

# Flood Risk Report

## Mermenatu Headwaters

HUC 08080201

*Post-Discovery, December 2020*



**FEMA**

Flood Risk Report History

Version Number	Version Date	Summary
1	12/29/2020	Initial Report after Discovery meeting

## Preface

The Department of Homeland Security, Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program provides States, Tribes, and local communities with flood risk information, datasets, risk assessments, and tools that they can use to increase their resilience to flooding and better protect their residents. By pairing accurate floodplain maps with risk assessment tools and planning and outreach support, Risk MAP transforms the traditional flood mapping efforts into an integrated process of identifying, assessing, communicating, planning for, and mitigating flood-related risks.

This Flood and Natural Hazard Risk Report provides datasets for floods and other natural hazards to help local or Tribal officials, floodplain managers, planners, emergency managers, and others better understand their flood risk, take steps to mitigate those risks, and communicate those risks to their residents and local businesses. Flood risk often extends beyond community limits. This report provides flood risk data for the Mermentau Headwaters Watershed.

Flood risk is always changing, and studies, reports, or other sources may be available that provide more comprehensive information. This report is not intended to be regulatory or the final authoritative source of all flood risk data in the project area. Rather, it should be used in conjunction with other data sources to provide a comprehensive picture of flood risk within the project area.

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## Executive Summary

The Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program provides communities with flood information to help them understand their current flood risk and make informed decisions about taking action to become stronger and more resilient in the face of future risk. The Risk MAP process provides communities with new or improved information about their flood risk based on watershed models that use information from local, regional, State, and Federal sources. Communities can use the resulting tools and data to enhance mitigation plans and better protect their residents.

This report is one such tool for communities impacted from an updated flood hazard analysis of the Mermentau Headwaters Watershed. The Flood Risk Report has two goals: (1) **inform communities of their risks** related to certain natural hazards, and (2) **enable communities to act** to reduce their risk. It is intended to assist Federal, State, and local officials with the following:

- Update local hazard mitigation plans and community comprehensive plans
- Update emergency operations and response plans
- Communicate risk
- Inform the modification of development standards
- Identify mitigation projects

During this phase of the process, communities are encouraged to review the flood hazard changes closely and provide feedback to FEMA Region VI, based on their local knowledge and any additional data available.

### About the Mermentau Headwaters Watershed

The Mermentau Headwaters study area is in Louisiana and covers many communities including 18 municipalities (Basile, Chataignier, Church Point, Crowley, Elton, Estherwood, Eunice, Iota, Jennings, Mamou, Oakdale, Oberlin, Opelousas, Pine Prairie, Rayne, Turkey Creek, and Ville Platte) and 5 parishes (Acadia, Allen, Evangeline, Jefferson Davis, and St. Landry). The first FEMA flood maps for the Mermentau Headwaters were released over 40 years ago. Since then, there have been several updates to these maps for each of the communities within Mermentau Headwaters Watershed. The most recent update was in 2011. The watershed begins in the northern part of Allen and Evangeline and travels south into Acadia through a series of bayous and streams.



*Figure 1: Flooding in Crowley, August 2016*

## About the Risk MAP Project

Much of the information garnered for the Risk MAP project originates from the careful leverage of pre-existing resources. The information relating to the demographics of the watershed is derived from the 2000 and 2010 censuses. Additionally, local community and parish governments provided further, locally obtained flooding information. Utilizing that pre-existing information allows the Risk MAP Project to increase its overall scope and detail without increasing the cost or length of the project.

FEMA, through its contractor Compass, completed the collection and creation of Base Level Engineering (BLE) for the Mermentau Headwaters Watershed in April 2018. The Base Level Engineering analysis was performed to support the overall Risk MAP program and to perform a validation of the effective Zone A Special Flood Hazard Areas (SFHAs) in the watershed.

In April 2020 the Louisiana Department of Transportation and Development (LA DOTD) with support from FEMA Region 6, initiated the Phase 1 Discovery phase of this project. The goal of Discovery is to gain a more holistic picture of the flood hazards within a watershed, to collect data to validate the flood risks, identify opportunities to facilitate migration planning, and aid local communities in identifying further actions to reduce flood risk. Furthermore, because flood risks change over time, this Discovery project will help identify areas for future flood risk identification and assessment. The Discovery process is designed to open lines of communication and relies on local involvement for productive discussions. For additional information on the Discovery portion of this project see the section of this report titled “Phase 1: Discovery.”

For more information about ways your community can take action or take advantage of available resources, please review the attached appendices.

## Introduction

### Flood Risk

Floods are naturally occurring phenomena that can and do happen almost anywhere. In its most basic form, a flood is an accumulation of water over normally dry areas. Floods become hazardous to people and property when they inundate an area where development has occurred, causing losses. Mild flood losses may have little impact on people or property, such as damage to landscaping or the accumulation of unwanted debris. Severe flood losses can destroy buildings and crops and cause severe injuries or death.

#### Calculating Flood Risk

It is not enough to simply identify where flooding may occur. Even if people know where a flood might occur, they may not know the risk of flooding in that area. The most common method for determining flood risk, also referred to as vulnerability, is to identify both the probability and the consequences of flooding:

**Flood Risk** (or Vulnerability) = **Probability x Consequences**; where

**Probability** = the likelihood of occurrence

**Consequences** = the **estimated** impacts associated with the occurrence

The probability of a flood is the likelihood that it will occur. The probability of flooding can change based on physical, environmental, and/or engineering factors. Factors that affect the probability of flood will have an impact on the area that range from changing weather patterns to the existence of mitigation projects. The ability to assess the probability of a flood, and the level of accuracy for that assessment, are also influenced by modeling methodology advancements, better knowledge, and longer periods of record for the water body in question.

The consequences of a flood are the estimated impacts associated with its occurrence. Consequences relate to human activities within an area and how a flood affects the natural and built environment.

The Flood Risk Report has two goals: (1) inform communities of their risks related to certain natural hazards and (2) enable communities to act to reduce their risk. The information within this Risk Report is intended to assist Federal, State and local officials to:

- **Communicate risk** – Local officials can use the information in this report to communicate with property owners, business owners, and other residents about risks and areas of mitigation interest.
- **Update local hazard mitigation plans and community comprehensive plans** – Planners can use risk information to develop and/or update hazard mitigation plans, comprehensive plans, future land use maps, and zoning regulations. For example, zoning codes can be changed to provide for more appropriate land uses in high-hazard areas.
- **Update emergency operations and response plans** – Emergency managers can identify high-risk areas for potential evacuation and low-risk areas for sheltering. Risk assessment information may show vulnerable areas, facilities, and infrastructure for which continuity of operations plans, continuity of government plans, and emergency operations plans would be essential.

- **Inform the modification of development standards** – Planners and public works officials can use information in this report to support the adjustment of development standards for certain locations.
- **Identify mitigation projects** – Planners and emergency managers can use this risk assessment to determine specific mitigation projects of interest. For example, a floodplain manager may identify critical facilities that need to be elevated or removed from the floodplain.

This report showcases risk assessments, which analyze how a hazard affects the built environment, population, and local economy, to identify mitigation actions and develop mitigation strategies.

The information in this report should be used to identify areas for mitigation projects as well as for additional efforts to educate residents on the hazards that may affect them. The areas of greatest hazard impact are identified in the Areas of Mitigation Interest section of this report, which can serve as a starting point for identifying and prioritizing actions a community, can take to reduce its risks.

### Watershed Basics

The Mermentau Headwaters watershed represents a complex network of bayous, streams, and ponds that connect to form the larger whole. The main tributaries are Bayou Des Cannes, Bayou Nezpique, and Bayou Plaquemine Brule. They all converge at the bottom of the watershed to form the Mermentau River. The Mermentau River eventually drains into the Gulf of Mexico.

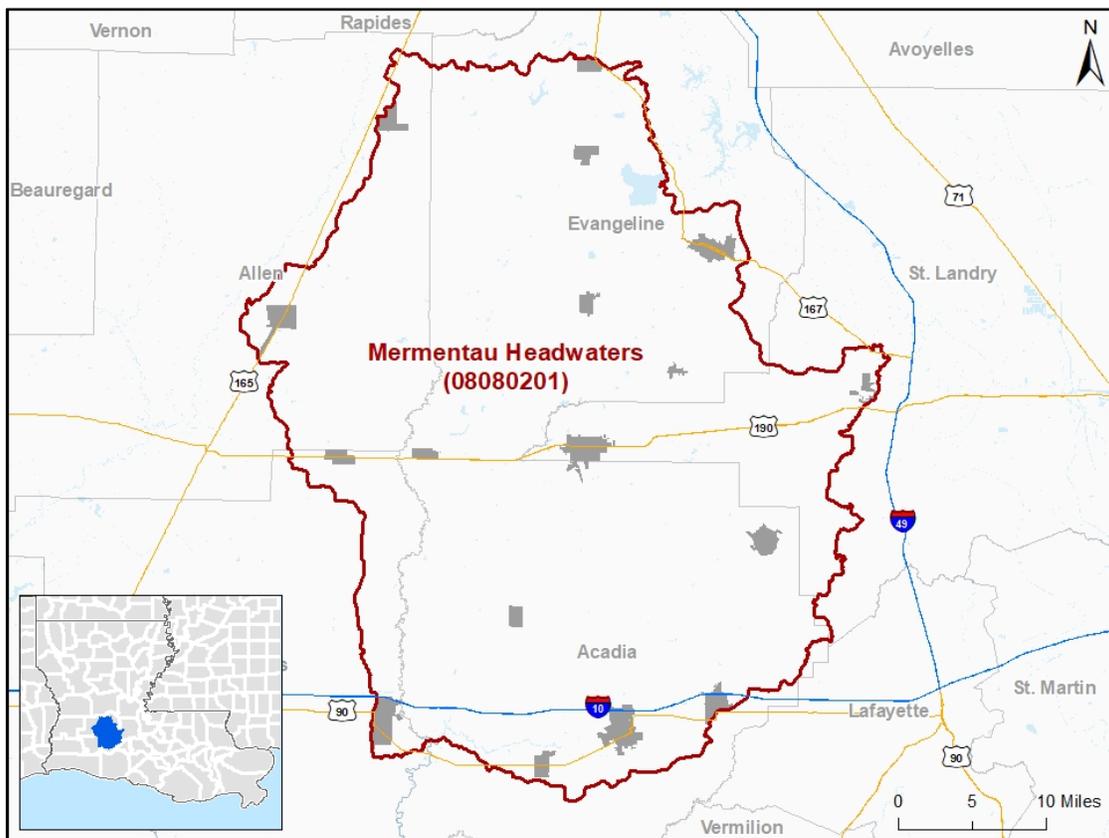


Figure 2: Overview map for the Mermentau Headwaters Watershed

Most of the parishes within the Mermentau Headwaters watershed have seen little growth over last few years.

Table 1: Population and Area Characteristics <sup>1</sup>

Risk MAP Project	Total Population	Average % Population Growth/Yr (2000-2010)	Predicted Population (by 2023)	Land Area
Mermentau Headwaters Watershed	246,099	0.5	251,475	1,392 sq. mi.

To help mitigate the risk to areas where increased population and development are expected, communities can adopt (or exceed) the minimum standards of the National Flood Insurance Program (NFIP). This is recommended as a proactive strategy to manage construction within the floodplain and avoid negative impacts to existing and future development.

To increase mitigation efforts and community flood awareness through potentially discounted premium rates, an NFIP community that has adopted more stringent ordinances or is actively completing mitigation and outreach activities is encouraged to consider joining the Community Rating System (CRS). The CRS program is a voluntary incentive-based program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions.

All of the parishes have a level of regulation, suitable for managing floodplains with mapped regulatory floodways and Base (1-percent-annual-chance) Flood Elevations (44 CFR 60.3(d)). Some communities have a level of regulation, suitable for managing floodplains with mapped Base (1-percent-annual-chance) Flood Elevations without mapped regulatory floodways (44 CFR 60.3(c)).

Communities can review their current ordinances and reflect potential flood hazard changes by adopting updated ordinances early. This action can reduce future flood losses by affecting how substantial improvements or new construction are regulated. Table 2 depicts NFIP and CRS participation status and provides an overview of the effective flood data availability.

Table 2: NFIP and CRS Participation <sup>2</sup>

Risk MAP Project	Participating NFIP Communities/ Total Communities	Number of CRS Communities	CRS Rating Class Range	Average Years since FIRM Update	Level of Regulations (44 CFR 60.3)
Mermentau Headwaters Watershed	22/22	1	9	10	60.3(c), 60.3(d)

<sup>1</sup> Data obtained from the U.S. Census Bureau; ESRI Demographic 5-year Projections; and National Land Cover Database

<sup>2</sup> Data obtained from FEMA Community Information Systems.

The Mermentau Headwaters Watershed contains 29 dams, this is reflected in table 3. For a watershed of its size, it has small number of dams. Dams can be of particular concern, especially in areas prone to heavy rainfall, because many older dams were not built to any particular standard and thus may not withstand extreme rainfall events. Older dams are often made out of an assortment of materials and some of these structures may not have any capacity to release water in a controlled manner and could be overtopped, which could result in catastrophic failure. Furthermore, without proper regulation the downstream risk may have changed since the original hazard classification was determined. For other dams, the dam failure inundation zone may not be known. Not having knowledge of these risk areas could lead to unprotected development in these zones.

Table 3: Risk MAP Project Dam Characteristics<sup>3</sup>

Risk MAP Project	Total Number of Identified Dams	Number of Dams Requiring EAP	Percentage of Dams without EAP	Average Years since Inspection	Average Storage (acre-feet)
Mermentau Headwaters Watershed	29	2	96%	7.6	617

## Project Phases and Map Maintenance

### Background

FEMA manages several risk analysis programs, including Flood Hazard Mapping, National Dam Safety, Earthquake Safety Program, Multi-Hazard Mitigation Planning, and Risk Assessment Program, that assess the impact of natural hazards and lead to effective strategies for reducing risk. These programs support the Department of Homeland Security’s objective to “strengthen nationwide preparedness and mitigation against natural disasters.”

FEMA manages the NFIP, which is the cornerstone of the national strategy for preparing American communities for flood hazards. In the Nation’s comprehensive emergency management framework, the analysis and awareness of natural hazard risk remains challenging. For communities to make informed risk management decisions and take action to mitigate risk, a consistent risk-based approach to assessing potential vulnerabilities and losses is needed, as well as tools to communicate the message. Flood hazard mapping remains a basic and critical component for a prepared and disaster-resilient Nation.

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*Flood-related damage between 1980 and 2013 totaled \$260 billion, but the total impact to our Nation was far greater—more people lose their lives annually from flooding than any other natural hazard.*

*FEMA, “Federal Flood Risk Management Standard (FFRMS)” (2015)*

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<sup>3</sup> Data obtained from USACE National Inventory of Dams (June 2020)

In Fiscal Year 2009, FEMA’s Risk MAP program began to synergize the efforts of Federal, State, and local partners to create timely, viable, and credible information identifying natural hazard risks. The intent of the Risk MAP program is to share resources to identify the natural hazard risks a community faces and ascertain possible approaches to minimizing them. Risk MAP aims to provide technically sound flood hazard information to be used in the following ways:

- To update the regulatory flood hazard inventory depicted on FIRMs and the National Flood Hazard Layer
- To provide broad releases of data to expand the identification of flood risk (flood depth grids, water surface elevation grids, etc.)
- To support sound local floodplain management decisions
- To identify opportunities to mitigate long-term risk across the Nation’s watersheds

## How are FEMA’s Flood Hazard Maps Maintained?

FEMA’s flood hazard inventory is updated through several types of revisions.

**Community-submitted Letters of Map Change.** First and foremost, FEMA relies heavily on the local communities that participate in the NFIP to carry out the program’s minimum requirements. These requirements include the obligation for communities to notify FEMA of changing flood hazard information and to submit the technical support data needed to update the FIRMs.

Although revisions may be requested at any time to change information on a FIRM, FEMA generally will not revise an effective map unless the changes involve modifications to SFHAs. Be aware that the best floodplain management practices and proper assessments of risk result when the flood hazard maps present information that accurately reflects current conditions.

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*Under the current minimum NFIP regulations, a participating community commits to notifying FEMA if changes take place that will affect an effective FIRM no later than 6 months after project completion.*

*Section 65.3, Code of Federal Regulations*

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**Letters of Map Amendment (LOMA).** The scale of an effective FIRM does not always provide the information required for a site-specific analysis of a property’s flood risk. FEMA’s LOMA process provides homeowners with an official determination on the relation of their lot or structure to the SFHA. Requesting a LOMA requires a homeowner to work with a surveyor or engineering professional to collect site-specific information related to the structure’s elevation; it may also require the determination of a site-specific Base Flood Elevation (BFE). Fees are associated with collecting the survey data and developing a site-specific BFE. Local survey and engineering professionals usually provide an Elevation Certificate to the homeowner, who can use it to request a LOMA. A successful LOMA may remove the Federal mandatory purchase requirement for flood insurance, but lending companies may still require flood insurance if they believe the structure is at risk.

**FEMA-Initiated Flood Risk Project.** Each year, FEMA initiates a number of Flood Risk Projects to create or revise flood hazard maps. Because of funding constraints, FEMA can study or restudy only a limited number of communities, counties, or watersheds. As a result, FEMA prioritizes study needs based on a

cost-benefit approach whereby the highest priority is given to studies of areas where development has increased and the existing flood hazard data has been superseded by information based on newer technology or changes to the flooding extent. FEMA understands communities require products that reflect current flood hazard conditions to best communicate risk and implement effective floodplain management.

Flood Risk Projects may be delivered by FEMA or one of its Cooperating Technical Partners (CTPs). The CTP initiative is an innovative program created to foster partnerships between FEMA and participating NFIP communities, as well as regional and State agencies. Qualified partners collaborate in maintaining up-to-date flood maps. In Region 6, CTPs are generally state-wide agencies that house the State Floodplain Administrator. However, some Region 6 CTPs are also large River Authority or Flood Control Districts. They provide enhanced coordination with local, State, and Federal entities, engage community officials and technical staff, and provide updated technical information that informs updates to the national flood hazard inventory.

Risk MAP has modified FEMA's project investment strategy from a single investment by fiscal year to a multi-year phased investment, which allows the Agency to be more flexible and responsive to the findings of the project as it moves through the project lifecycle. Flood Risk Projects are funded and completed in phases.

## General Flood Risk Project Phases

Each phase of the Flood Risk Project provides both FEMA and its partner communities an opportunity to discuss the data that has been collected to determine a path forward. Local engagement throughout each phase of the project enhances the opportunities for partnership and discussion about current and future risk, as well as offering the opportunity to identify projects and activities that local communities may pursue to reduce their long-term natural hazard risk.

Flood Risk Projects may be funded for one or more the following phases:

- Phase Zero – Investment
- Phase One – Discovery
- Phase Two – Risk Identification and Assessment
- Phase Three – Regulatory Product Update

Local input is critical throughout each phase of a Flood Risk Project. More detail about the tasks and objectives of each phase are included below.

### Phase Zero: Investment

Phase Zero of a Flood Risk Project initiates FEMA's review and assessment of the inventories of flood hazards and other natural hazards within a watershed area. During the Investment Phase, FEMA reviews the availability of information to assess the current flood plain inventory. FEMA maintains several data systems to perform watershed assessments and selects watersheds for a deeper review of available data and potential investment tasks, based on the following factors:

**Availability of High-Quality Ground Elevation.** FEMA reviews readily available and recently acquired ground elevation data. This information helps identify development and earth-moving activities near

streams and rivers. Where necessary, FEMA may partner with local, State, and other Federal entities to collect necessary ground elevation information within a watershed.



If [high-quality ground elevation](#) is both available for a watershed area and compliant with FEMA's quality requirements, FEMA and its mapping partners may prepare engineering data to assess, revise, replace, or add to the current flood hazard inventory.

**Mile Validation Status within Coordinated Needs Management Strategy (CNMS).** FEMA uses the CNMS database to track the validity of the flood hazard information prepared for the NFIP. The CNMS database reviews 17 criteria to determine whether the flood hazard information shown on the current FIRM is still valid.



Communities may also inform and request a review or update of the inventory through the CNMS website at <https://msc.fema.gov/cnms/>. The [CNMS Tool Tutorial](#) provides an overview of the online tool and explains how to submit requests.

**Local Hazard Mitigation Plans.** Reviewing current and historic hazard mitigation plans provides an understanding of a community's comprehension of its flood risk and other natural hazard risks. The mitigation strategies within a local hazard mitigation plan provide a lens to local opportunities and underscore a potential for local adoption of higher standards related to development or other actions to reduce long-term risk.

**Cooperating Technical Partner State Business Plans.** In some States, a CTP generates an annual State business plan that identifies future Flood Risk Project areas that are of interest to the state. Within the Mermentau Headwaters, the Louisiana Department of Transportation & Development and the Louisiana Governor's Homeland Security and Emergency Preparedness provided both information and insight. In this project area, FEMA has worked closely with both entities to develop the project scope and determine the necessary project tasks.



Communities that have identified local issues are encouraged to indicate their data needs and revision requests to the State CTP so that they can be prioritized and included in the State Business Plans.

**Possible Investment Tasks.** After a review of the data available within a watershed, FEMA may choose to (1) purchase ground elevation and/or (2) create some initial engineering modeling against which to compare the current inventory. This type of modeling is known as Base-Level Engineering.

## Phase One: Discovery

Phase One, Discovery is the current phase of this study of the Mermentau Headwaters watershed.

Phase One, the Discovery Phase, provides opportunities both internally (between the State and FEMA) and externally (with communities and other partners interested in flood potential) to discuss local issues with flooding and examine possibilities for mitigation action. This effort is made to determine where communities currently are with their examination of natural hazard risk throughout their community and to identify how State and Federal support can assist communities in achieving their goals.



The Discovery process includes an opportunity for local communities to provide information about their concerns related to natural hazard risks. Communities may continue to inform the

project identification effort by providing previously prepared survey data, as-built stream crossing information, and engineering information.

For a holistic community approach to risk identification and mapping, FEMA relies heavily on the information and data provided at a local level. Flood Risk Projects are focused on identifying (1) areas where the current flood hazard inventory does not provide adequate detail to support local floodplain management activities, (2) areas of mitigation interest that may require more detailed engineering information than is current available, and (3) community intent to reduce the risk throughout the watershed to assist FEMA's future investment in these project areas. Watersheds are selected for Discovery based on these evaluations of flood risk, data needs, availability of elevation data, regional knowledge of technical issues, identification of a community-supported mitigation project, and input from Federal, State, and local partners.

**Possible Discovery Tasks.** Discovery may include a mix of interactive webinars sessions, conference calls, informational tutorials, and in-person meetings to reach out to and engage with communities for input. Data collection, interviews and interaction with community staff, and data-mining activities provide the basis for watershed-, community- and stream-level reviews to determine potential projects that may benefit the communities. A range of analysis approaches are available to determine the extent of flood risk along streams of concern. FEMA and its mapping partners will work closely with communities to determine the appropriate analysis approach, based on the data needs throughout the community. These potential projects may include local training sessions, data development activities, outreach support to local communities wanting to step up their efforts, or the development of flood risk datasets within areas of concern, to allow a more in-depth discussion of risk.

## Phase Two: Risk Identification and Assessment

Phase Two (Risk Identification and Assessment) continues the risk awareness discussion with communities through watershed analysis and assessment. Analyses are prepared to review the effects of physical and meteorological changes within the project watershed. The new or updated analysis provides an opportunity to identify how development within a watershed has affected the amount of stormwater generated during a range of storm probabilities and shows how effectively stormwater is transported through communities in the watershed.



Coordination with a community's technical staff during engineering and model development allows FEMA and its mapping partners to include local knowledge, based on actual on-the-ground experience, when selecting modeling parameters.

The information prepared and released during Phase Two is intended to promote better local understanding of the existing flood risk by allowing community officials to review the variability of the risk throughout their community. As FEMA strives to support community-identified mitigation actions, it also looks to increase the effectiveness of community floodplain management and planning practices, including local hazard mitigation planning, participation in the NFIP, use of actions identified in the CRS Manual, risk reduction strategies for repetitive loss and severe repetitive loss properties, and the adoption of stricter standards and building codes.



FEMA is eager to work closely with communities and technical staff to determine the current flood risk in the watershed. During the Risk Identification and Assessment phase, FEMA would like to be alerted to any community concerns related to the floodplain mapping and analysis

approaches being taken. During this phase, FEMA can engage with communities and review the analysis and results in depth.

**Possible Risk Identification and Assessment Tasks.** Phase Two may include a mixture of interactive webinars, conference calls, informational tutorials, and in-person meetings to reach out to and engage with communities for input. Flood Risk Project tasks may include hydrologic or hydraulic engineering analysis and modeling, floodplain mapping, risk assessments using Hazus software, and preparation of flood risk datasets (water surface elevation, flood depth, or other analysis grids). Additionally, projects may include local training sessions, data development activities, outreach support to local communities that want to step up their efforts, or the development of flood risk datasets within areas of concern, to allow a more in-depth discussion of risk.

### Phase Three: Regulatory Products Update

If the analysis prepared in the previous Flood Risk Project phases indicate that physical or meteorological changes in the watershed have significantly changed the flood risk since the last FIRM was printed, FEMA will initiate the update of the regulatory products that communities use for local floodplain management and NFIP activities.

Delivery of the preliminary FIRMs and FIS reports begins another period of coordination between community officials and FEMA to discuss the required statutory and regulatory steps both parties will perform before the preliminary FIRM and FIS reports can become effective. As in the previous phases, FEMA and its mapping partners will engage with communities through a variety of conference calls, webinars, and in-person meetings.



Once the preliminary FIRMs are prepared and released to communities, FEMA will initiate the statutory portions of the regulatory product update. FEMA will coordinate a Consultation Coordination Officer (CCO) meeting and initiate a 90-day comment and appeal period. During this appeal period, local developers and residents may coordinate the submittal of their comments and appeals through their community officials to FEMA for review and consideration.

FEMA welcomes this information because additional proven scientific and technical information increases the accuracy of the mapping products and better reflects the community's flood risks identified on the FIRMs.



Communities may host or hold Open House meetings for the public. The Open House layout allows attendees to move at their own pace through several stations, collecting information in their own time. This format allows residents to receive one-on-one assistance and ask questions pertinent to their situation or their interest in risk or flood insurance information.

All appeals and comments received during the statutory 90-day Appeal Period, including the community's written opinion, will be reviewed by FEMA to determine the validity of the appeal. Once FEMA issues the appeal resolution, the associated community and all appellants will receive an appeal resolution letter and FEMA will make any revisions to the FIRM as appropriate. A 30-day period is provided for review and comment on successful appeals. Once all appeals and comments are resolved, the flood map is ready to be finalized.



After the Appeal Period, FEMA will send community leaders a Letter of Final Determination (LFD) stating that the preliminary FIRM will become effective in six months. The letter also discusses the actions each affected community participating in the NFIP must take to remain in good standing in the NFIP.

After the preceding steps are complete and the six-month compliance period ends, the FIRMs are considered effective maps and new building and flood insurance requirements become effective.

That is a brief general overview of a flood risk project. Next, the Flood Risk Report will provide details on the efforts in the Mermentau Headwaters Watershed.

## Phase One: Discovery

### Overview

The Louisiana Department of Transportation and Development (LA DOTD) in conjunction with FEMA Region 6 elected to pursue a Phase 1 Discovery project in the Mermentau Headwaters Watershed during Fiscal Year 2019. This was a natural progression given the completion of the BLE analysis in December 2018 and the results of its assessment and validation.

The Discovery process provides an opportunity not only to collect additional information that can be used to further refine areas of interest, but more importantly offers opportunities to work directly with communities within the watershed to discuss local issues which may not be apparent from the BLE analysis and research.

During Discovery the project team has contacted the communities through a variety of means to not only let them know that the project is underway, but to actively engage them so as to open lines of communication and make the resulting discussion more productive.

The following sections are a summary of the information gathered and a discussion of how that information may inform the discussion of future investments. The information that follows comes from FEMA, other Federal agencies, and the states and communities that make up the watershed.

### Watershed Information and Review

The following section will explore data from a number of sources to develop a better understanding of the level of risk that the watershed communities face. This will include, but not be limited to, information on the number of flood insurance policies, the number of claims, past disaster declarations, information about hazard mitigation plans, and NFIP engagement with both FEMA and state representatives.

#### **National Flood Insurance Program (NFIP) Information.**

All of the communities within the watershed participate in the National Flood Insurance Program. Table 4 shows community CRS ratings, the date and status of their effective maps, and the estimated 2016 population. Please note that the population figures represent the population for the entire community and not just the portion in the watershed.

Table 4: NFIP Information<sup>4</sup>

Community Name	CID	NFIP Participant	CRS Rating	FIRM Date	FIRM Status	Population (2018 ACS Estimate)
Acadia Parish	220001	Y		11/26/2010		62,568
Allen Parish	220009	Y		3/17/2011		25,661
Town of Basile	220065	Y		9/3/2010		1,713
Village of Chataignier	220066	Y		9/3/2010	No SFHA – All Zone C	247
Town of Church Point	220002	Y		11/26/2010		4,501
City of Crowley	225195	Y		11/26/2010		12,960
Town of Elton	220096	Y		7/22/2010		1,370
Village of Estherwood	220004	Y		11/26/2010		846
City of Eunice	220168	Y		11/26/2010		10,407
Evangeline Parish	220064	Y		9/3/2010		33,636
Town of Iota	220005	Y		11/26/2010	No Elevation Determined - All Zone A, C, and X	1,780
Jefferson Davis Parish	220095	Y		7/22/2010		31,467
City of Jennings	220098	Y		7/22/2010		10,047
Town of Mamou	220067	Y		9/3/2010	No Elevation Determined - All Zone A, C, and X	3,197
City of Oakdale	220011	Y		3/17/2011		7,640
Town of Oberlin	220012	Y		3/17/2011	No Elevation Determined - All Zone A, C, and X	1,660
City of Opelousas	220173	Y		8/5/2010		16,399
Village of Pine Prairie	220068	Y		9/3/2010	No Elevation Determined - All Zone A, C, and X	1,182
City of Rayne	220008	Y	9	11/26/2010		8,075
St. Landry Parish	220165	Y		8/5/2010		83,449
Village of Turkey Creek	220069	Y		9/3/2010	No Elevation Determined - All Zone A, C, and X	461
City of Ville Platte	220070	Y		9/3/2010		7,196

Table 5 includes both the number of flood insurance policies in each community but the coverage of those policies.

Table 5: NFIP Policy Information<sup>5</sup>

Community Name	CID	Policies in Force	Insurance in Force
Acadia Parish	220001	1,431	\$306,236,400.00
Allen Parish	220009	259	\$46,108,300.00
Town of Basile	220065	11	\$1,870,800.00
Village of Chataignier	220066	3	\$410,000.00
Town of Church Point	220002	83	\$16,928,200.00
City of Crowley	225195	993	\$154,769,900.00

<sup>4</sup> FEMA Community Information System (June 2020)

<sup>5</sup> FEMA Region 6 (April 2020)

Community Name	CID	Policies in Force	Insurance in Force
Town of Elton	220096	10	\$1,810,000.00
Village of Estherwood	220004	70	\$7,472,100.00
City of Eunice	220168	444	\$78,072,600.00
Evangeline Parish	220064	457	\$79,194,600.00
Town of Iota	220005	25	\$3,346,600.00
Jefferson Davis Parish	220095	709	\$158,543,300.00
City of Jennings	220098	168	\$43,015,500.00
Town of Mamou	220067	71	\$11,363,200.00
City of Oakdale	220011	96	\$19,613,300.00
Town of Oberlin	220012	25	\$7,240,400.00
City of Opelousas	220173	250	\$52,076,900.00
Village of Pine Prairie	220068	1	\$175,000.00
City of Rayne	220008	289	\$62,804,700.00
St. Landry Parish	220165	2,043	\$422,178,500.00
Village of Turkey Creek	220069	-	-
City of Ville Platte	220070	204	\$32,490,100.00

Table 6 shows the total number of flood insurance claims, the number of paid claims, and the total amount paid out for those claims.

*Table 6: NFIP Claims Information<sup>6</sup>*

Community Name	CID	Losses	Total Payment
Acadia Parish	220001	547	\$18,880,771.90
Allen Parish	220009	137	\$1,425,923.91
Town of Basile	220065	4	\$82,465.24
Village of Chataignier	220066	3	\$54,039.44
Town of Church Point	220002	78	\$1,706,303.54
City of Crowley	225195	565	\$6,602,165.69
Town of Elton	220096	4	\$11,992.24
Village of Estherwood	220004	21	\$542,628.79
City of Eunice	220168	194	\$5,636,648.71
Evangeline Parish	220064	100	\$2,758,064.23
Town of Iota	220005	7	\$181,699.21
Jefferson Davis Parish	220095	189	\$3,570,916.48
City of Jennings	220098	20	\$337,426.99
Town of Mamou	220067	43	\$981,587.13
City of Oakdale	220011	235	\$2,838,655.93
Town of Oberlin	220012	23	\$506,209.88

<sup>6</sup> FEMA Region 6 (April 2020)

Community Name	CID	Losses	Total Payment
City of Opelousas	220173	89	\$1,920,847.56
Village of Pine Prairie	220068	1	\$543.00
City of Rayne	220008	128	\$2,530,624.08
St. Landry Parish	220165	498	\$10,871,844.79
Village of Turkey Creek	220069	-	-
City of Ville Platte	220070	102	\$1,855,573.91

Table 7 shows the total number of properties that have repetitive flood claims, the total number of claims made for those properties, the total amount paid out for those claims, and the number of severe repetitive loss properties. Repetitive loss and severe repetitive loss properties are good targets for mitigation as they are certainly in a location that has a higher proclivity for flooding. Mitigation actions may include elevating the structure or a property buyout. Decisions on the best approach will likely be based on the depth and frequency of floods affecting the property.

*Table 7: Repetitive Loss Property Information<sup>7</sup>*

Community Name	Total Properties	Total Claims	Total Paid Losses	Severe Repetitive Loss Properties
Acadia Parish	81	126	\$7,352,470.37	6
Allen Parish	22	88	\$1,520,084.90	7
Town of Basile	-	-	-	-
Village of Chataignier	-	-	-	-
Town of Church Point	11	42	\$1,127,201.09	2
City of Crowley	31	80	\$2,154,866.13	1
Town of Elton	-	-	-	-
Village of Estherwood	2	5	\$157,260.90	0
City of Eunice	27	72	\$2,178,244.04	3
Evangeline Parish	12	35	\$1,180,659.09	2
Town of Iota	2	4	\$150,500.26	0
Jefferson Davis Parish	13	30	\$549,601.15	2
City of Jennings	1	2	\$16,944.52	0
Town of Mamou	5	12	\$255,461.78	0
City of Oakdale	20	57	\$770,357.74	2
Town of Oberlin	-	-	-	-
City of Opelousas	14	43	\$1,145,896.26	3
Village of Pine Prairie	1	2	\$22,441.41	0
City of Rayne	5	13	\$342,271.20	0
St. Landry Parish	70	190	\$5,043,622.54	7
Village of Turkey Creek	-	-	-	-
City of Ville Platte	13	31	\$841,840.90	0

<sup>7</sup> Information obtained from FEMA Region 6 (June 2018)

## Disaster Declarations

Table 8 lists the Federal Disaster Declaration for the watershed. Disasters are declared at the county/parish level. In the Mermentau Headwaters watershed St. Landry has the largest number of declarations at 31, Acadia has 28, Jefferson Davis has 26, Allen has 25, and Evangeline has 20. Declarations for flood events include twelve for St. Landry, five for Acadia, Allen and Jefferson Davis, and four for Evangeline.

Table 8: Disaster Declarations in the Watershed<sup>8</sup>

Date	Title	Acadia Parish	Allen Parish	Evangeline Parish	Jefferson Davis Parish	St. Landry Parish
9/10/1965	HURRICANE BETSY	X				X
10/13/1971	HURRICANE EDITH	X		X	X	X
4/27/1973	SEVERE STORMS & FLOODING					X
9/23/1974	HURRICANE CARMEN					X
11/1/1974	SEVERE STORMS	X				
6/6/1975	HEAVY RAINS, TORNADOES & FLOODING					X
2/22/1977	DROUGHT & FREEZING				X	
5/2/1977	SEVERE STORMS & FLOODING					X
9/25/1979	SEVERE STORMS & FLOODING		X			
5/21/1980	SEVERE STORMS & FLOODING	X			X	
1/11/1983	SEVERE STORMS AND FLOODING		X	X		
5/20/1989	SEVERE STORMS & FLOODING	X	X			X
7/17/1989	TROPICAL STORM ALLISON		X		X	X
8/26/1992	HURRICANE ANDREW	X	X	X	X	X
3/18/1997	SEVERE WINTER STORM				X	
9/23/1998	HURRICANE GEORGES/TS FRANCES	X		X		
10/3/2002	HURRICANE LILI	X	X	X	X	X
2/1/2003	LOSS OF SPACE SHUTTLE COLUMBIA	X	X	X		X
6/8/2004	SEVERE STORMS AND FLOODING	X			X	X
8/27/2005	HURRICANE KATRINA	X	X	X	X	X
8/29/2005	HURRICANE KATRINA	X	X	X	X	X
9/21/2005	HURRICANE RITA	X	X	X	X	X
9/24/2005	HURRICANE RITA	X	X	X	X	X
11/2/2006	SEVERE STORMS AND FLOODING	X	X	X	X	X
8/29/2008	HURRICANE GUSTAV	X	X	X	X	X
9/2/2008	HURRICANE GUSTAV	X	X	X	X	X

<sup>8</sup> FEMA <https://www.fema.gov/openfema-dataset-disaster-declarations-summaries-v1>, (November 2020)

Date	Title	Acadia Parish	Allen Parish	Evangeline Parish	Jefferson Davis Parish	St. Landry Parish
9/13/2008	HURRICANE IKE	x	x		x	
5/6/2011	FLOODING					x
8/18/2011	FLOODING					x
8/27/2012	TROPICAL STORM ISAAC	x	x		x	
8/29/2012	HURRICANE ISAAC	x	x	x	x	X
2/22/2013	SEVERE STORMS AND FLOODING	x		x	x	x
2/5/2016	FLOODING					X
3/13/2016	SEVERE STORMS AND FLOODING		x			
8/14/2016	SEVERE STORMS AND FLOODING	x		x	x	x
8/28/2017	TROPICAL STORM HARVEY	x	x		x	
10/16/2017	TROPICAL STORM HARVEY	x	x		x	
5/29/2019	FLOODING					X
7/11/2019	TROPICAL STORM BARRY	x	x	X	x	x
8/27/2019	HURRICANE BARRY		x			X
8/28/2020	HURRICANE LAURA	x	x	x	x	x
10/7/2020	HURRICANE DELTA	x	x	x	x	x
10/27/2020	TROPICAL STORM ZETA	x	x	x	x	x

### Hazard Mitigation Plan Review

Table 9 lists the status of hazard mitigation plans for the communities in the watershed. It should be noted that most communities participate in multi-jurisdiction plans that cover entire parishes.

*Table 9: Hazard Mitigation Plan Status*

Plan	Date Plan Approved	Plan Expiration Date
Acadia Parish Hazard Mitigation Update - 2016	11/14/2017	11/14/2022
Allen Parish Hazard Mitigation Update - 2017	12/4/2017	12/4/2022
Evangeline Parish Hazard Mitigation Update - 2016	6/11/2017	6/11/2022
Jefferson Davis Parish Hazard Mitigation Update - 2016	6/2017	6/2022
St. Landry Parish Hazard Mitigation Update - 2016	12/26/2016	12/26/2021

#### *Acadia Parish*

The Acadia Parish Hazard Mitigation Update (2016) is a multi-jurisdictional plan, which includes the City of Crowley and the City of Rayne. Mitigation actions identified within the plan are organized by four goals identified by the steering committee.

- Goal 1 – Identify and pursue preventative measures that will reduce future damages from hazards
  - Retrofit the shell of public buildings so that they may be used before and after events
  - Construction of a safe room for first responders
  - Installation of generators at public facilities
  - Update/upgrade the public warning system
  - Create redundancy of potable water supply at critical facilities
- Goal 2 – Enhance public awareness and understanding of disaster preparedness
  - Enhance public outreach programs
- Goal 3 – Reduce repetitive flood losses
  - Mitigation of repetitive and severe repetitive loss properties through elevation, acquisition-demolition, acquisition-relocation, and reconstruction
  - Promote purchase of flood insurance
- Goal 4 – Facilitate sound development as to reduce or eliminate the potential impact of hazards
  - Improve drainage to relieve flooding problems

#### *Allen Parish*

The Allen Parish Hazard Mitigation Update (2017) is a multi-jurisdictional plan, which includes the City of Oakdale and the Town of Oberlin. Mitigation actions identified within the plan are organized by three goals identified by the steering committee.

- Goal 1 – Protect residents from natural hazards
  - Retrofit the shell of public buildings so that they may be used before and after events
  - Construction of a safe room for first responders
  - Enhance public outreach programs
  - Installation of generators at public facilities
  - Update/upgrade the public warning system
- Goal 2 – Protect schools, homes, and businesses from damage
  - Promote the purchase of flood insurance
- Goal 3 – Give special attention to repetitively flooded areas
  - Improve drainage to reduce flooding problems
  - Mitigation of repetitive and severe repetitive loss properties through elevation, acquisition-demolition, acquisition-relocation, and reconstruction

#### *Evangeline Parish*

The Evangeline Parish Hazard Mitigation Update (2016) is a multi-jurisdictional plan, which includes the Town of Basile, the Village of Chataignier, the Town of Mamou, the Village of Pine Prairie, the Village of Turkey Creek, and the City of Ville Platte. Mitigation actions identified within the plan are organized by four goals identified by the steering committee.

- Goal 1- Implement mitigation measures to reduce the vulnerability from natural hazards
  - Retrofit the shell of public buildings so that they may be used before and after events
  - Construction of a safe room for first responders
  - Mitigation of repetitive and severe repetitive loss properties through elevation, acquisition-demolition, acquisition-relocation, and reconstruction

- Installation of generators at public facilities
- Update/upgrade the public warning system
- Creation of a dam failure working group
- Install/upgrade minor flood control structures including berms and floodwalls
- Goal 2- Improve citizen education and practice in the field of disaster preparedness and hazard mitigation
  - Enhance public outreach programs
  - Promote the purchase of flood insurance
- Goal 3 – Support economic recovery and resiliency through the mitigation of natural hazard impacts and recovery costs

Goal 4 – Improve sustainable land-use development practices by integrating hazard mitigation strategies and technologies that reduce the potential impact of hazards

#### *Jefferson Davis Parish*

The Jefferson Davis Parish Hazard Mitigation Update (2016) is a multi-jurisdictional plan, which includes the Town of Elton and the City of Jennings. Mitigation actions identified within the plan are organized by five goals identified by the steering committee.

- Goal 1 – Reduce exposure to damage from flooding
  - Elevation or acquisition/demolition of repetitive and severe repetitive loss structures
- Goal 2 – Ensure the delivery of critical services to the residents of the parish communities before, during and after a hazard event
  - Retrofit the shell of public buildings so that they may be used before and after events
  - Construction of a safe room for first responders
  - Install generators at critical facilities for continued operations during events
  - Create redundancy of potable water supply to critical facilities
- Goal 3- Guide development to reduce the exposure of new and existing improvements to hazard events
- Goal 4 – Enhance structures and infrastructure to reduce the impact of hazard events
  - Improve drainage
- Goal 5 – Increase public awareness and support of hazard mitigation
  - Enhance public outreach programs
  - Update/upgrade public warning system
  - Promote the purchase of flood insurance

#### *St. Landry Parish*

The St. Landry Parish Hazard Mitigation Update (2016) is a multi-jurisdictional plan, which includes the City of Eunice and the City of Opelousas. Mitigation actions identified within the plan are organized by four goals identified by the steering committee.

- Goal 1 – Preventative measures that will reduce future damages from hazards
  - Retrofit the shell of public buildings so that they may be used before and after events
  - Construction of a safe room for first responders
  - Construct a public shelter for extreme weather
  - Redundancy of potable water at critical facilities

- Install generators at critical facilities for continued operations during events
- Goal 2 – Enhance public awareness and understanding of disaster preparedness
  - Enhance public outreach programs
  - Provide information on high risk areas
  - Install reverse 911 system
- Goal 3 – Reduce repetitive flood losses
  - Improve drainage
  - Elevation or acquisition/demolition of repetitive and severe repetitive loss structures
- Goal 4 – Facilitate sound development to reduce or eliminate the impact of hazards
  - Promote the purchase of flood insurance

### **Ordinances and Regulations Review**

A review of development regulations helps shed light on how a community tries to limit their exposure to damages from disasters by guiding development away from floodplains or insuring flood proofing strategies are utilized. The following section will review the ordinances, development regulations, and any additional guidelines as they are related to development activities, or renovations, within flood zones or areas affected by flooding.

#### *Acadia Parish*

Chapter 5, article II of the Acadia Parish code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for enduring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Division 3 states the provisions for flood hazard reduction. This section is divided into six sections general standards, specific standards, standards for subdivision proposals, standards for areas of shallow flooding (AO/AH zones), floodways, and penalties for noncompliance. General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require for sites in an unnumbered A zone, for which a BFE has been established are subject to the elevation requirements for the AE zone. Specific standards also require that the lowest floor is elevated to or above the base flood elevation, requirements for enclosures, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator.

The Acadia Parish Code of Ordinances can be found here:

[https://library.municode.com/la/acadia\\_parish\\_police\\_jury/codes/code\\_of\\_ordinances](https://library.municode.com/la/acadia_parish_police_jury/codes/code_of_ordinances)

### *Allen Parish*

Chapter 42, article II of the Allen Parish code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Division III states the provisions for flood hazard reduction. This section is divided into four sections: general standards, specific standards, standards for subdivision proposals, and standards for areas of shallow flooding (AO/AH zones). General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator.

The Allen Parish Code of Ordinances can be found here:

[https://library.municode.com/la/allen\\_parish\\_police\\_jury/codes/code\\_of\\_ordinances](https://library.municode.com/la/allen_parish_police_jury/codes/code_of_ordinances)

### *City of Crowley*

Chapter 5, article V of the City of Crowley code of ordinances addresses flood damage prevention. This article of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Sec. 5-126 states the general standards for flood hazard reduction. This includes proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Sec. 5-127 states the specific standards for flood hazard reduction. This requires that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. Sec. 5-128 states the standards for subdivision proposals, which require compliance with the previous proposals. Sec. 5-129 states the standards for areas of shallow flooding (AO/AH zones.) This includes that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator.

The City of Crowley Code of Ordinances can be found here:

[https://library.municode.com/la/crowley/codes/code\\_of\\_ordinances](https://library.municode.com/la/crowley/codes/code_of_ordinances)

### *City of Eunice*

Chapter 5, subchapter A, part III of the City of Eunice code of ordinances addresses flood damage prevention. This part of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Sec. 5:66 states the general standards for flood hazard reduction. This includes proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Sec 5:67 states the specific standards for flood hazard reduction. This requires that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. Sec 5:68 states the standards for subdivision proposals, which require compliance with the previous proposals. Sec 5:69 states the standards for areas of shallow flooding (AO/AH zones.) This includes that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator. Sec. 5:70 states the floodway standards. This prohibits encroachments on the floodway, including fill new construction, substantial improvements and other development within the floodway unless it is certified by a professional registered engineer providing that the encroachment will not increase flood levels.

The City of Eunice Code of Ordinances can be found here:

[https://library.municode.com/la/eunice/codes/code\\_of\\_ordinances](https://library.municode.com/la/eunice/codes/code_of_ordinances)

### *Evangeline Parish*

Chapter 8, article II of the Evangeline Parish code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Division 3 states the provisions for flood hazard reduction. There are five sections general standards, specific standards, standards for subdivision proposals, standards for areas of shallow flooding (AO/AH zones), and floodways. General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator. The floodway standards prohibit encroachments on the floodway, including fill new construction,

substantial improvements and other development within the floodway unless it is certified by a professional registered engineer providing that the encroachment will not increase flood levels.

The Evangeline Parish Code of Ordinances can be found here:

[https://library.municode.com/la/evangeline\\_parish\\_police\\_jury/codes/code\\_of\\_ordinances](https://library.municode.com/la/evangeline_parish_police_jury/codes/code_of_ordinances)

### *Jefferson Davis Parish*

Chapter 5.5, article II of the Jefferson Davis Parish code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Division III states the provisions for flood hazard reduction. There are five sections general standards, specific standards, standards for subdivision proposals, standards for areas of shallow flooding (AO/AH zones), and floodways. General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator. The floodway standards prohibit encroachments on the floodway, including fill new construction, substantial improvements and other development within the floodway unless it is certified by a professional registered engineer providing that the encroachment will not increase flood levels.

The Jefferson Davis Parish Code of Ordinances can be found here:

[https://library.municode.com/la/jefferson\\_davis\\_parish\\_police\\_jury/codes/code\\_of\\_ordinances](https://library.municode.com/la/jefferson_davis_parish_police_jury/codes/code_of_ordinances)

### *Town of Mamou*

Chapter 15.24 of the Town of Mamou code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Article V states the provisions for flood hazard reduction. There are three sections general standards, specific standards, and standards for subdivision proposals. General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and

restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards.

The Town of Mamou Code of Ordinances can be found here:

[https://library.municode.com/la/mamou/codes/code\\_of\\_ordinances](https://library.municode.com/la/mamou/codes/code_of_ordinances)

### *City of Rayne*

Chapter 42, article II of the City of Rayne code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Division 3 states the provisions for flood hazard reduction. There are four sections general standards, specific standards, standards for subdivision proposals, and standards for areas of shallow flooding (AO/AH zones). General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation or one foot above the crown of the street whichever is greater, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator.

The City of Rayne Code of Ordinances can be found here:

[https://library.municode.com/la/rayne/codes/code\\_of\\_ordinances](https://library.municode.com/la/rayne/codes/code_of_ordinances)

### *St. Landry Parish*

Chapter 18 of the St. Landry Parish code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Section IV states the provisions for flood hazard reduction. There are five sections general standards, specific standards, standards for subdivision proposals, standards for areas of shallow flooding (AO/AH zones), and floodways. General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high

as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator. The floodway standards prohibit encroachments on the floodway, including fill new construction, substantial improvements and other development within the floodway unless it is certified by a professional registered engineer providing that the encroachment will not increase flood levels.

The St. Landry Code of Ordinances can be found here:

[https://library.municode.com/la/st. landry\\_parish/codes/code\\_of\\_ordinances](https://library.municode.com/la/st._landry_parish/codes/code_of_ordinances)

### *City of Ville Platte*

Chapter 9, article II of the City of Ville Platte code of ordinances addresses flood damage prevention. This chapter of the ordinance establishes the need and purpose to prevent flood damage and then provides a framework for ensuring that purpose is fulfilled. Specifically, the ordinance creates the floodplain administrator position and assigns their duties and responsibilities, and also outlines the need for and processes related to development permits, including procedures for obtaining variances.

Division 5 states the provisions for flood hazard reduction. There are four sections general standards, specific standards, standards for subdivision proposals, and standards for areas of shallow flooding (AO/AH zones). General standards include proper anchoring to prevent the structure from floatation, using construction methods that minimize flood damage, the use of construction materials that are resistant to flood damage, locating service facilities where flood damage will be minimized, and water supply and sanitary sewage systems will minimize or eliminate infiltration of floodwaters and the discharge into floodwaters. Specific standards require that the lowest floor is elevated to or above the base flood elevation, that mobile homes are elevated and anchored and restrictions on the placement of recreational vehicles. The subdivision standards require compliance with the previous standards. The standards for shallow flooding state that the lowest floor is elevated at least two feet or at least as high as the depth number specified on the FIRM, adequate drainage paths to guide floodwaters around and away, and that a registered professional engineer submits certification to the floodplain administrator.

The City of Ville Platte Code of Ordinances can be found here:

[https://library.municode.com/la/ville\\_platte/codes/code\\_of\\_ordinances](https://library.municode.com/la/ville_platte/codes/code_of_ordinances)

### **Land Use Change**

Development in the watershed has been minimally expanding. Examining National Land Cover Data (<https://www.mrlc.gov/data>) from 2001 to 2016, the latest available, the watershed has seen some development. From 2001 to 2016, developed land increased by 6 square miles, which is a 0.4% increase. This development is primarily seen in Crowley, Eunice, and Jennings.

### **Letters of Map Change**

Letters of Map Change are letters that revise the special flood hazard area on a given map panel or panels. A Letter of Map Amendment, or LOMA usually applies to a single property that is higher than the mapped 1%-annual-chance floodplain, but due to limitations of scale or topographic detail appears to be located within the floodplain on the FIRM panel. A Letter of Map Revision is a letter that revises a FIRM panel or panels usually due to a project designed to reduce flood risk in an area. A Letter of Map Revision Based on Fill, or LOMR-F, revises a FIRM panel of panels due to a property having fill placed on it that raises it above the map flood elevation for an area. The number and types of map revisions in a community can provide insight into measures being taken to reduce or manage flood risk or be an

indication that a community's maps are in need of revision. Communities within the Mermentau Headwaters Watershed have a total of 140 Letters of Map Change, consisting of 111 LOMAs and 28 LOMR-Fs. Table 10 below illustrates which communities have Letter of Map Change and their types. Figure 2 shows the location of the LOMAs.

*Table 10: Letters of Map Change*

Community Name	LOMA	LOMR-F
Acadia Parish	32	4
Allen Parish	3	-
Town of Basile	-	-
Village of Chataignier	-	-
Town of Church Point	4	-
City of Crowley	2	-
Town of Elton	-	-
Village of Estherwood	-	-
City of Eunice	10	2
Evangeline Parish	44	13
Town of Iota	-	-
Jefferson Davis Parish	3	1
City of Jennings	-	1
Town of Mamou	-	-
City of Oakdale	2	-
Town of Oberlin	-	-
City of Opelousas	-	-
Village of Pine Prairie	-	-
City of Rayne	-	2
St. Landry Parish	1	1
Village of Turkey Creek	-	-
City of Ville Platte	10	4

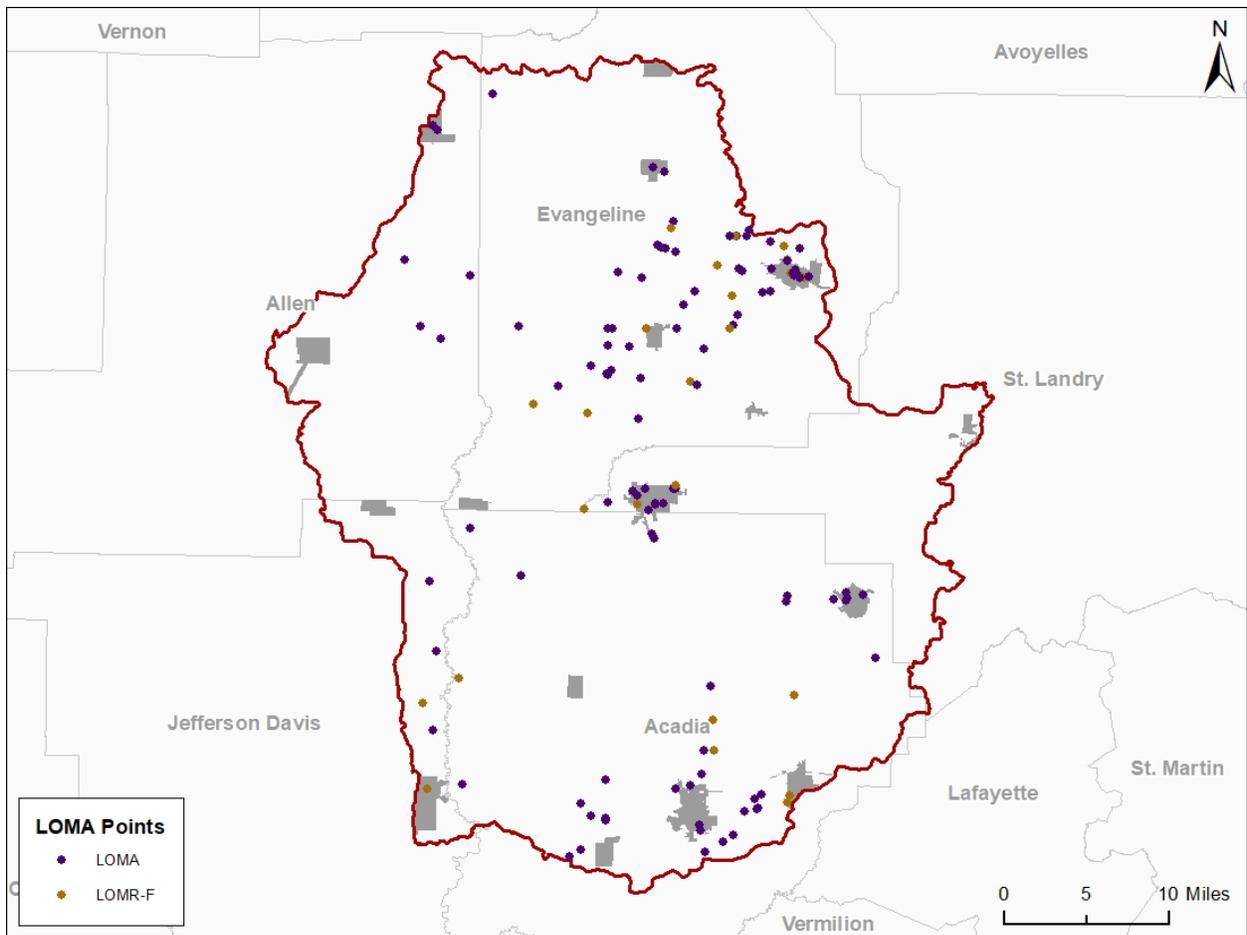


Figure 2: Map of LOMA Points

## Hydraulics and Floodplain Analysis

The average FIRM age in the Mermentau Headwaters Watershed is 10 years. Figure 3 below shows the parishes and their current effective FIRM date.

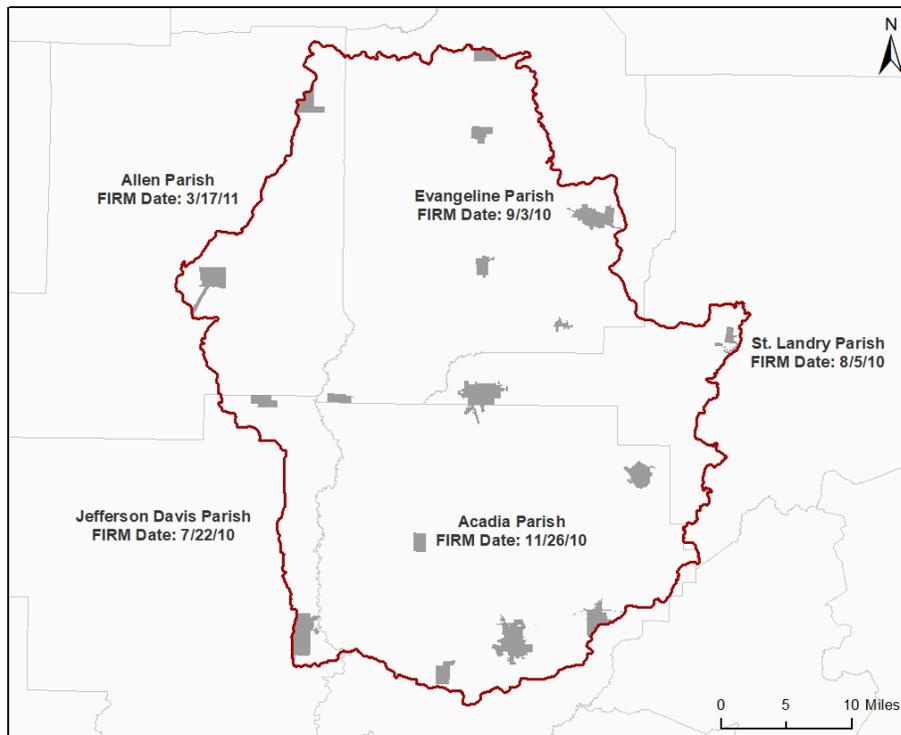


Figure 3: Map of Effective FIRM Dates

Hydraulics, floodplain, and floodways were reviewed based on the FIS reports, available hydraulic models, and FIRMs.

### Acadia Parish

The Effective Acadia Parish Flood Insurance Study consolidated the Unincorporated Areas and nine incorporated areas that previously had individual studies. These communities include: Town of Church Point, City of Crowley, Town of Duson, Town of Estherwood, Town of Iota, Village of Mermentau, Village of Morse, City of Rayne, and City of Eunice.

The H&H analyses for the Town of Church Point, Village of Estherwood, Village of Mermentau, Village of Morse and the City of Rayne were performed by Pyburn and Odom, Inc. in 1979. The initial H&H analysis for the Unincorporated Areas was performed by Pyburn and Odom, Inc. in 1980. A restudy of Bayou Queue de Tortue was performed by S.E.Huey Co. in 1997. The H&H analysis for the City of Eunice Profession Engineering Consultants Corporation in 1980. New approximate H&H analyses were completed by FTN/Taylor Joint Venture in 2008.

There are several mismatches of floodplains between Acadia and neighboring parishes including:

- Bayou Barwick Tributary is mapped (AE) in Evangeline Parish but not in Acadia,
- Downstream Unnamed Tributary southeast of Eunice stops in Acadia Parish but is mapped in St Landry Parish upstream.

- Bayou Blanc in Crowley has mismatches in the floodplain.

#### *Allen Parish*

Allen Parish has an Effective Flood Insurance Study for all jurisdictions with an Effective Date of March 17, 2011. This study incorporated prior studies including the Unincorporated Areas, the Towns of Elizabeth, Kinder and Oberlin, the Village of Reeves and the City of Oakdale.

The Effective Study redelineated previous detailed study streams on the best available topographic data on Beaver Creek, Calcasieu River, and Calcasieu River Tributaries 1 and 2. Major floods cause localized inundation of structures adjacent to all these streams, and their tributaries.

#### *Evangeline Parish*

Evangeline Parish has a parish-wide Flood Insurance Study that includes and supersedes prior flood studies in the City of Ville Platte, the Towns of Basile and Mamou, the Villages of Chataignier, Pine Prairie and Turkey Creek, and the unincorporated areas.

The original hydrologic and hydraulic analyses were prepared by Professional Engineering Consultants Corporation completed in August 1986. Additional studies were completed by the USGS and the U.S. Army Corps of Engineers in May 1996. The Effective study was completed by FTN/Taylor Engineering Joint Venture in 2010.

#### *Jefferson Davis Parish*

Jefferson Davis Parish has a parish-wide Flood Insurance Study that includes and supersedes prior flood studies in the City of Jennings, the Towns of Elton, Lake Arthur and Welsh, the Village of Fenton, and the unincorporated areas.

The hydrologic and hydraulic analyses for the Towns of Elton and Welsh and for the City of Jennings were performed by Pyburn & Odom, Inc. The analyses for the Towns of Elton, Jennings and Welsh were completed in 1980. The hydrologic and hydraulic analyses for the Town of Lake Arthur were completed by the New Orleans District, US Army Corps of Engineers in 1980. The hydrologic and hydraulic analyses for the unincorporated areas of Jefferson Davis Parish were completed by the U.S. Geological Survey (USGS) in September 1985.

#### *St. Landry Parish*

This Flood Insurance Study for St Landry Parish and Incorporated Areas consolidates analyses and mapping from multiple prior studies. No new detailed hydraulic analysis was performed for the current study.

Bayous in St. Landry Parish have relatively flat slopes and relatively broad floodplains on their lower reaches, and as a consequence they have been subject to backwater flooding which has produced notable flood elevations in the past.

### Flood Risk Assessment

Flood risk assessment data is developed using a FEMA flood loss estimation tool, Hazus. Hazus (<https://www.fema.gov/hazus>) is a standardized risk assessment tool that estimates potential losses from a variety of disaster types. For the Mermentau Headwaters watershed Hazus was used in conjunction with the 1-percent-annual-chance depth grid created during the Phase Zero Base Level

Engineering analysis to perform a Level 2 analysis for the communities in the watershed. The flood loss estimates that were calculated are expressed in dollar amounts and cover only the portion of the community that falls within the watershed. These estimates should be used to understand relative risk from flood and potential losses. Flood loss estimates provide by this project include asset losses (building and content loss) for residential, commercial, industrial, government, education, and religious uses, as well as business disruption losses. The following section offers a high level discussion of these losses, however communities can dig into the results further by using data found in the BLE Database that will be available upon the completion of this project. Specific data that communities will find useful include the S\_Cen\_Blk\_Ar feature layer and accompanying L\_RA\_Results table. For additional information on the BLE Database and the data contained within please visit <https://www.fema.gov/media-library/assets/documents/160060>.

**Losses from the 1% Annual-Chance Flood**

The 1%-annual-chance flood is the standard flood used for mapping flood zones on NFIP FIRM Panels. In the Mermentau Headwaters all of the communities sustained losses during the 1%-annual-chance flood modeled during the BLE analysis. Of the 22 communities that did sustain losses Acadia Parish saw the greatest losses at more than \$195 million while the Village of Turkey Creek saw about \$800k in losses. Figure 2 below show the losses for all of the communities in the watershed. For specific loss numbers for each community see the “TOT\_LOSSES” column of the L\_RA\_Results table found in the BLE Database.

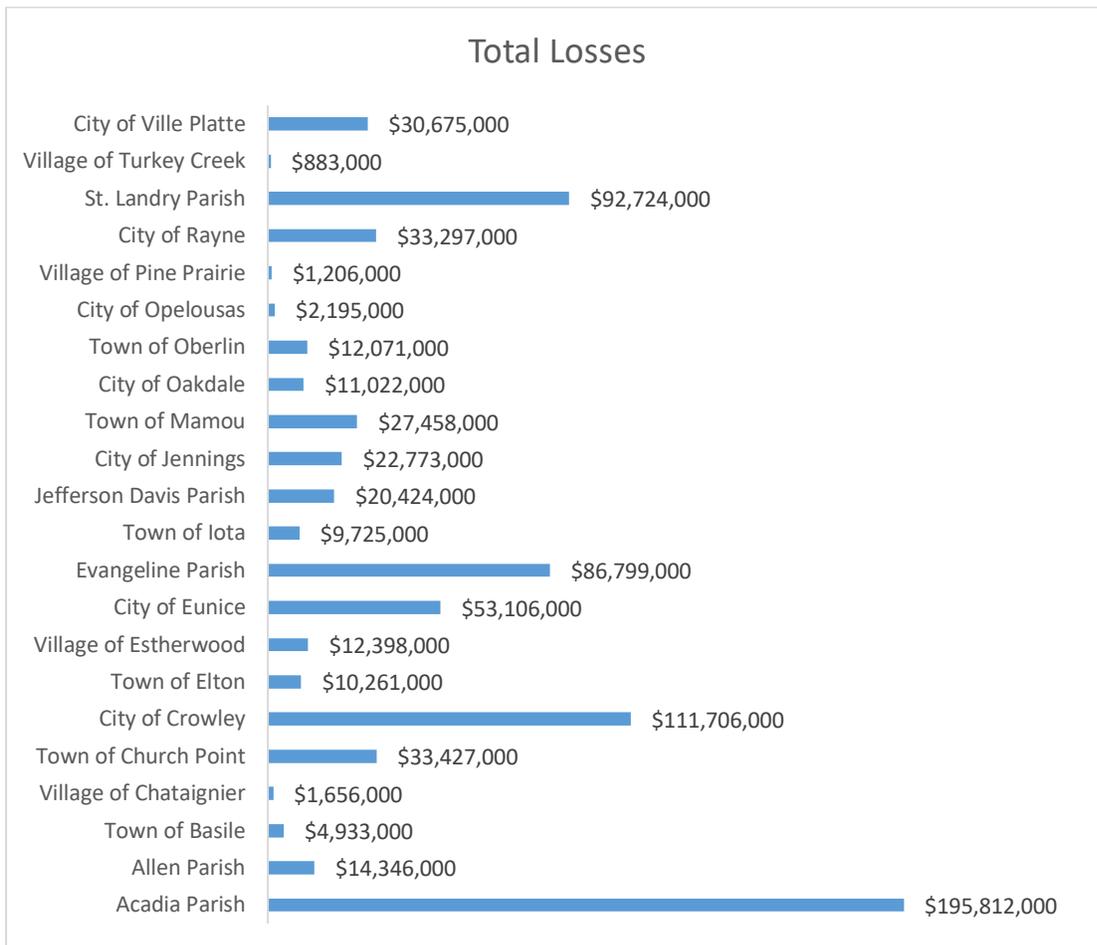


Figure 4: Total Losses for the 1-Percent-Annual-Chance Flood Event

Since communities vary in terms of physical size and population, the total losses incurred during a flood may not reflect the magnitude of the loss. In order to more accurately compare the figures below normalize the dollar losses for population and the area covered by the community respectively.

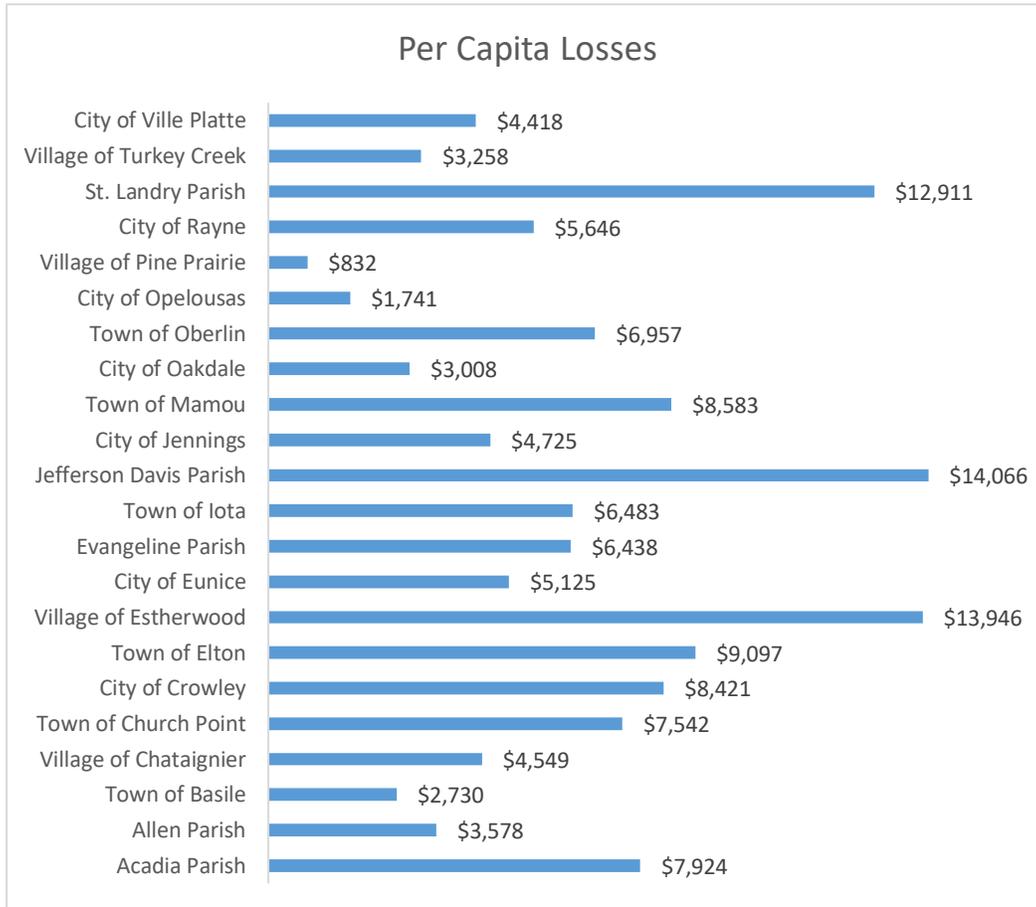


Figure 5: Per Capita Losses for the 1-Percent-Annual-Chance Flood Event

When normalized for population (Figure 5 above) Jefferson Davis Parish has the highest losses, followed by Village of Turkey Creek.



Figure 6: Losses per Square Mile for the 1-Percent-Annual-Chance Flood Event

When normalized for area (Figure 6 above) the Town of Mamou has the greatest losses, while Allen Parish has the lowest losses.

### Discovery Outreach and Meeting

In developing a comprehensive analysis of the Mermentau Headwaters watershed several government agencies and departments contributed information. In May 2020 staff of the Louisiana Department of Transportation and Development and Dewberry, the state’s CTP contractor, held a project kickoff meeting. Having finalized a list of community contacts compiled from DOTD information and public sources, the communities within the watershed were first contacted in July 2020 via telephone to inform them on the Discovery Project and to verify contact information. Due to the unprecedented events of COVID-19, the Discovery meeting had to be held virtually. Meeting invites were sent out via email on 11/6/2020. The email discussed the purpose of the Discovery Meeting, stipulated the date, time and virtual meeting location, and asked for any pertinent data to be brought to the meeting. The email also included a link to an ArcGIS webmapping application. This webmap showed relevant geographical information to the watersheds. It also had a feature where the communities could enter in comments on their portion of the watershed. The data remained online for the communities to enter their comments for 30 days. Two follow up calls were made to all communities after the Discovery meeting to ensure a thorough understanding of the process and that all comments could be collected.

## FEMA Investment Decision

During and after the Discovery meeting it was made known that most of the communities were previously unaware of the Base Level Engineering data. Time was spent on training of how to obtain information from the FEMA eBFE viewer (<https://webapps.usgs.gov/infrm/estbfe/>) and how to appropriately use the data. It is our recommendation that more education is needed in the watershed to ensure that the data are used properly. It is also the recommendation of DOTD to FEMA that the surrounding watersheds have BLE data completed in the next fiscal year cycle.

Once all of the BLE data is created in this area, it is recommended to discuss with the communities their needs for BLE enhancement. Allen parish for example has no mapping needs in this watershed. However, they could in the future in the northern part of the parish covered by other watersheds.

## Appendix I: Resources

### State Partners

Organization/Title	Name	Partner Location	Contact Information
Louisiana Department of Transportation & Development State NFIP Coordinator	Cindy O'Neal, CFM	P.O. Box 94245 Baton Rouge, LA 70804	Phone: 225-379-3005 Email: <a href="mailto:cindy.oneal@la.gov">cindy.oneal@la.gov</a> Web Page: <a href="http://floods.dotd.la.gov">http://floods.dotd.la.gov</a>
Mississippi Emergency Management Agency State NFIP Coordinator	Stacey Ricks, CFM	P.O. Box 5644 Pearl, MS 39288	Phone: 601-933-6610 Email: <a href="mailto:sricks@mema.ms.gov">sricks@mema.ms.gov</a> Web Page: <a href="http://www.msema.org/floodplain-management/">http://www.msema.org/floodplain-management/</a>
Louisiana Governor's Office of Homeland Security and Emergency Preparedness State Hazard Mitigation Officer	Jeffrey Giering, CFM	1201 Capitol Access Rd. Baton Rouge, LA 70802	Phone: 225-379-3005 Email: <a href="mailto:jeffrey.giering@la.gov">jeffrey.giering@la.gov</a> Web Page: <a href="http://gohsep.la.gov">http://gohsep.la.gov</a>
Mississippi Emergency Management Agency State Hazard Mitigation Officer	Jana Henderson, CFM	P.O. Box 5644 Pearl, MS 39288	Phone: 601-933-6636 Email: <a href="mailto:jhenderson@mema.ms.gov">jhenderson@mema.ms.gov</a> Web Page: <a href="http://www.msema.org/">http://www.msema.org/</a>

### Watershed Follow Up Points of Contact

Subject/Topic of Interest	Name	Contact Information
FEMA Project Monitor <i>Project Outreach</i>	Diane Howe Risk Analysis Branch	Phone: 940-898-5171 Email: <a href="mailto:diane.howe@fema.dhs.gov">diane.howe@fema.dhs.gov</a>
<ul style="list-style-type: none"> <li>• Floodplain Management</li> <li>• Floodplain Ordinance</li> <li>• Community Assistance Visits</li> <li>• Higher Standards</li> </ul>	John Miles, Jr.	Phone: <a href="tel:840-297-0185">840-297-0185</a> Email: <a href="mailto:john.milesjr@fema.dhs.gov">john.milesjr@fema.dhs.gov</a>
<ul style="list-style-type: none"> <li>• Community Rating System</li> <li>• Flood Insurance</li> </ul>	Jonathan Smith	Phone: 228-235-6506 Email: <a href="mailto:jsmith@iso.com">jsmith@iso.com</a>
<ul style="list-style-type: none"> <li>• How to find and read FIRMs</li> <li>• Letters of Map Change and Elevation Certificates</li> <li>• Flood zone disputes</li> <li>• Mandatory insurance purchase guidelines</li> <li>• Map Service Center (MSC) &amp; National Flood Hazard Layer</li> </ul>	FEMA Map Information eXchange	Phone: 877.FEMA.MAP (336.2627) Email: <a href="mailto:FEMAMapSpecialist@riskmapcds.com">FEMAMapSpecialist@riskmapcds.com</a> Live Chat: <a href="https://www.floodmaps.fema.gov/fhm/fmx_main.html">https://www.floodmaps.fema.gov/fhm/fmx_main.html</a>

## Governor's Office of Homeland Security and Emergency Preparedness

<http://gohsep.la.gov/>

Louisiana is a high-risk state for emergency events and disasters. The Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) is the agency responsible for coordinating the state's efforts throughout the emergency management cycle to prepare for, prevent where possible, respond to, recover from, and mitigate against to lessen the effects of man-made or natural disasters that threaten the state. GOHSEP can save lives and reduce property damage by understanding risks and taking action to address those risks, as well as minimizing disaster impacts and increasing the resiliency in our communities, environment, and economy.



### HELPFUL LINKS:

FLOOD INDEX: <http://gohsep.la.gov/ABOUT/LOUISIANA-HAZARDS-THREATS/FLOODING>

GOHSEP CONTACTS: <http://gohsep.la.gov/ABOUT/CONTACT-US/GOHSEP-CONTACTS>

FLOOD MITIGATION ASSISTANCE GRANT PROGRAM: <http://gohsep.la.gov/GRANTS/RECOVERY-GRANTS/Hazard-Mitigation-Assistance>

GOHSEP MITIGATION PLANNING: <http://getagameplan.org/planMitigate.htm>

FEMA ESTIMATED BASE FLOOD ELEVATION (estBFE) VIEWER: <https://webapps.usgs.gov/infrm/estbfe/>

## Louisiana Department of Transportation and Development

<http://floods.dotd.la.gov>

The Louisiana Department of Transportation and Development (DOTD) is the State Coordinating Agency for the NFIP as designated by the Governor. The purpose of the program is to promote local government compliance with NFIP regulations to ensure the availability of low-cost flood insurance, and in doing so, minimize loss of life and property due to catastrophic flooding. This is accomplished through on-site assessments, distribution of a quarterly newsletter, conducting workshops, providing technical assistance on local government ordinance development, and participation in post-disaster Flood Hazard Mitigation activities.



### DOTD FLOOD INFORMATION & RESOURCES

Louisiana Floodplain Management Desk Reference—The Louisiana Floodplain Management Desk Reference is a comprehensive guide that gives detailed information on administering floodplain ordinances at the community level.

### POINTS OF CONTACT:

Cindy O'Neal, CFM  
State NFIP Coordinator  
**Phone:** 225-379-3005  
**Fax:** 225-379-3002  
**Email:** [cindy.oneal@la.gov](mailto:cindy.oneal@la.gov)

## Louisiana Floodplain Management Association

Organization	Contact Information	Website
Louisiana Floodplain Management Association (LFMA)	Phone: 318-226-6934	<a href="http://lfma.org">http://lfma.org</a>

## Certified Floodplain Manager (CFM) Certification

The Association of State Floodplain Managers (ASFPM) established a national program for certifying floodplain managers. This program recognizes continuing education and professional development that enhances the knowledge and performance of local, state, federal, and private-sector floodplain management professionals.

The role of the nation's floodplain managers is expanding due to increases in disaster losses, the emphasis on mitigation to alleviate the cycle of damage-rebuild-damage, and a recognized need for professionals to adequately address these issues. This certification program will lay the foundation for ensuring that highly qualified individuals are available to meet the challenge of breaking the damage cycle and stopping its negative drain on the nation's human, financial, and natural resources.

CFM® is a registered trademark and available only to individuals certified and in good standing under the ASFPM Certified Floodplain Manager Program.

For more information, you may want to review these available CFM Awareness Videos:

- [What is the CFM Program?](#)
- [Who can be a CFM?](#)
- [What are the Benefits of a CFM?](#)

Study Materials for those interested in applying for the CFM certification can be found on the ASFPM Website at: <http://www.floods.org/index.asp?menuID=215>

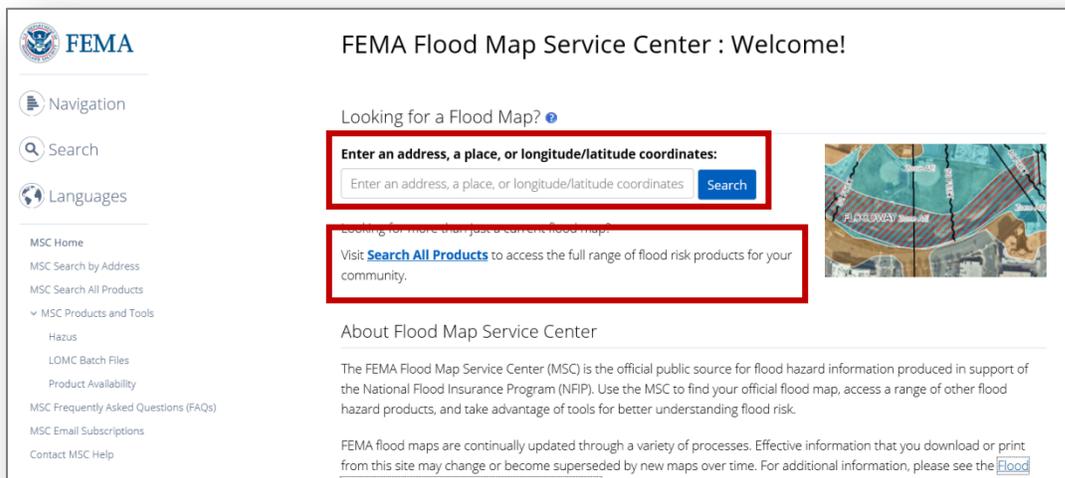
## Map Service Center – Preliminary Map Data

The [FEMA Flood Map Service Center \(MSC\)](#) is the official public source for flood hazard information produced in support of the NFIP. Use the MSC to find your official effective flood map, preliminary flood maps, and access a range of other flood hazard products.

FEMA flood maps are continually updated through a variety of processes. Effective information that you download or print from this site may change or become superseded by new maps over time. For additional information, please see the [Flood Hazard Mapping Updates Overview Fact Sheet](#).

At the Map Service Center, there are two ways to locate flood maps in your vicinity.

1. Enter an address, place name, or latitude/longitude coordinates and click search. This will provide the current effective FIRM panel that the location exists on.
2. Or [Search All Products](#), which will provide access to the full range of flood risk information available.



Visiting the more advanced search option, “Search All Products,” users may access current, preliminary, pending, and historic flood maps. Additionally, GIS data and flood risk products may be accessed through the site with these few steps.