% initiative funding	Ongoing			8		Pw	p	A
135	J		Relocation -- Sheriff's Dispatch from Basement to 1st Floor (Courthouse)	Relocation of Services is not eligible for HMGP funding	Bid 04.14			2		Pw	p	A
136	J		Review Mechanical Room for Elevation of other Critical Equipment (Courthouse)	Review of eligible project is not eligible for HMGP funding	Bid 04.14			2		Pw	p	A
137	J		Elevation and Upgrade of Fuel System--elevate and bring in day tank, remote access (Courthouse)	Elevation is an eligible HMGP activity	Bid 04.15			2		Pw	p	A
144	C		Point Chevreuil Shoreline Protection--Reduce/Reverse shoreline erosion	CIAP	Bid 04.14			6		U	P	E
145	C		Deer Island Pass Realignment--Dredge shallow flat at the mouth of Deer Island Bayou to improve water and sediment flow to Atchafalaya Bay. Dredged material will be placed in marsh creation cells to help prevent erosion.	Dredging not covered by HMGP Funds	Bid 07.14			6		U	P	E
146	C		Historic Reef Restoration	Not Mitigation--Coastal Restoration	Delete			6		U	P	
147	C		Point Chevreuil to Marsh Island	Not Mitigation--Coastal Restoration	Delete			6		U	P	
148	D		Wax Lake Outlet to New Iberia Hurricane Protection (Storm Surge)	New Construction not covered by HMGP funds	Delete			6		U	DD1	S
149	D		Maintain Existing Levee Protection for Morgan City and Berwick	Not Mitigation--Maintenance not eligible for HMGP funding	Revised			6		U	WLE DD2	S, R
150	E		Stabilize Banks of the GIWW between Morgan City and Larose	Not Mitigation--Stabilization not reinforcement or new construction	Delete			6		U	P	
152	E		Increase Sediment Transport from Atchafalaya River down Wax Lake Outlet for Marsh enhancement and restoration	Soft Project--Coastal Restoration not eligible for HMGP funds	Delete			6		U	P	E
159	J		Flood Protection -- Morgan City to Gibson Hurricane Protection (Alignment will follow the Federal Lower Atchafalaya River Barrier Plan, which is designed to alleviate Atchafalaya River Backwater flooding)	Large Scale projects not eligible for HMGP funds	Repeat			6		U	SMLD	Bw
161	I		Mitigation of Repetitive Losses -- Elevation (9)	Only one remaining	Revised					UP	P	
162	I		Mitigation of Repetitive Losses -- Mitigation Reconstruction (1)		Complete					UP	P	S, Sw

The following projects are ongoing or have been completed since the last Hazard Mitigation Plan Update:

Affected Area		Responsible Jurisdiction				
A	Amelia	B	Berwick, Town of			
B	Berwick, Town of	Ba	Baldwin, Town of			
Ba	Baldwin, Town of	C	Chitimacha Nation			
Bv	Bayou Vista	DD1	Consolidated Drainag District No. 1 West of Wax Lake			
C	Chitimacha Nation	DD2	Consolidated Drainage District No. 2 Morgan City			
D	Delete from Program as NA		(back water levee to Siracusaville incl pump stations)			
F	Franklin, City of	DD6	Amelia and vicinity			
M	Morgan City, City of	M	Morgan City, City of			
Pa	Patterson, City of	MCpc	Morgan City Port Commission			
Pw	Parishwide	Sd 1 of DD2	ByuVista and vicinity			
T	Terrebonne Parish	F	Franklin, City of			
U	Unincorporated	Pw	St. Mary Parish Government			
W	West of Wax Lake Outlet	Pa	Patterson, Town of			
		WLE	Wax Lake East Drainage District (Atchafalaya to the Wax Lake Outlet)			
		Wsd1, 2, 4, 5	Water & Sewer Commission Nos. xx			
		SMLD	St. Mary Levee District			

Ongoing or Completed Projects

	Project Description	Status	Responsible Jurisdiction
1	Upgrade MC backwater levees to certifiable standard	Ongoing	M, SMLD ,DD2, P
2	Initiate problem solving initiative focusing on backflow surge up the Charenton Canal and the Franklin Canal affecting Bayou Teche west of Wax Lake Outlet (Calumet Cut) as well as the Franklin repetitive loss area	Ongoing	DD1
3	Yokely Levee Improvements	CDBG Ongoing	SMLD
4	Bayou Choupique Flood Protection Ring Levee	Ongoing	Ba, SMLD
5	Parishwide Warning System	Ongoing	p
6	Mitigation of Repetitive Losses Parishwide	Ongoing	P
7	Drainage Improvement -- Dredge Borrow Canals North of Bayou Teche/Lwr. Atch.	Ongoing	WLE
8	Mitigate Coastal Erosion	Ongoing	P
9	Atchafalaya Sediment Delivery to enhance natural delta growth	Ongoing	P
10	Interconnection of potable water systems	Ongoing	P
11	Mitigation of Repetitive Losses -- Elevation (1 remaining)	Ongoing	P
12	Franklin Canal flood control structure	Completed	

13	Address concern expressed for replacement of Plantation Pump Station in the Bayou Vista area (Sub-drainage District No. 1 of Drainage District No. 2 - note: names appear not to fit logic because of consolidation of districts in years past)	Completed	
14	Organize a watershed management initiative to address drainage and flooding issues	Complete	
15	Identified floodplains and other natural features to evaluate sites most appropriate for development	Complete	
16	Develop community based wetland restoration programs	Complete	
17	St. Mary Parish All Hazards Emergency Preparedness Plan	Complete	
18	Designated wetland districts (land not appropriate for development)	Complete	
19	Establish an entity dedicated to the protection and enhancement of natural areas (CZM, COE)	Complete	
20	Organize management strategies to minimize the adverse effects of development projects	Complete	
21	Mitigation of Repetitive Losses -- Mitigation Reconstruction (1)	Complete	

5.3 §201.6 (c)(3)(iii) …shall include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

The Hazard Mitigation Committee identified 128 hazard mitigation projects to be included in the parish Hazard Mitigation Plan. Each responsible political jurisdiction prioritized its respective projects. The actions presented on the previous pages were categorized to organize priorities by HMGP grant eligibility. Potential projects identified included properties and areas that have localized flooding or drainage problems as noted in the St. Mary Parish Hazard Mitigation Plan (2005) and 2008 update. Most of the projects from the original plan were not eligible for HMGP funding, but those that were carried forward to project prioritization. The project list reviewed for prioritization also included consideration of repetitive loss (RL) and severe repetitive loss (SRL) properties in the incorporated and unincorporated areas of the parish.

Prioritization

The Parish's mitigation consultants, LJC Planning and Design and CB&I assisted the HMPU Committee and Parish administrators in reviewing and evaluating the project list. Consideration was given to a variety of factors including a project's eligibility for federal mitigation grants and its ability to be funded. This process required evaluation of each

project's engineering feasibility, cost effectiveness, and environmental and cultural factors. The resultant parishwide project priorities are noted below.

Parish Priority Projects List			
Project Description	*Goal*	*Affected Area*	*Responsible Jurisdiction(s)*
Rehabilitate No. 6 Pump and Sump at Bayou Ramos (near electric substation)	*2*	*AU*	*DD6*
Drainage Improvements--New Bar Gates for Pump Station Nos. 2 and 2A in Amelia	*1*	*AU*	*DD6*
Install Backwash gate at Bayou Ramos pump station	*1*	*AU*	*DD6*
Morgan City/Amelia Levee Alignment 1 (Miller Drawing No. 12281-7)--Levee construction and 15,775 linear foot steel sheet pile wall along Bayou Boeuf	*1*	*AMUT*	*SMLD*
Drainage Improvement -- Enclose open drainage canals -- Maple Street Canal, Canal behind Cypress Gardens, MarquisManor Canal	*2*	*M*	*M, DD2*
Drainage Improvement -- Improve Drainage along RR Tracks, Young's Road Industrial Park, Oceaneering (M. Loupe)	*2*	*M*	*M, DD2*
Flood Protection -- New 500' Berm at Lake End Park	*1*	*M*	*M, DD2*
Enlarge outlets under RR track where Thorguson, Patty Drive, and Guidry ditches flow south	*2*	*B*	*B*
Enlarge outfall ditches south of RR track to Wax Lake East Drainage pumps	*2*	*B*	*B*
Redirect outfall ditch--Cannata Pump Station in Byu Vista that intersects with Guidry Ditch	*2*	*B*	*B*
Drainage Improvement -- Culvert Upgrades at Highway 90		*Bv*	*Sd1 of 2*
Drainage Improvement -- Widen Opperman Road Drainage Canal		*Bv*	*Sd1 of 2*
Drainage Improvement -- Widening of Drainage ditch and Upgrading of Culverts and Trestle at Cannata's Pump Station and 18 Foot Ditch	*2*	*BvU*	*WLE*
Safe House Patterson Volunteer Fire Department	*2*	*Pa*	*Pa*
Safe Housing Complex for Patterson Public Works Department	*2*	*Pa*	*Pa*
Communications tower at central parish location	*2*	*Pa*	*Pa*
Elevate Franklin Sewer Lift Stations	*2*	*F*	*F*
Wind retrofit--Baldwin police & fire stations, city hall, public works building, and water plant	*2*	*Ba*	*Ba*
Generator--Baldwin Fire Station	*2*	*Ba*	*Ba*
Generators--Baldwin Sewer Lift Stations	*2*	*Ba*	*Ba*

Yokely Pump Station Safe Room	*2*	*FU*	*DD1*
Franklin Levees (Miller Drawing No. 12281-3)--Levee improvements west and south of Franklin. Levee construction = $30,590,000; Charenton Canal flood control structure = $35,000,000	*1*	*FU*	*DD1*
Improve Flood Control Pump Stations West of Wax Lake--Consolidated Drainage District 1	*2*	*FBaU*	*DD1*
Wind Retrofit -- Chitimacha Tribal School	*5*	*C*	*C*
Wind Retrofit -- Chitimacha Police Department	*5*	*C*	*C*
Wind Retrofit -- Chitimacha Fire Department	*5*	*C*	*C*
Big Island Mining--dredging and placing dredged material on natural delta lobes	*6*	*Pw*	*P*
Castille Pass Channel Sediment Delivery--dredging and extending Castille Pass to promote sub delta development	*6*	*Pw*	*P*
Bayou Sale Shoreline Protection to reduce and/or reverse shoreline erosion and create marsh	*6*	*Pw*	*P*
Ivanhoe Canal/Glencoe Levees (Miller Drawing No. 12281-1)--construction of approx. 16 miles of new levees north and south of LA Hwy. 83	*1*	*WU*	*DD1*

5.4 §201.6 (c)(3)(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

As referenced in the project list, each municipality (Morgan City, Berwick, Patterson, Franklin, and Baldwin) has at least one project within the city limits. The list of projects above also includes the unincorporated areas of the parish and the Chitimacha Tribe, thereby covering every government authority (unincorporated, municipal, tribal) within the parish boundaries.

6.0 §201.6 (c)(4) PLAN MAINTENANCE PROCEDURES

A plan maintenance process that includes:

6.1 §201.6 (c)(4)(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

St. Mary Parish has developed a plan maintenance process to ensure that regular review and update of the Hazard Mitigation Plan occurs. The Parish has formed a Hazard Mitigation Plan Evaluation Committee that consists of selected members from municipalities, Chitimacha the Tribe local agencies, and the Hazard Mitigation Plan Update Committee which prepared the HMPU as included herewith. The HMP Evaluation Committee will consist of the following representation:

1. St. Mary Parish President
2. St. Mary Parish CAO (responsible for overall coordination of HMP maintenance activities)
3. St. Mary Parish Engineer
4. St. Mary Parish Director of Planning and Zoning
5. St. Mary Parish Director of Economic Development
6. St. Mary Parish OEP director
7. St. Mary Parish Sheriff
8. Mayors of each of the five municipalities or his planning and zoning director as his representative
9. St. Mary Levee District Executive Director (or designee)
10. Chitimacha Tribe Chairman (or designee)
11. Chairpersons of each drainage district or his engineering representative

The CAO of the parish will be responsible for contacting each of the committee members during January of every year. Members will have a one month period in which to respond to initiate a meeting if any one member feels that issues need to be addressed. However, should a hazard event occur and the need for update analysis surface, a meeting can be called by the CAO or requested by a committee member through the CAO.

The parish CAO will also be responsible for maintaining plan review comments. Members of the evaluation committee will monitor the plan on an ongoing basis and bring their comments to the yearly evaluation meetings. Ideas to be discussed will include, but are not limited to, the following:

- Does the committee membership need to be updated?
- Have any new hazard events occurred?
- Has new funding been allotted?
- Have any projects been implemented?

- Have the project priorities changed?
- Are there any new projects to discuss?

The HMPU Committee reviewed all of the above criteria during the planning process.

In addition to the yearly evaluations, the questions listed above and additional considerations will be made during the formal update process to be completed and approved by FEMA within a five-year cycle. Updates to the Hazard Mitigation Plan will be made fully utilizing the representation of the HMP committee formed for this purpose. (See §201.6 (c)(4)(i))

6.2 §201.6 (c)(4)(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Members of local and parish departments who interact on planning issues, such as the Parish President, Parish CAO, Parish Director of Planning and Zoning, Parish Director of Economic Development, Parish OEP Director, St. Mary Parish Sheriff, mayors of each municipality, Chitimacha Tribe representative, Chairpersons of each drainage district or his engineering representative, met to review the relevance of the HMP's risks and vulnerabilities identified, as well as the goals, objectives, and actions for mitigating the risks, and catalogued all said information for use in future updates to the other local planning mechanisms. In addition, at the time such update processes take place, these stakeholders will convene as a committee to review the ongoing relevance of said data and how it can best be utilized in the various planning mechanisms to produce the best possible planning document.

When appropriate, local governments, by way of the individuals who served on the HMPU Committee and the HMP Evaluation Committee, will address the need to incorporate requirements of the mitigation plan into their respective zoning ordinances, comprehensive plans, and/or capital improvement plans if deemed necessary and if not previously included. An effort will be made by all HMPU committee members to ensure consistency in all future planning efforts with the mitigation goals and risk assessment presented in this plan. Consistency between all planning efforts will ensure a decrease in losses related to hazard events within future and existing developments. During the last five-year update cycle, the former hazard mitigation plan's (2005) goals were incorporated into the *Amelia Area Revitalization Plan* relative to flood control issues. The goals and hazard mitigation priorities were also discussed frequently in council meetings at both the municipal and parish level.

If amendments to existing ordinances or new ordinances are required, each political jurisdiction will be responsible for its respective updates. However, based upon the findings of this plan, little need exists for creating new ordinances or revising existing

ordinances as the parish has been dealing with flood mitigation issues for decades as its livelihood depends on it.

6.3 §201.6 (c)(4)(iii) Discussion on how the community will continue public participation in the plan maintenance process.

Responsibility for continued public participation will be that of the parish CAO. Copies of the plan will be kept on file at the parish government office and with each municipality. Contained in the plan and presented in section (c)(4)(i) is a list members of the plan evaluation committee that can be contacted. In addition, copies of the plan and any proposed changes will be posted on the parish government website. This website will also have an e-mail address and phone numbers to which the public can direct their comments or concerns. The local newspaper will also be notified if HMP issues arise. The Parish and Tribal governing bodies will formally adopt the updated plan following State and Federal preliminary approvals.

Projects will be primary function of the Parish government and its steering committee. As such it will coordinate with the Tribal government on projects directly or indirectly pertinent to the Chitimacha nation lands—the reservation and fee title lands.

All projects heading toward implementation require Council (Parish and Tribal) action. All council meetings are advertised and agendas posted. The public is allowed at all meetings.