

# 2023 CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

TOWN OF CLARKS, TOWN OF  
COLUMBIA, VILLAGE OF  
GRAYSON, UNINCORPORATED  
CALDWELL PARISH





# CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

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**Caldwell Parish**



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Caldwell Parish Police Jury  
Town of Clarks  
Town of Columbia  
Village of Grayson

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## 1. Introduction

Hazard Mitigation is defined as sustained actions taken to reduce or eliminate long-term risk from hazards and their effects. Hazard Mitigation Planning is the process through which natural hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies that would lessen the impacts are determined, prioritized, and implemented.

In that regard, this plan (a) documents the Caldwell Parish Hazard Mitigation Plan Update (HMPU) process; (b) identifies natural hazards and risks within the parish; and (c) identifies the parish's hazard mitigation strategy to make Caldwell Parish and its jurisdictions less vulnerable and more disaster resilient. It also includes mitigation project scoping to further identify scopes of work, funding sources, and implementation timing requirements of proposed selected mitigation projects. Information in the plan will be used to help guide and coordinate mitigation and local policy decisions affecting future land use.

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

- Caldwell Parish
- Town of Clarks
- Town of Columbia
- Village of Grayson

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

This Hazard Mitigation Plan is a comprehensive plan for disaster resiliency in Caldwell Parish. The parish is subject to natural hazards that threaten life and health and have caused extensive property damage. To better understand these hazards and their impacts on people and property, and to identify ways to reduce those impacts, the parish's Office of Homeland Security and Emergency Preparedness undertook this Natural Hazards Mitigation Plan. "Hazard mitigation" does not mean that all hazards are stopped or prevented. It does not suggest complete elimination of the damage or disruption caused by such incidents. Natural forces are powerful and most natural hazards are well beyond our ability to control. Mitigation does not mean quick fixes. It is a long-term approach to reduce hazard vulnerability. As defined by FEMA, "hazard mitigation" means any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event.

Every community faces different hazards, and every community has different resources and interests to bring to bear on its problems. Because there are many ways to deal with natural hazards and many agencies that can help, there is no one solution for managing or mitigating their effects. Planning is one of the best ways to correct these shortcomings and produce a program of activities that will best mitigate the impact of local hazards and meet other local needs. A well-prepared plan will ensure that all possible activities are reviewed and implemented so that the problem is addressed by the most appropriate and efficient solutions. It can also ensure that activities are coordinated with each other and with other goals and programs, preventing conflicts and reducing the costs of implementing each individual activity.

Under the Disaster Mitigation Act of 2000 (42 USC 5165), a mitigation plan is a requirement for Federal mitigation funds. Therefore, a mitigation plan will both guide the best use of mitigation funding and meet the prerequisite for obtaining such funds from FEMA. FEMA also recognizes plans through its Community Rating System (CRS), a program that reduces flood insurance premiums in participating communities. This program is further described in Section Three: Capability Assessment.

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

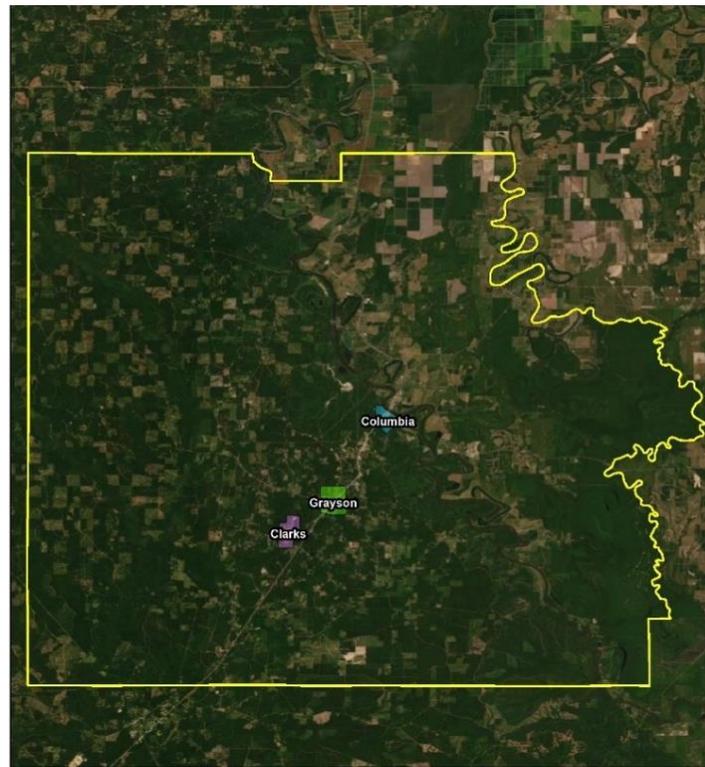
## Geography, Population and Economy

### Geography

Caldwell Parish is located in northeast Louisiana (*Figure 1-1*). Caldwell Parish is on Highway 165, south of Monroe in Ouachita Parish, just below Interstate 20. It is strategically situated to serve the tri-state market region, which includes Louisiana, Mississippi and Arkansas. The Boeuf River forms the eastern border with Richland and Franklin Parishes. Ouachita Parish is to the north, and Jackson and Winn Parishes are to the west. To the south are LaSalle and Catahoula Parishes. The parish is approximately 541 miles square, with the Ouachita River meandering from north to south, dividing the alluvial lands on the east from the hill country to the west. However, both sections are heavily timbered. Pine forests dominate the hills and ridges west of the river, while the east banks forests feature gum, oak, hickory and cypress.



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



*Figure 1-2: Incorporated Jurisdictions within Caldwell Parish*

The topography of Caldwell Parish varies significantly from east to west. In the eastern end of the parish, the land is typically used for agricultural business, with an elevation reaching as low as 40 feet in certain areas. The western part of the parish consists of rolling terrain covered by pine and hardwood forests, with the highest elevation in the parish reaching 240 feet. The largest concentration of urban development is found in the central portion of the parish.

Approximately 60-70% of the total land area of Caldwell Parish is located within FEMA's 100-year floodplain. Areas east of the Ouachita River are predominately in the 100-year floodplain. Areas located along Castor Creek, Black Bayou, Hurricane Creek, Beaucoup Creek, and Piney Creek just west of the Ouachita River are also included in the 100-year floodplain. There are also portions of Caldwell Parish outside of the 100 year floodplain found within the central portion of the parish and along the western and southern parish boundaries.

Caldwell Parish weather is typically warm and humid. The average annual temperature for the state as a whole is 68°F. January is typically the coldest month for Louisiana, averaging approximately 35°F, while July is typically the warmest at an average of 93°F. Winter months are usually mild with cold spells of short duration. For Caldwell Parish in particular, the summer months are usually quite warm, with an average daily maximum temperature in July and August of 93°F. Winters are typically mild. Snowfall averages less than one inch per year. Average annual rainfall for the area is 58 inches. Caldwell Parish is susceptible to the normal weather dangers, such as thunderstorms and flooding, but may be affected by tropical cyclones as well. Hurricane season lasts from June 1st to November 30th, with most hurricanes forming in August, September, and October.

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

As noted above, Caldwell Parish is located in the northeast region of Louisiana.



Figure 1-3: Louisiana Homeland Security Regions

Population

The population of Caldwell Parish is estimated at 9,645 (2020 estimate) with a population percent change from April 1, 2010 – April 1, 2020 of -5.05%

Table 1-1: Caldwell Parish Population  
(Source: US Census)

|   | 2010 Census | 2014 Estimate | 2020 Census | Percent Change 2010 - 2020 |
|---|-------------|---------------|-------------|----------------------------|
| <b>Total Population</b>                 | 10,132      | 9,894         | 9,645       | -5.05%                     |
| <b>Population Density (Pop/Sq. Mi.)</b> | 19.1        |               | 18.2        | -4.71%                     |
| <b>Total Households</b>                 | 4,994       | 5,022         | 3,665       | -36.26%                    |
| <b>Persons Per Household</b>            |             |               | 2.60        | -----                      |

Economy

Caldwell Parish, located in northeast Louisiana, is strategically situated on four-lane LA Highway 165 to serve the tri-state market region, which includes Louisiana, Mississippi, and Arkansas. Its location ensures direct access for its products and services to a wide range of destinations. Although Caldwell Parish receives revenue from oil and gas production, farming and forestry have been cornerstones of the economy for generations. Cotton is still the dominant crop grown in the parish, but other crops include corn, soybeans, potatoes, and peanuts.

Caldwell Parish and Columbia have a long tradition of being a river port. Packet boats or steamers plied the Ouachita River during the cotton boom of the early 1880s and their usefulness rose again during the late part of the century until railroads and highways began to appear in the area. Today Caldwell has a new port, which can contribute significantly to the parish’s economic potential. Industry data for business patterns in Caldwell Parish can be found in the table on the following page.

Table 1-2: Caldwell Parish Business Patterns

(Source: <https://www.census.gov/programs-surveys/cbp/data/tables.html>)

| Business Description                             | Number of Establishments | Number of Employees | Annual Payroll (\$1,000) |
|--|--------------------------|---------------------|--------------------------|
| Retail Trade                                     | 28                       | 317                 | 6,852                    |
| Manufacturing                                    | 4                        | 33                  | 1,395                    |
| Health Care and Social Assistance                | 23                       | 657                 | 26,064                   |
| Transportation and Warehousing                   | 5                        | 35                  | 2,615                    |
| Construction                                     | 8                        | 14                  | 837                      |
| Real Estate and Rental and Leasing               | 5                        | 7                   | 210                      |
| Wholesale Trade                                  | 3                        | 27                  | 1,276                    |
| Other Services (except Public Administration)    | 18                       | 85                  | 1,770                    |
| Accommodation and Food Services                  | 9                        | 138                 | 1,793                    |
| Financial and Insurance                          | 8                        | 90                  | 4,655                    |
| Professional, Scientific, and Technical Services | 33                       | 93                  | 2,411                    |
| Agriculture, Forestry, Fishing and Hunting       | 8                        | 57                  | 2,225                    |
| Utilities  | 3                        | 22                  | 2,634                    |
| Information                                      | 4                        | 15                  | 491                      |

## Hazard Mitigation

To fully understand hazard mitigation efforts in Caldwell Parish and throughout Louisiana, it is first crucial to understand how hazard mitigation relates to the broader concept of emergency management. In the early 1980s, the newly-created Federal Emergency Management Agency (FEMA) was charged with developing a structure for how the federal, state, and local governments would respond to disasters. FEMA developed the *four phases of emergency management*, an approach which can be applied to all disasters. The four phases are as follows:

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

- **Disaster Response**—includes actions taken to provide emergency assistance, save lives, minimize property damage, and speed recovery immediately following a disaster.
- **Disaster Recovery**—includes actions taken to return to a normal or improved operating condition following a disaster.

*Figure 1-4* illustrates the basic relationship between these phases of emergency management. While hazard mitigation may occur both before and after a disaster event, it is significantly more effective when implemented before an event occurs. This is one of the key elements of this plan and its overall strategy: reduce risk before disaster strikes in order to minimize the need for post-disaster response and recovery.

As *Figure 1-4* demonstrates, mitigation relies on updating in the wake of disaster. This can give the appearance that mitigation is only reactive rather than proactive. In reality, post-disaster revision is a vital component of improving mitigation. Each hazardous event affords an opportunity to reduce the consequences of future occurrences.

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

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

The catastrophic tropical events of 2005 and 2020, coupled with the unprecedented flooding events of 2016 have had profound impacts on emergency management and hazard mitigation throughout Louisiana. As detailed later in this document, significant funding has been made available to the State of Louisiana and its parishes for the purpose of hazard mitigation planning. The storms also raised awareness of the importance of hazard mitigation among decision-makers and the general population, which has been particularly important since natural hazards will likely be increasing in frequency, magnitude, and impact in the coming years due to climate change.



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

## General Strategy

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

Part of the ongoing integration process is that the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) encourages the parishes and the local communities with independent hazard mitigation plans to utilize the same plan format and methodologies as the State Hazard Mitigation Plan in order to create continuity of information from local to state mitigation plans and programs.

The 2023 Caldwell Parish Hazard Mitigation Plan (HMP) maintains much of the information from the 2017 plan version, but it now incorporates the order and methodologies of the 2019 Louisiana State Hazard Mitigation Plan.

The sections in the 2017 Caldwell Parish HMP were as follows:

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

This plan update also coheres with the Plain Writing Act of 2010, which requires federal agencies to use clear communication that is accessible, consistent, understandable, and useful to the public. While the State of Louisiana and its political subdivisions are not required to meet such standards, the Act aligns with best practices in hazard mitigation. Since successful hazard mitigation relies on full implementation and cooperation at all levels of government and community, a successful hazard mitigation plan must also be easily used at all of these levels. Nevertheless, the Caldwell Parish Hazard Mitigation Planning Committee recognized the benefits from the successful analysis and mitigation planning executed in previous plan updates, as well as improvements to be made in the 2023 update. This plan update remains coherent with those documents, retaining language and content when needed, deleting it when appropriate, and augmenting it when constructive.

## 2023 Plan Update

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

1. Identify and pursue mitigation measures that will reduce future damages;
2. Enhance public awareness and understanding of disaster preparedness;
3. Reduce repetitive flood losses in the parish;
4. Facilitate sound development in the parish to reduce or eliminate the potential impact of hazards.

This plan update makes a number of textual changes throughout, but the most obvious changes are data related and structural edits. First, the National Oceanic and Atmospheric Administration’s (NOAA) National Centers for Environmental Information’s (NCEI) Storm Events Database was used in the analysis, which provides historical hazard data from 1950 to 2022. The planning committee was also instrumental in providing detailed data where appropriate to more accurately reflect hazard impacts on the parish and jurisdictions. Furthermore, all of the sections were updated to reflect the most current information and the most current vision of the plan update. The most significant changes are the newly developed hazard profiles and risk assessments, as well as the removal of much repetition between sections from the previous plan updates.

The 2023 plan update is organized in the same format as the 2017 update, with one minor change to this 2023 update as outlined below:

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

*Table 1-3: 2023 Plan Update Crosswalk*

| Plan Update Crosswalk  |  |
|--|--|
| 2017 Update  | 2023 Update  |
| Section 1: Introduction  | Section 1: Introduction  |
| Section 2: Hazard Identification and Parish-Wide Risk Assessment | Section 2: Hazard Identification and Parish-Wide Risk Assessment |
| Section 3: Capability Assessment                                 | Section 3: Capability Assessment                                 |
| Section 4: Mitigation Strategy                                   | Section 4: Mitigation Strategy                                   |
| Appendix A: Planning Process                                     | Appendix A: Planning Process                                     |
| Appendix B: Plan Maintenance                                     | Appendix B: Plan Maintenance                                     |
| Appendix C: Essential Facilities                                 | Appendix C: Critical Facilities                                  |
| Appendix D: Plan Adoptions                                       | Appendix D: Plan Adoptions                                       |
| Appendix E: State Required Worksheets                            | Appendix E: State Required Worksheets                            |

Despite numerous changes in this plan update, the plan remains consistent in its emphasis on the types of hazards that pose the most risk to loss of life, injury, and property in Caldwell Parish and its communities. The extent of this risk is dictated primarily by its geographic location. Most significantly, Caldwell Parish remains at high risk of water inundation from various types of flooding. The entire parish is also at high risk of damages from high winds and wind-borne debris. The 2016 flooding events, along with the 2020 hurricane season were both felt heavily in all parts of Caldwell Parish. Other hazards threaten the parish and/or its communities, although not to such great degrees and not in such

widespread ways. In all cases, the relative social vulnerability of areas threatened and affected plays a significant role in how governmental agencies and their partners (local, parish, state and federal) prepare for and respond to disasters.

Mitigation efforts related to particular hazards are highly individualized by jurisdiction. Flexibility in response and planning is essential. The most important step forward to improve hazard management capability is to improve coordination and information sharing between the various levels of government regarding hazard

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## 2. Hazard Identification and Parish-Wide Risk Assessment

This section assesses the various hazard risks that Caldwell Parish faces in order to identify a strategy for mitigation. Having identified the categories of hazards, emergencies, disasters, and catastrophes, this section details the major climatological and natural/human-influenced hazards by (1) defining them, (2) explaining how they are measured, (3) describing their geographic extent, (4) surveying their previous occurrences, and (5) evaluating their future likelihood of occurrences.

The table below provides an overview of the hazards that had been previously profiled in the Caldwell Parish Hazard Mitigation Plan published in 2016, as well as the hazards that were identified in the state's 2019 Hazard Mitigation Plan that were of high or medium risk for the parish by the state. Those hazards identified as high or medium risk by the state or previously identified as a risk by the parish, have been determined to provide a risk to the parish and will be profiled in this section.

*Table 2-1: Hazard Profile Summary.*

| Hazard                                  | Profiled in Previous Plan | Considered Medium or High Risk in the State's HM Plan | Profiled in the 2023 Update |
|---|---------------------------|---|-----------------------------|
| Dam Failure                             | X                         |   | +                           |
| Drought                                 | X                         |   | X                           |
| Earthquakes                             | *                         |   |                             |
| Flooding                                | X                         | X   | X                           |
| Levee Failure                           | X                         |   | +                           |
| Thunderstorms (Hail, Lightning, & Wind) | X                         | X   | X                           |
| Tornadoes                               | X                         | X   | X                           |
| Tropical Cyclones                       | X                         | X   | X                           |
| Wildfires                               | X                         |   | X                           |
| Winter Weather                          | X                         |   | X                           |

\*Hazard Discounted in Previous Plan  
+ Data Deficiency

### Prevalent Hazards to the Community

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

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

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

- Flooding from rivers and waterways, rain storms, tropical cyclones, and hurricanes in the following forms:
  - a) Riverine
  - b) Stormwater
  - c) Surge
  - d) Backwater flooding (as the result of river flooding and surge)
  - e) Coastal
- High wind damage most commonly resulting from hurricanes, thunderstorms, and tornadoes
- Property damage resulting from all profiled natural hazards

The potential destructive power of tropical cyclones was determined to be the most prevalent hazard to the parish. Twenty-four of the twenty-nine disaster declarations Caldwell Parish have received resulted from tropical cyclones (14) or flooding (10), which validates this as the most significant hazard. Therefore, the issue of hurricanes and flooding will serve as the main focus during the mitigation planning process. Hurricanes present risks from the potential for flooding, primarily resulting from storm surge, and high wind speeds. While storm surge is considered the hazard with the most destructive potential, the risk assessment will also assess non-storm surge flooding as well. Flooding can also occur from non-hurricane events, as flash floods are a common occurrence due to heavy rainfall.

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

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

### Previous Occurrences

On the next page, *Table 2-2* summarizes federal disaster declarations for Caldwell Parish since 1965. Information includes names, dates, and types of disaster.

Table 2-2: Caldwell Parish Major Disaster Declarations.

| Disaster Number | Year       | Declaration  |
|-----------------|------------|--|
| 208             | 9/10/1965  | Tropical Cyclone – Hurricane Betsy                 |
| 374             | 4/27/1973  | Severe Storms and Flooding                         |
| 418             | 2/23/1974  | Flooding   |
| 3011            | 4/12/1975  | Heavy Rains and Flooding                           |
| 470             | 6/6/1975   | Heavy Rains, Tornadoes, and Flooding               |
| 3031            | 2/22/1977  | Drought and Freezing                               |
| 675             | 1/11/1983  | Severe Storms and Flooding                         |
| 829             | 5/20/1989  | Severe Storms and Flooding                         |
| 904             | 5/3/1991   | Severe Storms, Tornadoes, and Flooding             |
| 1437            | 10/3/2002  | Tropical Cyclone – Hurricane Lili                  |
| 1603            | 8/29/2005  | Tropical Cyclone – Hurricane Katrina               |
| 1607            | 9/24/2005  | Tropical Cyclone – Hurricane Rita                  |
| 1668            | 11/2/2006  | Severe Storms and Flooding                         |
| 1786            | 9/2/2008   | Tropical Cyclone – Hurricane Gustav                |
| 1863            | 12/10/2009 | Severe Storms, Tornadoes, and Flooding             |
| 4080            | 8/29/2012  | Tropical Cyclone – Hurricane Isaac                 |
| 4263            | 3/13/2016  | Severe Storms, Flooding                            |
| 4462            | 9/19/2019  | Severe Storms and Flooding                         |
| 4484            | 3/24/2020  | COVID-19 Pandemic                                  |
| 3527            | 6/7/2020   | Tropical Cyclone – Tropical Storm Cristobal        |
| 3538            | 8/23/2020  | Tropical Cyclone – Tropical Storms Laura and Marco |
| 4559            | 8/28/2020  | Tropical Cyclone – Hurricane Laura                 |
| 3543            | 9/14/2020  | Tropical Cyclone – Hurricane Sally                 |
| 4570            | 10/16/2020 | Tropical Cyclone – Hurricane Delta                 |
| 3549            | 10/27/2020 | Tropical Cyclone – Tropical Storm Zeta             |
| 3556            | 2/18/2021  | Severe Winter Storm                                |
| 4590            | 3/9/2021   | Severe Winter Storms                               |
| 4611            | 8/29/2021  | Tropical Cyclone – Hurricane Ida                   |
| 3574            | 9/13/2021  | Tropical Cyclone – Tropical Storm Nicholas         |

### Probability of Future Hazard Events

The probability of a hazard event occurring in Caldwell Parish is estimated in the table on the following page. The percent chance of an event happening during any given year was calculated by posting past events and dividing by the time period. Unless otherwise indicated, the time period used to assess probability followed the method used in the State of Louisiana's most current Hazard Mitigation Plan. The primary source for historical data used throughout the plan is the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information's (NCEI) Storm Events Database, which provides historical hazard data from 1950 to 2021. In staying consistent with the state plan, the Storm Events Database was evaluated for the last thirty-one years (1990 – 2021) to determine future probability of a hazard occurring. While the 31-year record used by the State was adopted for the purpose of determining the overall probability, to assist with determining estimated losses, unless otherwise stated, the full 71-year record was used when Hazus was not available to determine losses. This full record was used to provide a more extensive record to determine losses. All assessed damages

were adjusted for inflation in order to reflect the equivalent amount of damages with the value of the U.S. dollar today. The following table shows the annual probability for each hazard occurring across the parish:

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

| Hazard                           | Probability                         |        |          |         |
|----------------------------------|-------------------------------------|--------|----------|---------|
|                                  | Caldwell Parish<br>(Unincorporated) | Clarks | Columbia | Grayson |
| <b>Dam Failure</b>               | < 1%                                | < 1%   | < 1%     | < 1%    |
| <b>Drought</b>                   | 19%                                 | 19%    | 19%      | 19%     |
| <b>Flooding</b>                  | 19%                                 | 6%     | 19%      | 3%      |
| <b>Levee Failure</b>             | < 1%                                | < 1%   | < 1%     | < 1%    |
| <b>Thunderstorms - Hail</b>      | 100%                                | 100%   | 100%     | 100%    |
| <b>Thunderstorms - Lightning</b> | < 1%                                | < 1%   | < 1%     | < 1%    |
| <b>Thunderstorms - Winds</b>     | 100%                                | 100%   | 100%     | 100%    |
| <b>Tornadoes</b>                 | 35%                                 | 35%    | 35%      | 35%     |
| <b>Tropical Cyclones</b>         | 26%                                 | 26%    | 26%      | 26%     |
| <b>Wildfires</b>                 | < 1%                                | < 1%   | < 1%     | < 1%    |
| <b>Winter Storms</b>             | 61%                                 | 61%    | 61%      | 61%     |

As shown in the above tables, hailstorms and high winds have the highest chance of occurrence in the parish (100%). These are followed by winter storms (61%); tornadoes (35%); tropical cyclones (26%); flooding for the unincorporated area of the parish, flooding for the incorporated area of Columbia, and drought (19%); and flooding for the incorporated area of Clarks (6%) and Grayson (3%). Wildfires, lightning, dam failure, and levee failure have an annual chance of occurrence of less than 1%.

### Inventory of Assets for the Entire Parish

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

Within the entire planning area, there is an estimated value of \$7,800,395,000 in structures throughout the parish. The table below provides the total estimated value for each type of structure by occupancy.

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

| Occupancy           | Caldwell Parish        | Unincorporated Area    | Clarks              | Columbia            | Grayson              |
|---------------------|------------------------|------------------------|---------------------|---------------------|----------------------|
| <b>Agricultural</b> | \$4,187,000            | \$4,085,000            | \$0                 | \$0                 | \$102,000            |
| <b>Commercial</b>   | \$99,179,000           | \$44,867,000           | \$3,091,000         | \$4,348,000         | \$46,873,000         |
| <b>Government</b>   | \$10,194,000           | \$5,122,000            | \$1,731,000         | \$893,000           | \$2,448,000          |
| <b>Industrial</b>   | \$19,648,000           | \$10,236,000           | \$219,000           | \$72,000            | \$9,121,000          |
| <b>Religion</b>     | \$23,870,000           | \$15,408,000           | \$3,623,000         | \$1,612,000         | \$3,227,000          |
| <b>Residential</b>  | \$7,633,964,000        | \$7,520,017,000        | \$43,450,000        | \$23,208,000        | \$47,289,000         |
| <b>Education</b>    | \$9,353,000            | \$7,463,000            | \$0                 | \$0                 | \$1,890,000          |
| <b>Total</b>        | <b>\$7,800,395,000</b> | <b>\$7,607,198,000</b> | <b>\$52,114,000</b> | <b>\$30,133,000</b> | <b>\$110,950,000</b> |

Critical Facilities of the Parish

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

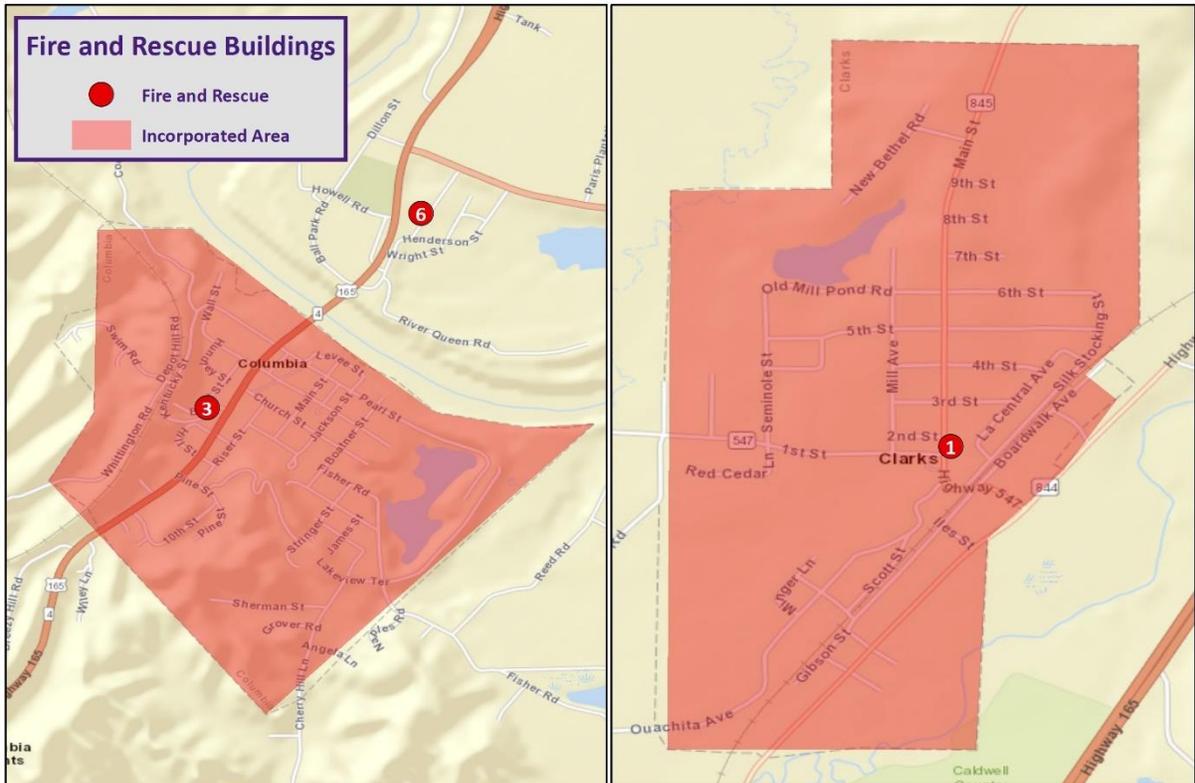
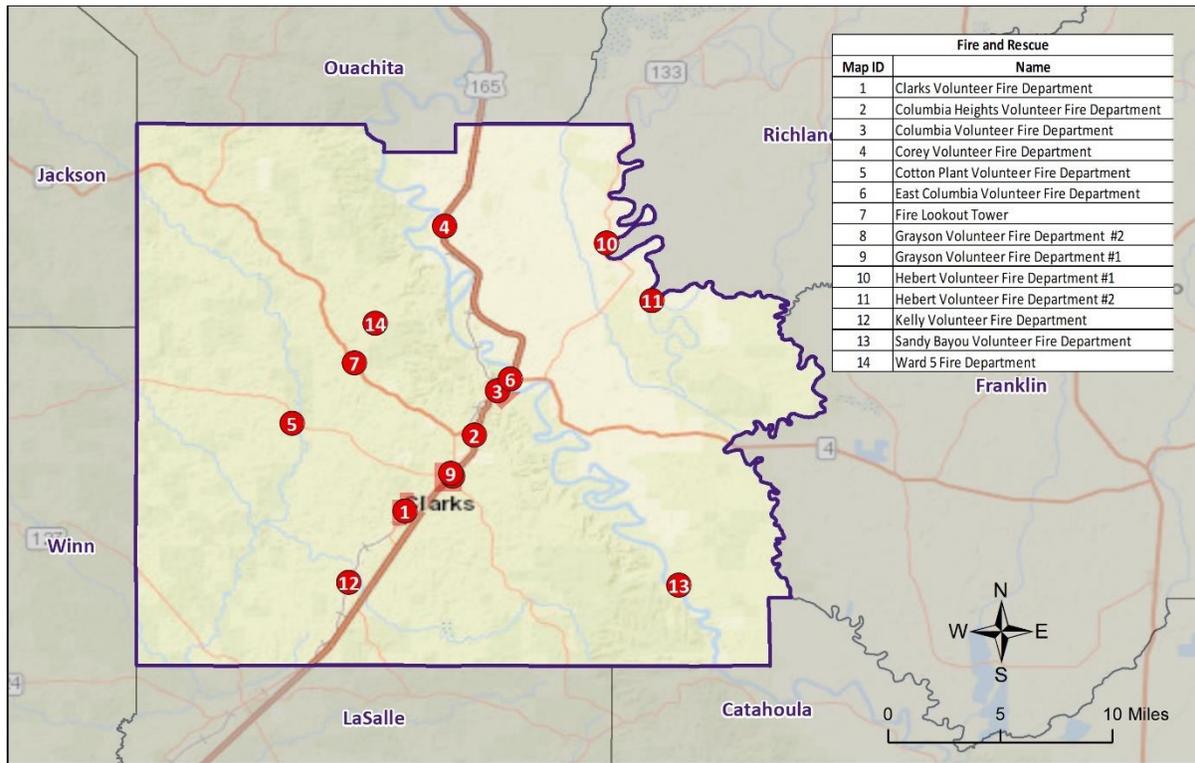


Figure 2-1: Fire and Rescue Facilities in Caldwell Parish.

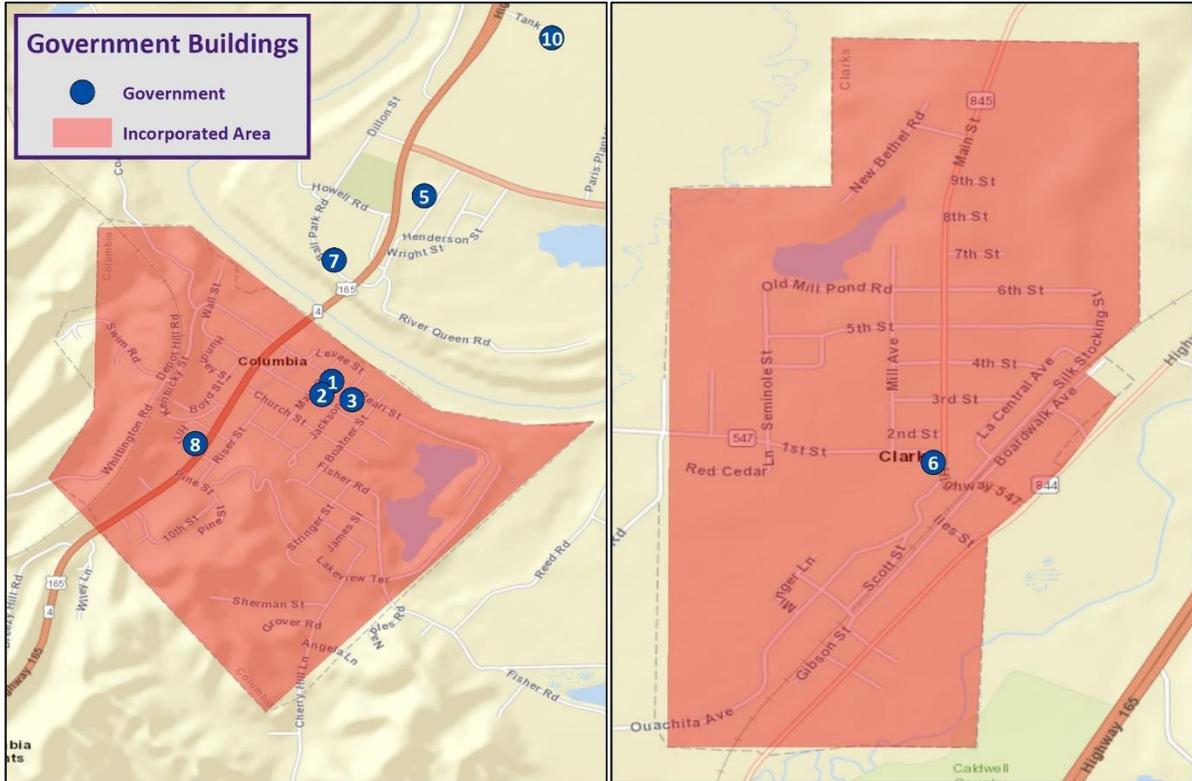
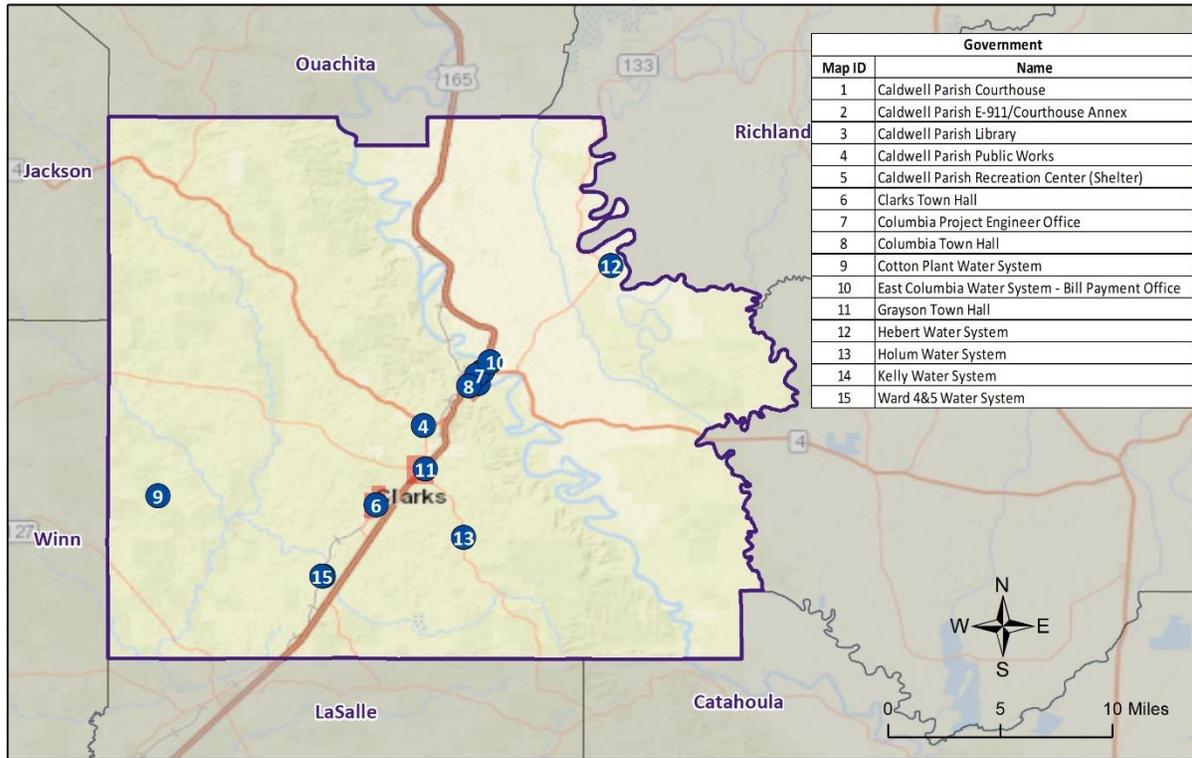


Figure 2-2: Government Buildings in Caldwell Parish.

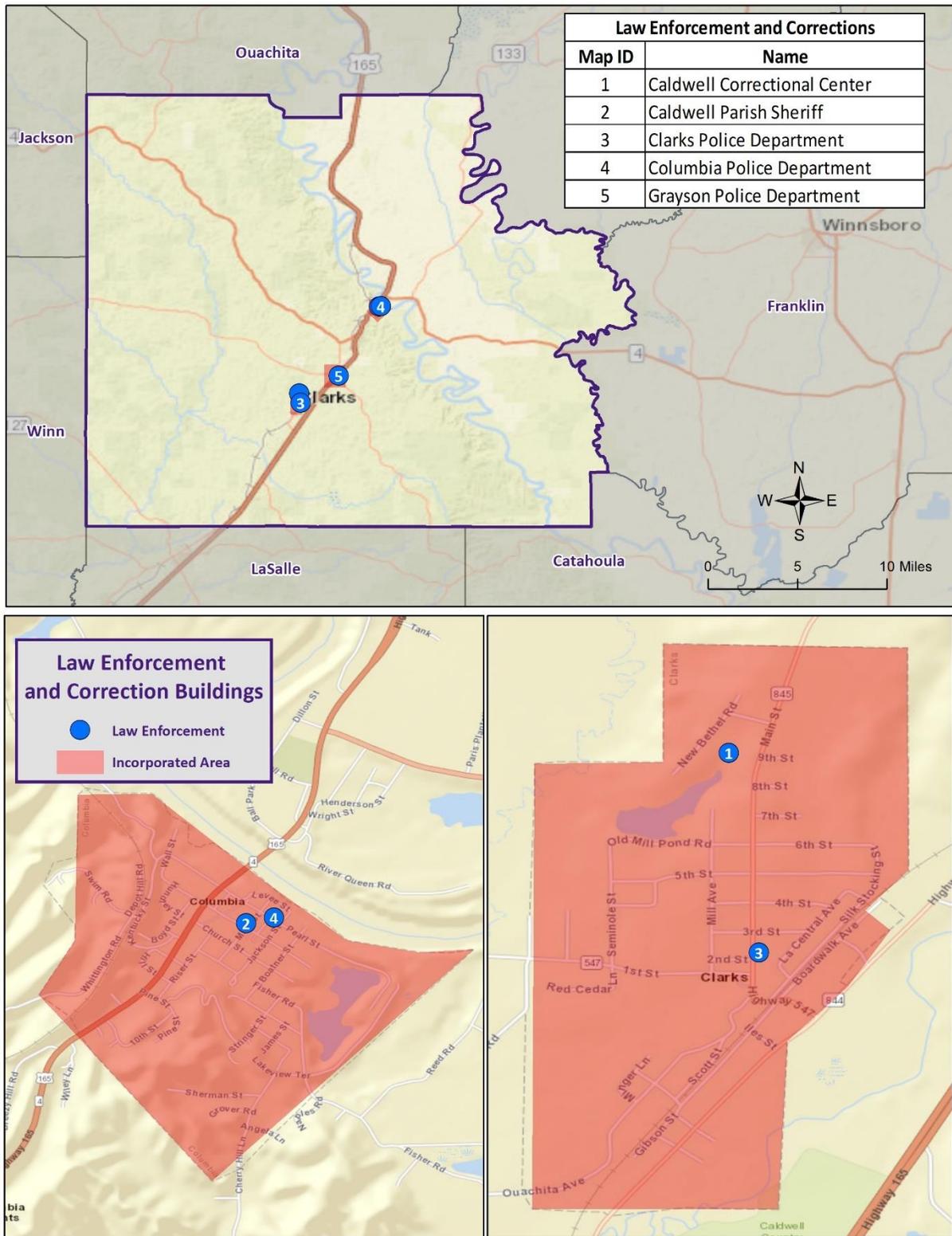


Figure 2-3: Law Enforcement Facilities in Caldwell Parish.

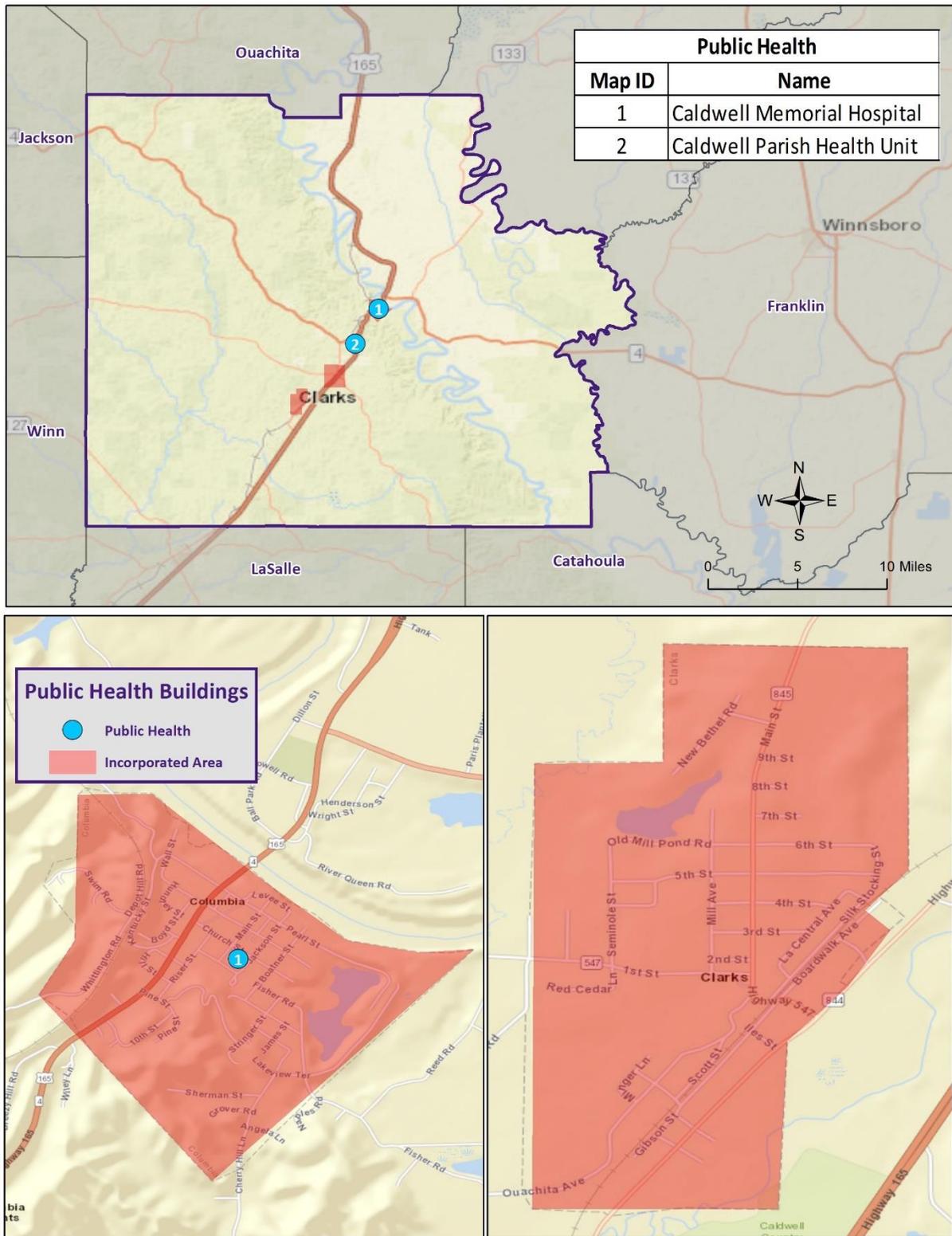


Figure 2-4: Public Health Facilities in Caldwell Parish.

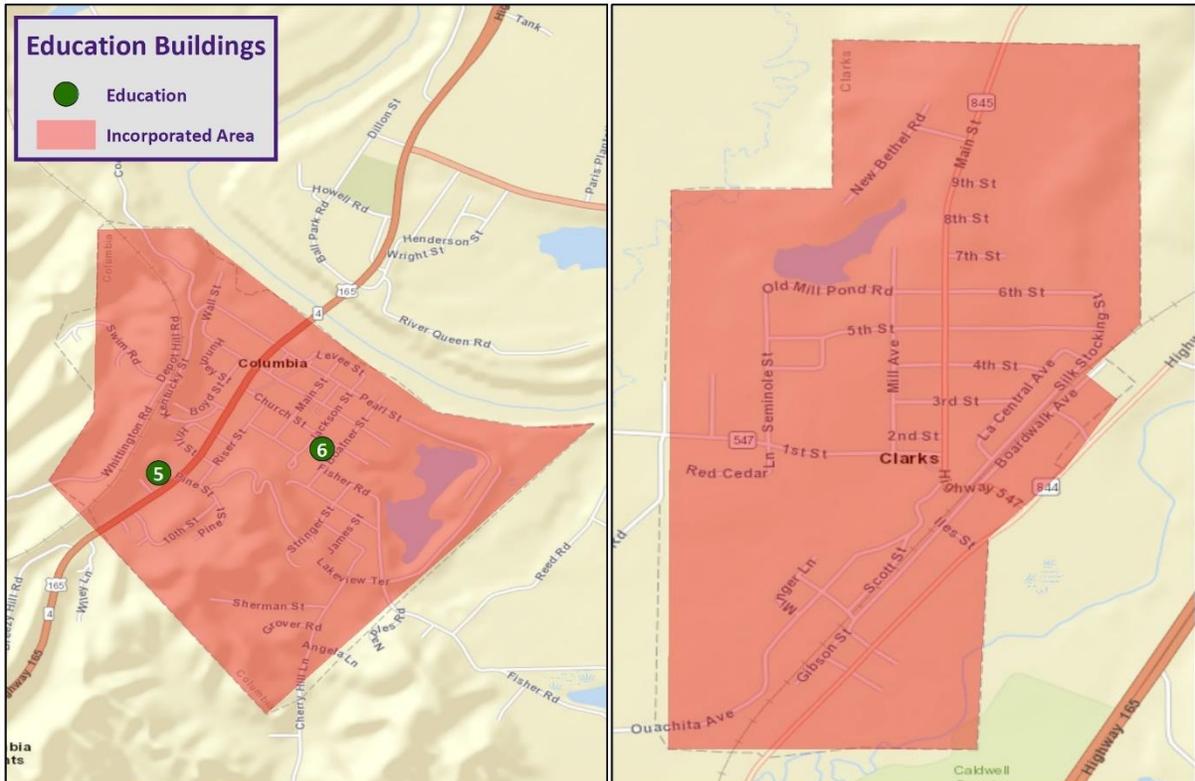
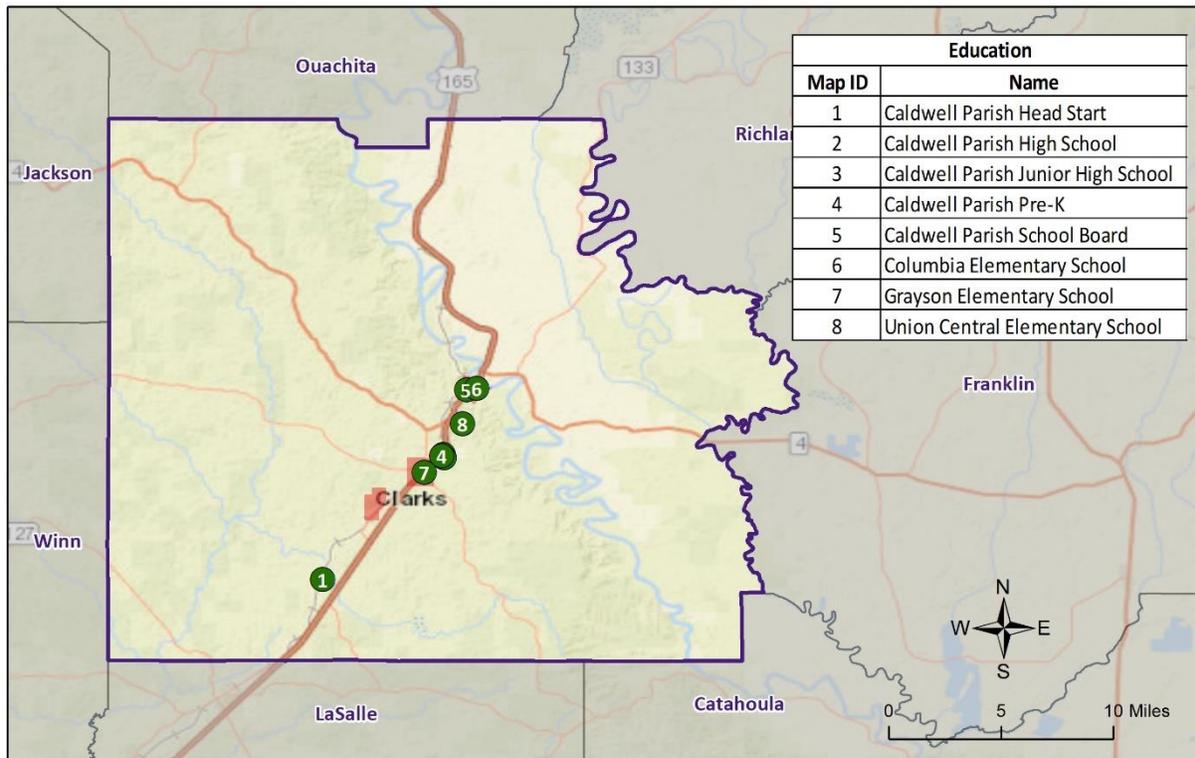


Figure 2-5: Educational Facilities in Caldwell Parish.

## Assessing Vulnerability Overview

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

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

## Quantitative Methodology

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

## Qualitative Methodology

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

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

Each degree of risk is assigned a value (1-4) and a weighting factor. To calculate the Risk Factor for a given hazard, the assigned risk value for each category is multiplied by the weighted factor, and the sum of all six categories is totaled together to determine the final Risk Factor. The highest possible Risk Factor is 4.0.

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

Priority Risk Index and Hazard Risk

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

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

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

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

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

Table 2-7: Risk Assessment for Caldwell Parish.

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

### Future Development Trends

Caldwell Parish experienced a decline in population and housing between the years of 2000 and 2020, falling in population from 10,559 with 5,035 housing units in the year 2000 to a population of 9,645 with 4,583 housing units in the year 2020. Columbia experienced the largest decline in population falling from a populace of 390 in 2010 to 277 in 2020. This is followed by the incorporated area of Grayson with 15.4% overall decline and the unincorporated area of the parish with a 3.8% overall decline. The incorporated area of Clarks experienced a growth in population during this same time period.

Columbia experienced the largest decline of housing units from 2010 to 2020 falling from 207 in 2010 to 160 in 2020. This is followed by the incorporated area of Clarks with a 15.2% overall decline, the incorporated area of Grayson with a 8.2% overall decline, and the unincorporated area of the parish with a 7.1% overall decline. The future population and number of buildings can be estimated using U.S. Census Bureau housing and population data. The tables on the following page show population and housing unit estimates from 2000 to 2020:

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

| Total Population                               | Caldwell Parish | Unincorporated Area | Clarks | Columbia | Grayson |
|--|-----------------|---------------------|--------|----------|---------|
| 1-Apr-00                                       | 10,559          | 8,457               | 1,067  | 489      | 546     |
| 1-Apr-10                                       | 10,119          | 8,182               | 1,016  | 390      | 531     |
| 1-Apr-20                                       | 9,645           | 7,867               | 1,052  | 277      | 449     |
| Population Growth between 2000 – 2010          | -4.2%           | -3.3%               | -4.8%  | -20.2%   | -2.7%   |
| Average Annual Growth Rate between 2000 – 2010 | -0.4%           | -0.3%               | -0.5%  | -2.0%    | -0.3%   |
| Population Growth between 2010 – 2020          | -4.7%           | -3.8%               | 3.5%   | -29.0%   | -15.4%  |
| Average Annual Growth Rate between 2010 – 2020 | -0.47%          | -0.38%              | 0.35%  | -2.90%   | -1.54%  |

Table 2-9: Housing Growth Rate for Caldwell Parish.

| Total Housing Units                            | Caldwell Parish | Unincorporated Area | Clarks | Columbia | Grayson |
|--|-----------------|---------------------|--------|----------|---------|
| 1-Apr-00                                       | 5,035           | 4,268               | 270    | 237      | 260     |
| 1-Apr-10                                       | 4,994           | 4,257               | 263    | 207      | 267     |
| 1-Apr-20                                       | 4,583           | 3,955               | 223    | 160      | 245     |
| Housing Growth between 2000 – 2010             | -0.8%           | -0.3%               | -2.6%  | -12.7%   | 2.7%    |
| Average Annual Growth Rate between 2000 – 2010 | -0.1%           | 0.0%                | -0.3%  | -1.3%    | 0.3%    |
| Housing Growth between 2010 – 2020             | -8.2%           | -7.1%               | -15.2% | -22.7%   | -8.2%   |
| Average Annual Growth Rate between 2010 – 2020 | -0.8%           | -0.7%               | -1.5%  | -2.3%    | -0.8%   |

### Future Hazard Impacts

Hazard impacts were estimated for five years and ten years in the future (2025 and 2030). Yearly population and housing growth rates were applied to parish inventory assets for composite flood and tropical cyclones. Based on a review of available information, it is assumed that population and housing units will grow within Caldwell Parish from the present until 2030. A summary of estimated future impacts is shown in the table below. Dollar values are expressed in future costs and assume an annual rate of inflation of 1.02%.

Table 2-10: Estimated Future Impacts, 2020 - 2030.

(Source: Hazus, US Census Bureau)

| Hazard / Impact                | Total in Parish (2020) | Hazard Area (2020) | Hazard Area (2025) | Hazard Area (2030) |
|--------------------------------|------------------------|--------------------|--------------------|--------------------|
| <b>Flood Damage</b>            |                        |                    |                    |                    |
| <b>Structures</b>              | 4,545                  | 429                | 411                | 398                |
| <b>Value of Structures</b>     | \$7,815,107,944        | \$737,350,775      | \$744,330,937      | \$749,962,612      |
| <b># of People</b>             | 9,655                  | 911                | 915                | 919                |
| <b>Tropical Cyclone Damage</b> |                        |                    |                    |                    |
| <b>Structures</b>              | 4,545                  | 4,545              | 4,361              | 4,219              |
| <b>Value of Structures</b>     | \$7,815,107,944        | \$7,815,107,944    | \$7,889,089,984    | \$7,948,779,553    |
| <b># of People</b>             | 9,655                  | 9,655              | 9,703              | 9,742              |

Both population and housing numbers have had a relatively insignificant decline throughout the parish since the last update to the Caldwell Parish Hazard Mitigation Plan. With that in mind, Caldwell Parish is mindful in offsetting any new development around the parish with appropriate mitigative actions. Initiatives such as active floodplain management have regulated the development of flood prone areas to continue supporting and encouraging safer communities within Caldwell Parish. The small amount of development that has occurred since 2017 has not in any knowing way altered the parish’s vulnerability to natural hazards.

### Land Use

The Caldwell Parish Land Use table is provided below. Residential, commercial, and industrial areas account for only 5% of the parish’s land use. Forested land at 142,264 acres is the largest category accounting for 41% of land in the parish. The parish also consists of wetlands (29%), agricultural lands (23%), and water areas (3%).

Table 2-11: Caldwell Parish Land Use.  
 (Source: USGS Land Use Map)

| Land Use                                      | Acres   | Percentage |
|---|---------|------------|
| Agricultural Land, Cropland, and Pasture      | 79,224  | 23%        |
| Wetlands                                      | 99,328  | 29%        |
| Forest Land (Not including forested wetlands) | 142,264 | 41%        |
| Urban/Development                             | 16,152  | 5%         |
| Water   | 9,289   | 3%         |

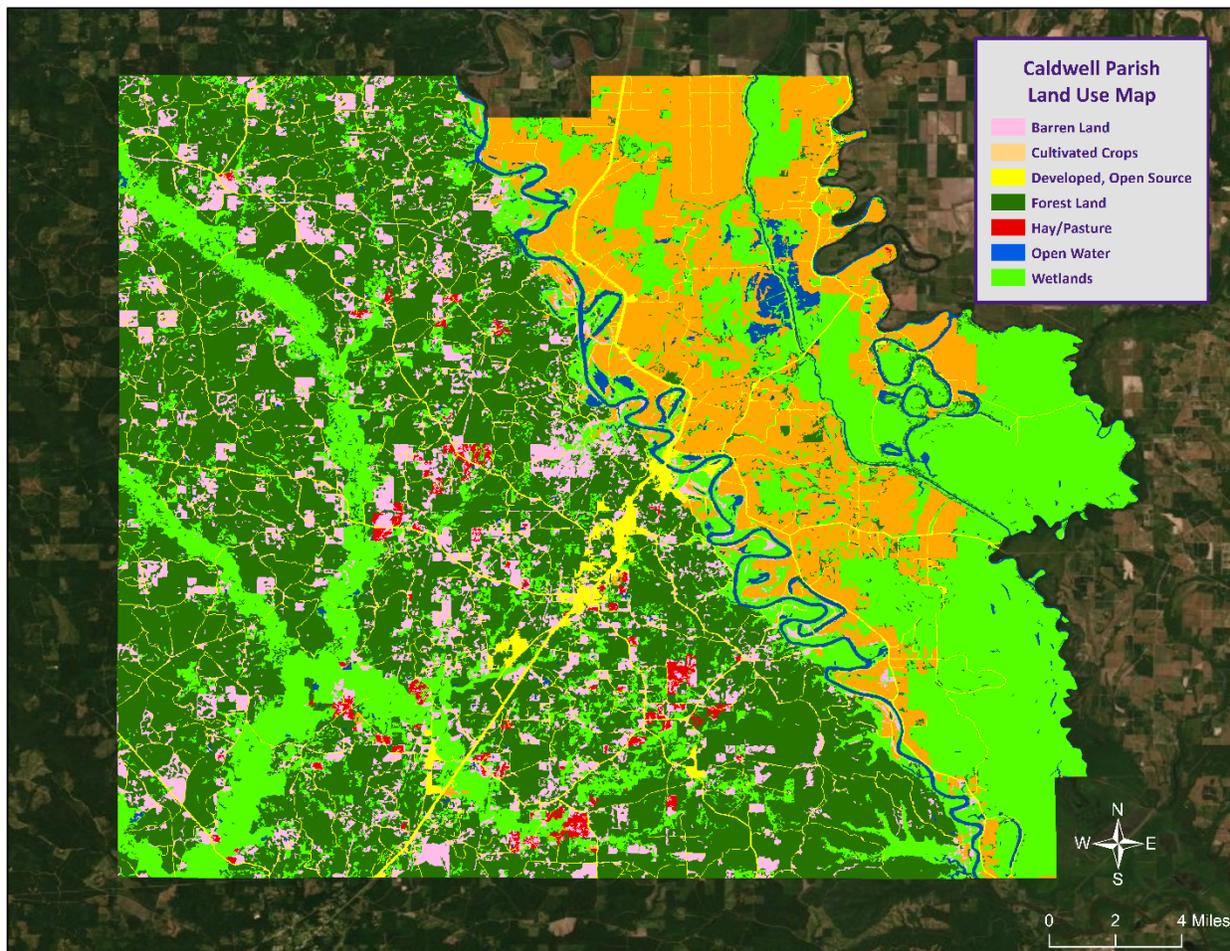


Figure 2-6: Caldwell Parish Land Use Map.  
 (Source: USGS Land Use Map)

## Hazard Identification

### Dam Failure

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

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

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

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

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

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

- High winds, which can cause significant wave action and result in substantial erosion; and
- Earthquakes, which typically cause longitudinal cracks at the tops of the embankments that can weaken entire structures.

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

#### Location

According to the National Inventory of Dams, Caldwell Parish has one significant hazard dam located in the unincorporated area of Caldwell Parish. Dam hazards pose no threat to the incorporated areas of Clarks, Columbia, and Grayson. The dam located in Caldwell Parish is shown in the following figure:

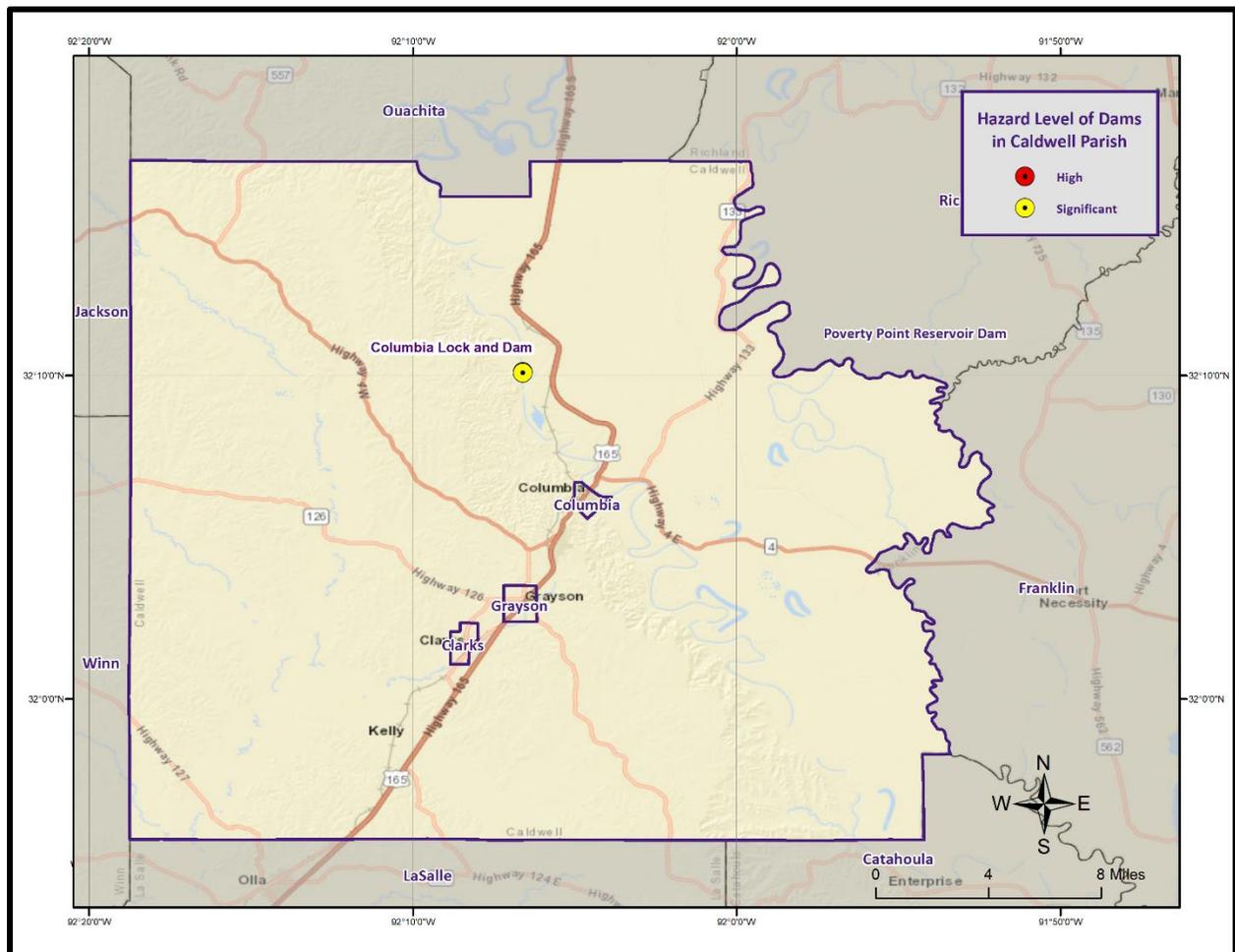


Figure 2-7: National Inventory of Dam Locations in Caldwell Parish.

#### Previous Occurrences / Extents

The National Performance of Dams Program (NPDP), a database of dam incidents maintained by Stanford University, lists one dam incident in Louisiana, which occurred in Kisatchie Lake Dam in Grant Parish in 1991. However, there have been no dam failures within the boundaries of Caldwell Parish and its jurisdictions. The parish claims a data deficiency on the extent of dam failure for the one significant hazard dam in Caldwell Parish. This data deficiency includes potential inundation areas and subsequent impacts related to the overtopping, collapse, or breaching of the Columbia Lock and Dam. As these inundation

zones haven't yet been identified, Caldwell Parish will continue to develop an extent and additional relevant data associated with this hazard.

#### *Frequency / Probability*

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

#### *Estimated Potential Loses*

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

*Table 2-12: Dams and Associated Risk in Caldwell Parish.  
(Source: National Inventory of Dams)*

| System                | Rating      | Height (ft) | Storage (Acre-Feet) | Dam Type | Last Inspection Date |
|-----------------------|-------------|-------------|---------------------|----------|----------------------|
| Columbia Lock and Dam | Significant | 90          | 156,800             | Gravity  | 7/12/2017            |

#### *Vulnerability*

See *Appendix C: Critical Facilities* for parish and municipality building exposure to dam failures.

## Drought

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

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

This hazard is often measured using the Palmer Drought Severity Index (PDSI, also known operationally as the Palmer Drought Index). The PDSI, first developed by Wayne Palmer in a 1965 paper for the U.S. Weather Bureau, measures drought through recent precipitation and temperature data with regard to a basic supply-and-demand model of soil moisture. It is most effective in long-term calculations. Three other indices used to measure drought are the Palmer Hydrologic Drought Index (PHDI), the Crop Moisture Index (CMI), which is derived from the PDSI, and the Keetch-Byram Drought Index (KBDI), created by John Keetch and George Byram in 1968 for the U.S. Forest Service. The KBDI is used mainly for predicting the likelihood of wildfire outbreaks. As a compromise, the PDSI is used most often for droughts since it is a medium-response drought indicator. The objective of the PDSI is to provide measurements of moisture conditions that are standardized so that comparisons using the index can be made between locations and between months. *Table 2-13* displays the range and Palmer classifications of the PDSI index while *Figure 2-8* displays the current drought monitor for the state of Louisiana and its parishes.

Table 2-13: Palmer Drought Severity Index Classification and Range

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

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

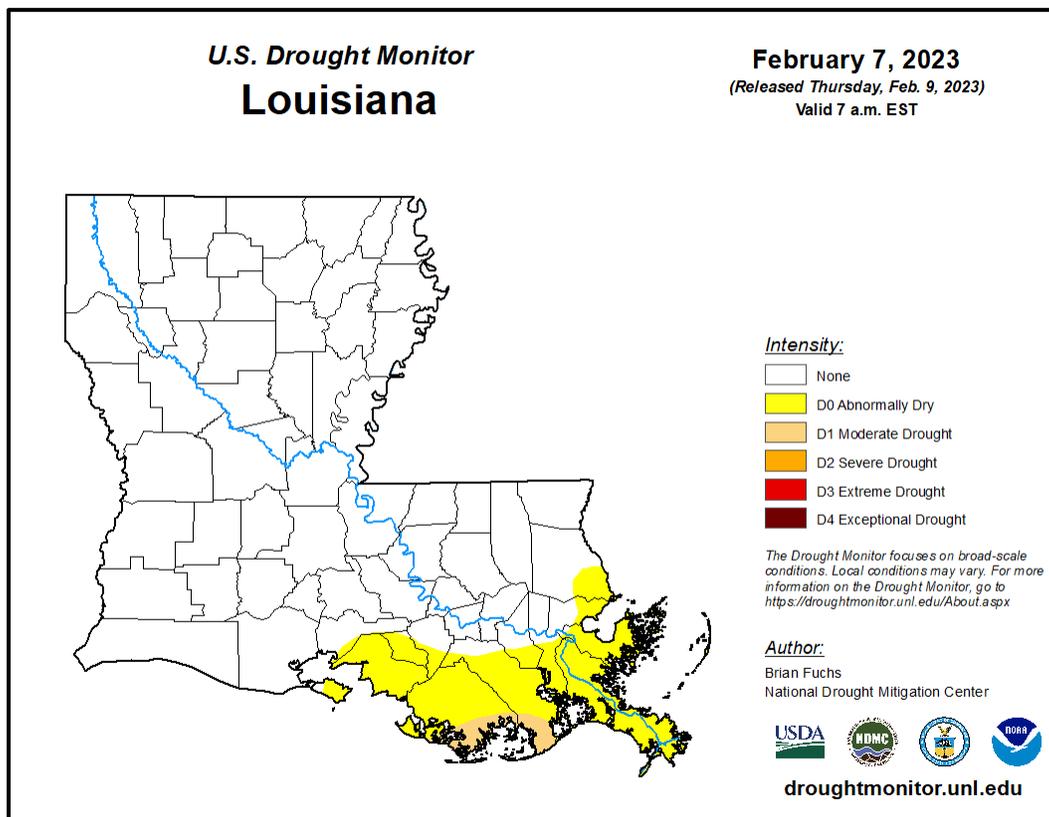


Figure 2-8: United States Drought Monitor for the State of Louisiana and its Parishes. (Source: The National Drought Mitigation Center)

Location

Drought typically impacts a region and not one specific parish or jurisdiction. While the entire planning area can experience drought, the major impact of a drought event in Caldwell Parish is on the agricultural community. The worst-case drought scenario for Caldwell Parish would be a severe drought (D3).

Previous Occurrences / Extent

Historically, there have been six drought incidents in Caldwell Parish. Drought events have ranged from Mild to Extreme per the National Climatic Data Center. Since the last update in 2017, there have been two drought events within the boundaries of Caldwell Parish.

*Table 2-14: Historical Droughts in Caldwell Parish since the 2017 Update.*

| Date                          | Impacts  | Crop Damage | Magnitude |
|-------------------------------|--|-------------|-----------|
| November 2017 – February 2018 | Severe (D2) drought conditions present across much of North Louisiana during December continued through the entire month of January, as below normal rainfall again was observed across much of this area. Monthly rainfall amounts ranged from just under 1.50 inches to around 3.00 inches, with the lower amounts having fallen across much of Caddo and Bossier Parishes. In fact, Shreveport ranked as having the 16th driest January on record with just 1.41 inches recorded, which was 2.79 inches below normal. The continued dry conditions since September resulted in hydrological impacts being felt across much of this area, with low stream flows reported across many rivers and their tributaries. | \$0         | D2        |
| December 2021 – March 2022    | Severe (D2) drought conditions continued across much of Northern Louisiana throughout February. This was in response to a prolonged period of dryness which began back in mid-summer 2021, coupled with above normal temperatures which persisted through much of the fall and early winter. Total rainfall amounts generally between 10-12 inches fell across these areas from August through December, which was around 50% or less of normal. Total rainfall in January was generally below average but increased in February to around 2-4 inches. This dryness contributed to lower than normal streamflow observed across area creeks, streams, and rivers.  | \$0         | D2        |

### Frequency / Probability

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

### Estimated Potential Loses

According to the NCEI Storm Events Database, there have been four drought events which have impacted Caldwell Parish which resulted in \$1,000 in damage to crops in the parish. When examining the drought hazard, the main impact will primarily be on the crops. The following table presents an analysis of agricultural exposure which are susceptible to droughts by type for Caldwell Parish.

*Table 2-15: Agricultural Exposure by Crop Type for Droughts in Caldwell Parish.  
(Source: LSU AG Center 2020 Parish Totals)*

| Agricultural Exposure by Type for Drought |             |              |             |             |           |
|---|-------------|--------------|-------------|-------------|-----------|
| Corn                                      | Cotton      | Forestry     | Rice        | Soybeans    | Wheat     |
| \$3,194,453                               | \$1,539,834 | \$25,394,536 | \$1,673,910 | \$6,411,346 | \$541,209 |

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

### Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to drought.

## Flooding

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

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

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

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

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

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

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

during Hurricane Isaac in 2012. Although the town was protected by a levee on the side facing the Mississippi River, floodwaters from Lake Maurepas and Lake Pontchartrain crept into the community on the side of town opposite the Mississippi River.

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

Historically, in Caldwell Parish, all types of flooding events have historically been observed except for coastal flooding. For purposes of this assessment, ponding, flash flood, and urban flooding are considered to be flooding as a result of storm water from heavy precipitation thunderstorms

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

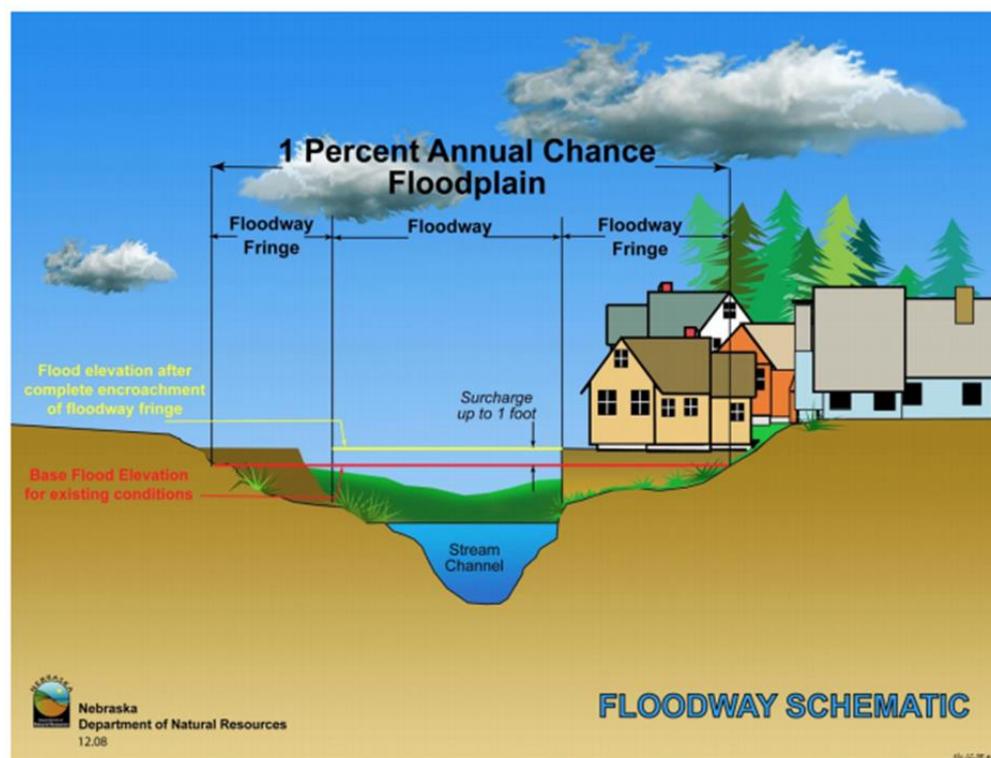
- **Flood Categories**
  - Minor Flooding: Minimal or no property damage, but possibly some public threat.
  - Moderate Flooding: Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations.
  - Major Flooding: Extensive inundation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

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

expressions of flood probability. As such, the ASFPM also expresses the 100-year flood event as having a 25% chance of occurring over the life of a 30-year mortgage.

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

The 100-year flood event is of particular significance since it is the regulatory standard that determines the obligation (or lack thereof) to purchase flood insurance. Flood insurance premiums are set depending on the flood zone, as modeled by National Flood Insurance Program (NFIP) Rate Maps. The NFIP and FEMA suggest insurance rates based on Special Flood Hazard Areas (SFHAs), as diagrammed in *Figure 2-9*.



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

*(Source: Nebraska Department of Natural Resources)*

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

#### Property Damage

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

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

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

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

#### Repetitive Loss Properties

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

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

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

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

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

Table 2-16: Repetitive Loss Structures for Caldwell Parish.

| Jurisdiction                     | Number of Structures | Residential | Commercial | Government | Total Claims | Total Claims Paid | Average Claim Paid |
|----------------------------------|----------------------|-------------|------------|------------|--------------|-------------------|--------------------|
| Caldwell Parish (Unincorporated) | 21                   | 21          | 0          | 0          | 46           | 633,169           | \$13,765           |
| Clarks                           | 1                    | 1           | 0          | 0          | 2            | \$32,560          | \$0                |
| Columbia                         | 2                    | 0           | 2          | 0          | 7            | \$92,430          | \$13,204           |
| Grayson                          | 0                    | 0           | 0          | 0          | 0            | \$0               | \$0                |
| <b>Total</b>                     | <b>24</b>            | <b>22</b>   | <b>2</b>   | <b>0</b>   | <b>55</b>    | <b>\$758,159</b>  | <b>\$13,785</b>    |

All 24 repetitive loss structures were geocoded in order to provide an overview of where the repetitive loss structures are located throughout the parish. Figure 2-10 shows the approximate location of the structures, while Figure 2-11 shows where the highest concentration of repetitive loss structures is located. Through the repetitive loss map, it is clear the primary concentrated area of repetitive loss structures is focused in and around the incorporated area of Columbia.

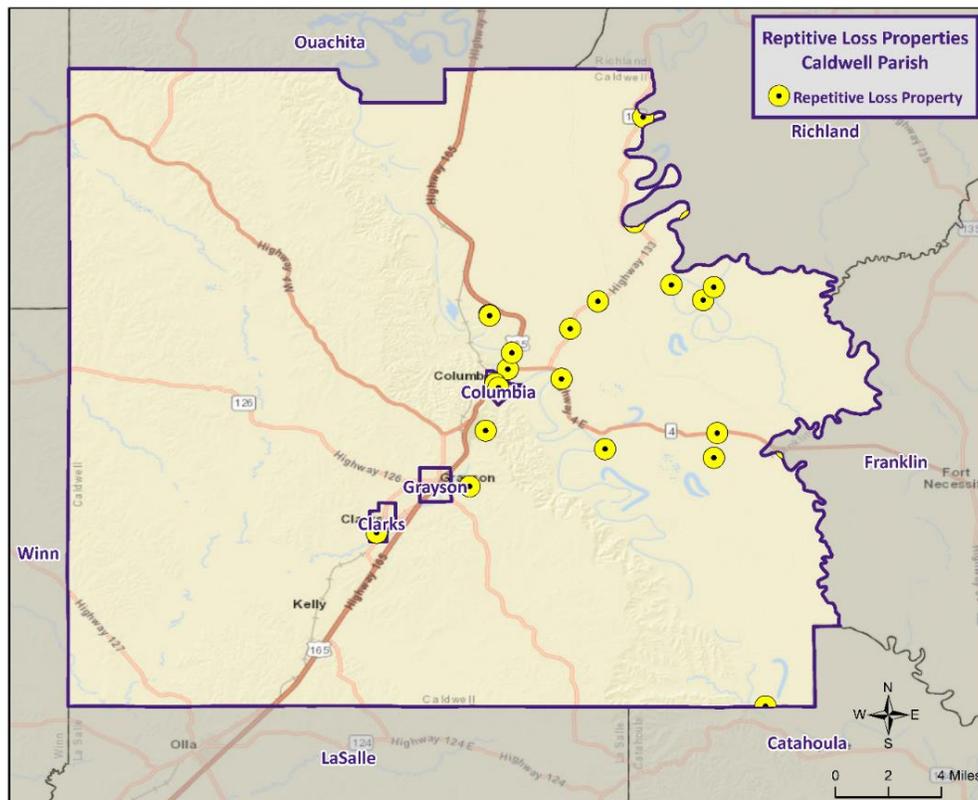


Figure 2-10: Repetitive Loss Properties in Caldwell Parish.

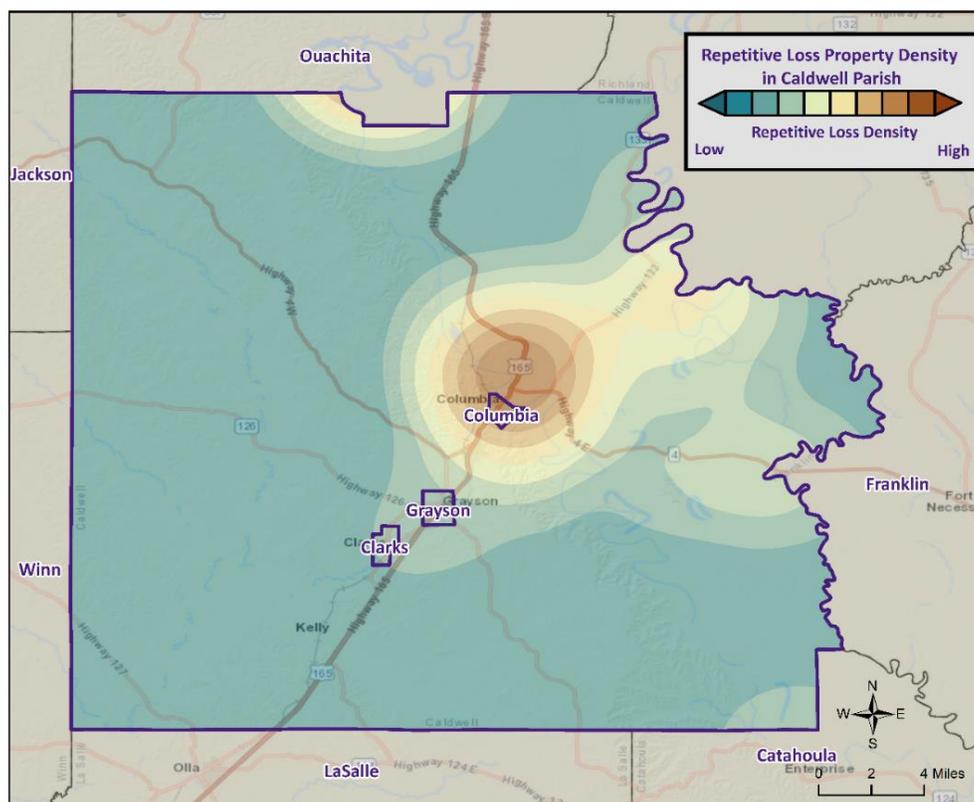


Figure 2-11: Repetitive Loss Property Densities in Caldwell Parish.

National Flood Insurance Program

Flood insurance statistics indicate that Caldwell Parish has 316 flood insurance policies with the NFIP, with total annual premiums of \$291,649. Caldwell Parish and the jurisdictions of Clarks, Columbia, and Grayson are all participants in the NFIP. Caldwell Parish and all of its jurisdictions will continue to adopt and enforce floodplain management requirements, including regulating new construction Special Flood Hazard Areas, and will continue to monitor activities including local requests for new map updates. Flood insurance statistics and additional NFIP participation details for Caldwell Parish and its jurisdictions are provided in the tables to follow.

Table 2-17: Summary of NFIP Policies for Caldwell Parish.

| Location               | No. of Insured Structures | Total Insurance Coverage Value | Annual Premiums Paid | No. of Insurance Claims Filed Since 1978 | Total Loss Payments |
|------------------------|---------------------------|--------------------------------|----------------------|--|---------------------|
| <b>Caldwell Parish</b> | 305                       | \$43,054,000                   | \$284,351            | 443                                      | \$4,214,757         |
| <b>Clarks</b>          | 0                         | \$0                            | \$0                  | 2  | \$32,560            |
| <b>Columbia</b>        | 11                        | \$2,298,700                    | \$7,298              | 15                                       | \$178,290           |
| <b>Grayson</b>         | 0                         | \$0                            | \$0                  | 1  | \$0                 |
| <b>Total</b>           | <b>316</b>                | <b>\$45,352,700</b>            | <b>\$291,649</b>     | <b>461</b>                               | <b>\$4,425,607</b>  |

Table 2-18: Summary of Community Flood Maps for Caldwell Parish.

| CID    | Community Name  | Initial FHBM Identified | Initial FIRM Identified | Current Effective Map Date | Date Joined the NFIP | Tribal |
|--------|-----------------|-------------------------|-------------------------|----------------------------|----------------------|--------|
| 220044 | Caldwell Parish | -                       | 4/3/1978                | 9/5/2012                   | 4/3/1978             | No     |
| 220320 | Clarks          | 8/15/1975               | 11/1/2010               | 9/5/2012                   | 11/1/2010            | No     |
| 220045 | Columbia        | 2/1/1974                | 6/1/1978                | 9/5/2012                   | 6/1/1978             | No     |
| 220329 | Grayson         | 8/13/1976               | 9/5/2012                | 9/5/2012                   | 7/9/1981             | No     |
| 220044 | Caldwell Parish | -                       | 4/3/1978                | 9/5/2012                   | 4/3/1978             | No     |

According to the Community Rating System (CRS) list of eligible communities dated October 1, 2022, Caldwell Parish and the incorporated areas of Clarks, Columbia, and Grayson do not participate in the CRS program.

#### *Threat to People*

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

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

#### *Flooding in Caldwell Parish*

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

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

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

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

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

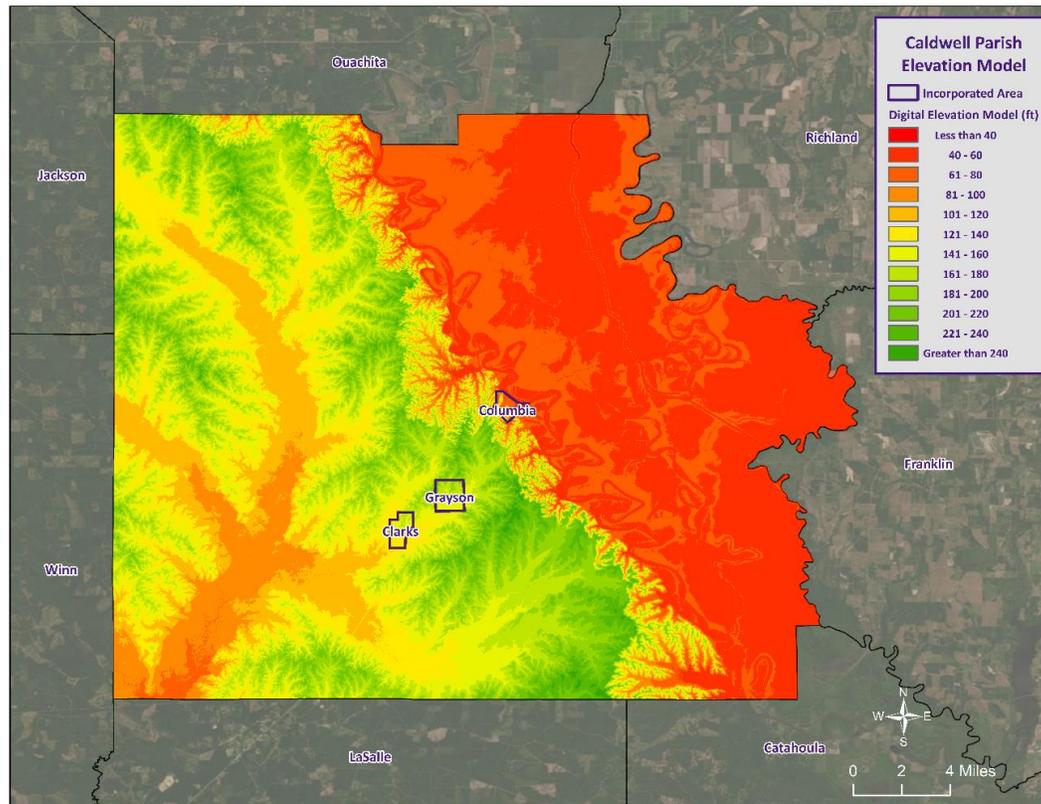


Figure 2-12: Elevation throughout Caldwell Parish.

The digital elevation model (DEM) for Caldwell Parish is instructive in visualizing where the low-lying and high-risk areas are for the parish. Elevations in the parish range from less than 40 feet (NAVD88) to over 240 feet (NAVD88). The highest elevations in the parish are approximately 261 feet (NAVD88), located in the unincorporated areas of the parish. The incorporated areas range in elevation from 75 to 164 feet (NAVD88), with Columbia averaging 75 feet (NAVD88), Clarks averaging 141 feet (NAVD88), and Grayson averaging 164 feet (NAVD88). The lowest elevations of the parish are located in the eastern sections of the unincorporated areas of the parish.

#### Location

Caldwell Parish has experienced significant flooding in its history and can expect more in the future. One of the main contributors to flooding in Caldwell is the Ouachita River. During periods of excessive rainfall, the river will crest and cause riverine flooding to areas surrounding the river.

Based on previous flood events, the worst-case scenarios are based on several different types of flooding events. Storm water excesses and riverine flooding primarily affect the low-lying areas of the parish, and flood depths of up to three feet can be expected in the unincorporated areas of the parish and the incorporated areas of Clarks, Columbia, and Grayson.

On the following pages are flood zone maps displaying 100- and 500-year flood zones for Caldwell Parish and its jurisdictions.

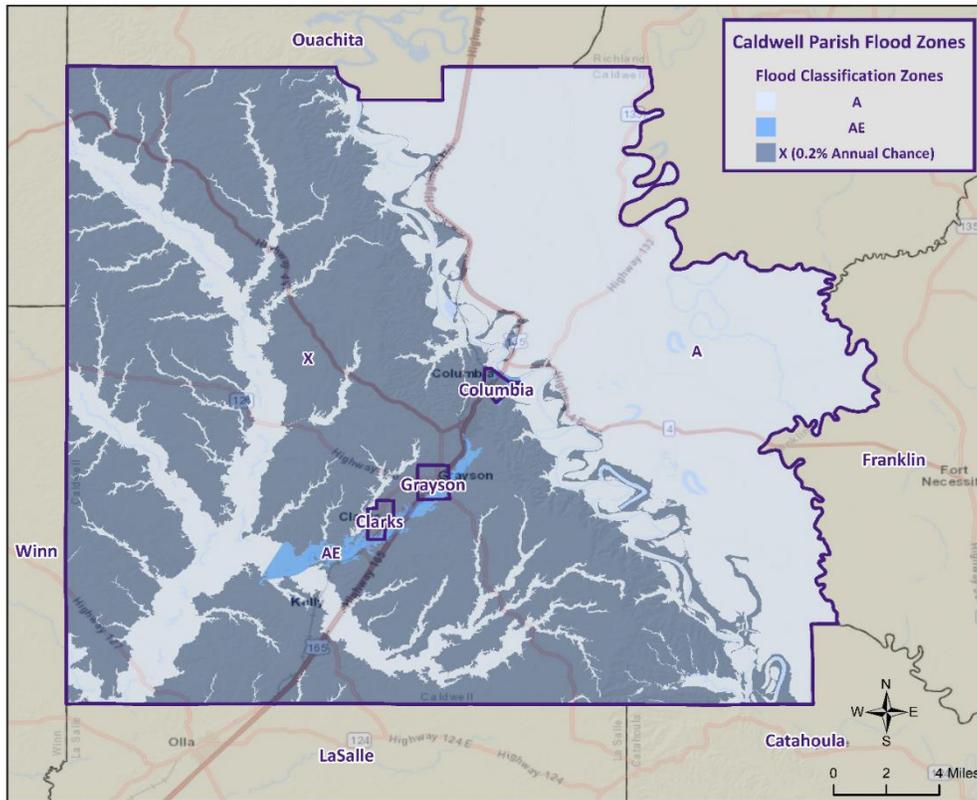


Figure 2-13: Caldwell Parish Areas within the Flood Zones.

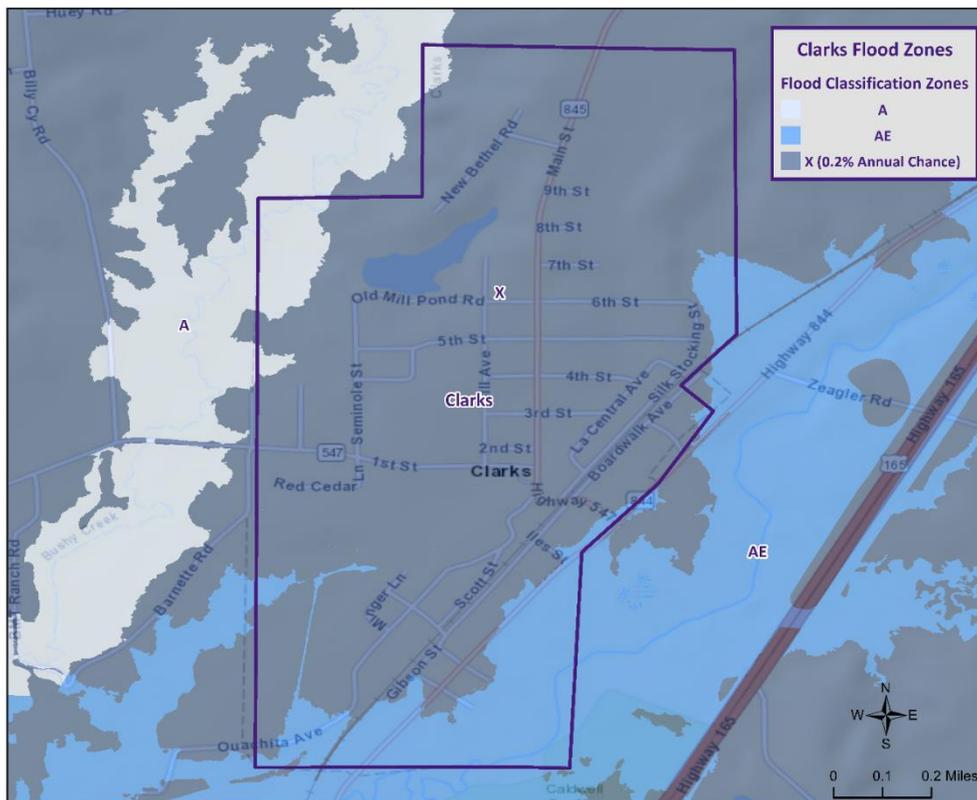


Figure 2-14: Clarks Areas within the Flood Zones.

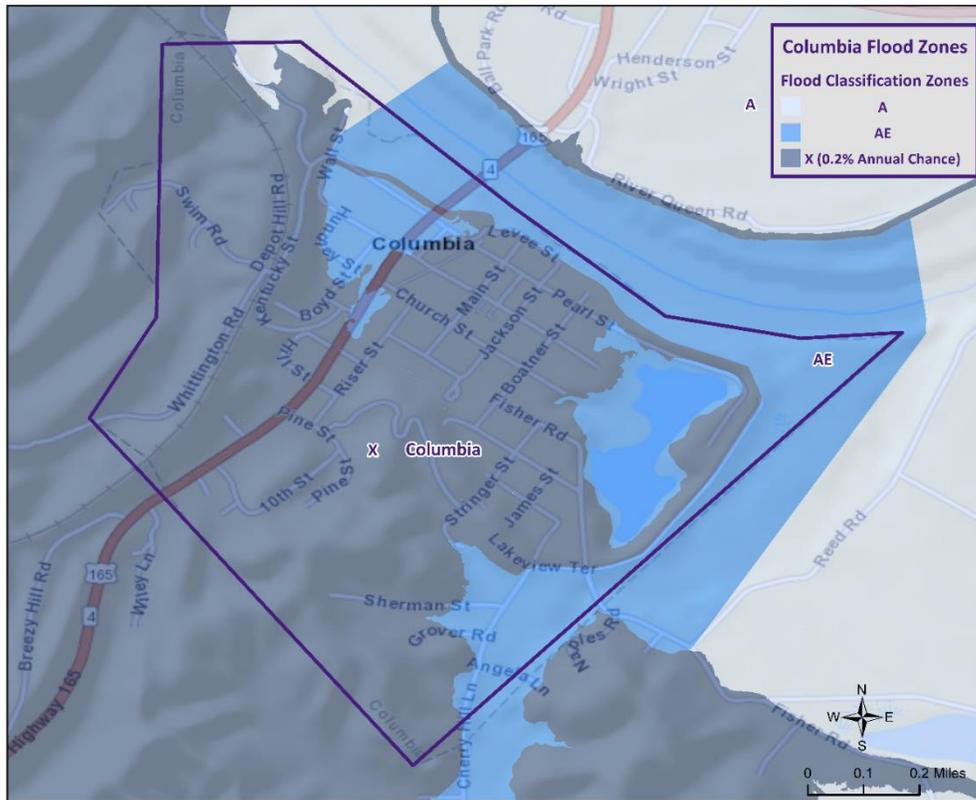


Figure 2-15: Columbia Areas within the Flood Zones.

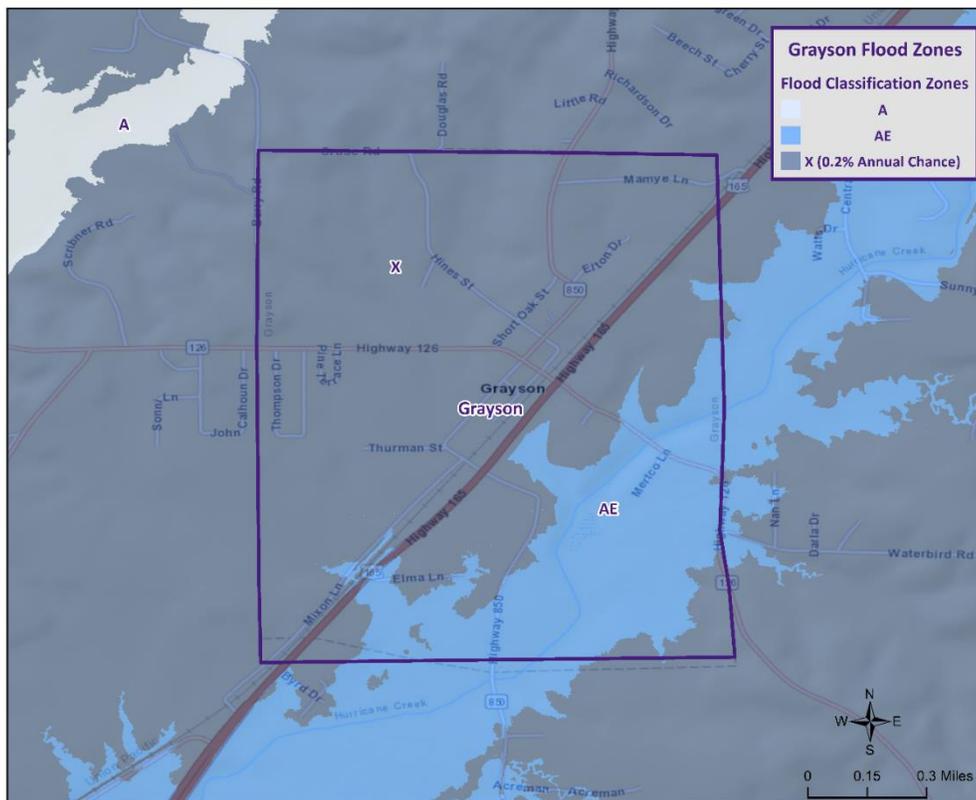


Figure 2-16: Grayson Areas within the Flood Zones.

*Previous Occurrences / Extents*

Historically, there have been 24 flooding events that have caused significant flooding in Caldwell Parish and its jurisdictions between 1990 and 2021. Below is a brief synopsis of the flooding events which occurred since the last Caldwell Parish HMP Update in 2017.

*Table 2-19: Historical Floods in Caldwell Parish with Locations since the 2017 Caldwell Parish HMP Update.*

| <b>Date</b>   | <b>Extents</b>  | <b>Type of Flooding</b> | <b>Estimated Damages</b> | <b>Location</b> |
|---------------|---|-------------------------|--------------------------|-----------------|
| April 2, 2017 | Portions of Highway 165 in Columbia was barricaded due to flash flooding.   | Flash Flood             | \$0                      | Columbia        |
| April 2, 2017 | Portions of Highway 126 west of Grayson was flooded and closed.   | Flash Flood             | \$0                      | Cotton Plant    |
| April 2, 2017 | Portions of Highway 506 near and west of the Kelly community was flooded and closed.  | Flash Flood             | \$0                      | Kelly           |
| May 12, 2019  | A very wet winter and springtime season, characteristic of widespread rainfall amounts of 35-40+ inches across much of the Ouachita River basin of Central and Southern Arkansas, and extreme Northern Louisiana since February, resulted in consistently high water spilling downstream along the Ouachita River into Monroe and Columbia, Louisiana throughout much of April and all of May. This resulted in the Ouachita River in Columbia to climb above the moderate flood stage (67 feet) at 215 pm on May 12th, cresting at 68.2 ft at 540 am on the 22nd. A slow recession commenced afterwards, but the Ouachita River at Columbia remained above the 67 ft moderate flood stage through the end of the month. As a result, the Riverton and Columbia Lock and Dam recreational areas were flooded and closed, with moderate to severe flooding of lowland river bottoms observed between and near levee systems. | Flood                   | \$0                      | Blankston       |
| June 1, 2019  | Moderate flooding continued along the Ouachita River at Columbia during the first couple of days of June, as a result of widespread rainfall amounts of 35-40+ inches that had fallen across much of the Ouachita River basin of Central and Southern Arkansas, and extreme Northern Louisiana since February 2019. The Ouachita River remained above the 67 foot moderate flood stage in Columbia through 7 pm on June 2nd, after cresting at 68.2 feet back during the early morning hours on May 22nd. As a result, the Riverton and Columbia Lock and Dam recreational areas remained flooded and closed until the water receded, with moderate to severe flooding of   | Flood                   | \$0                      | Blankston       |

| Date             | Extents  | Type of Flooding | Estimated Damages | Location   |
|------------------|--|------------------|-------------------|------------|
|                  | lowland river bottoms observed between and near levee systems.                             |                  |                   |            |
| October 10, 2020 | The auditorium and a couple of classrooms at the Caldwell Parish High School were flooded. | Flash Flood      | \$0               | Pulpwood   |
| October 10, 2020 | Highway 165 near Kelly was flooded.  | Flash Flood      | \$0               | Kelly      |
| October 10, 2020 | Numerous roads were flooded and closed throughout the parish.                              | Flash Flood      | \$0               | Burlington |

*Frequency / Probability*

The NCEI Storm Events Database identified 24 flooding events within the Caldwell Parish planning area since 1990. The table below shows the probability and return frequency for each jurisdiction.

*Table 2-20: Annual Flood Probabilities for Caldwell Parish.*

| Jurisdiction                            | Annual Probability | Return Frequency             |
|---|--------------------|------------------------------|
| <b>Caldwell Parish (Unincorporated)</b> | 19%                | 1 event every 5 to 6 years   |
| <b>Clarks</b>                           | 6%                 | 1 event every 15 to 16 years |
| <b>Columbia</b>                         | 19%                | 1 event every 5 to 6 years   |
| <b>Grayson</b>                          | 3%                 | 1 event every 31 years       |

Based on historical record, the overall flooding probability for the entire Caldwell Parish Planning area is 77% with 24 events occurring over a 31-year period.

*Estimated Potential Losses*

Using the Hazus Flood Model, the 100-year flood scenario, along with the Parish DFIRM, was analyzed to determine losses from this worst-case scenario. *Table 2-21* shows the total economic losses that would result from this occurrence.

*Table 2-21: Estimated Losses in Caldwell Parish from a 100-year Flood Event.  
(Source: Hazus)*

| Jurisdiction                                 | Estimated Total Losses from 100-Year Flood Event |
|--|--|
| <b>Caldwell Parish (Unincorporated Area)</b> | \$14,148,000                                     |
| <b>Clarks</b>                                | \$784,000  |
| <b>Columbia</b>                              | \$31,000   |
| <b>Grayson</b>                               | \$4,259,000                                      |
| <b>Total</b>                                 | <b>\$19,222,000</b>                              |

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

*Table 2-22: Estimated 100-year Flood Losses for Caldwell Parish by Sector.  
(Source: Hazus)*

| Caldwell Parish (Unincorporated) | Estimated Total Losses from 100-Year Flood Event |
|----------------------------------|--|
| Agricultural                     | \$51,000   |
| Commercial                       | \$1,660,000                                      |
| Government                       | \$30,000   |
| Industrial                       | \$220,000  |
| Religious / Non-Profit           | \$135,000  |
| Residential                      | \$12,050,000                                     |
| Schools                          | \$2,000  |
| <b>Total</b>                     | <b>\$14,148,000</b>                              |

*Table 2-23: Estimated 100-year Flood Losses for Clarks by Sector.  
(Source: Hazus)*

| Clarks                 | Estimated Total Losses from 100-Year Flood Event |
|------------------------|--|
| Agricultural           | \$0  |
| Commercial             | \$59,000   |
| Government             | \$54,000   |
| Industrial             | \$0  |
| Religious / Non-Profit | \$53,000   |
| Residential            | \$618,000  |
| Schools                | \$0  |
| <b>Total</b>           | <b>\$784,000</b>                                 |

*Table 2-24: Estimated 100-year Flood Losses for Columbia by Sector.  
(Source: Hazus)*

| Columbia               | Estimated Total Losses from 100-Year Flood Event |
|------------------------|--|
| Agricultural           | \$0  |
| Commercial             | \$28,000   |
| Government             | \$0  |
| Industrial             | \$0  |
| Religious / Non-Profit | \$0  |
| Residential            | \$3,000  |
| Schools                | \$0  |
| <b>Total</b>           | <b>\$31,000</b>                                  |

Table 2-25: Estimated 100-year Flood Losses for Grayson by Sector.  
(Source: Hazus)

| Grayson                | Estimated Total Losses from 100-Year Flood Event |
|------------------------|--|
| Agricultural           | \$11,000   |
| Commercial             | \$1,883,000                                      |
| Government             | \$15,000   |
| Industrial             | \$1,134,000                                      |
| Religious / Non-Profit | \$94,000   |
| Residential            | \$920,000  |
| Schools                | \$202,000  |
| <b>Total</b>           | <b>\$4,259,000</b>                               |

#### Threat to People

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

Table 2-26: Vulnerable Populations Susceptible to a 100-year Flood Event.  
(Source: Hazus)

| Number of People Exposed to Flood Hazards |                |                  |                  |
|---|----------------|------------------|------------------|
| Location                                  | # in Community | # in Hazard Area | % in Hazard Area |
| <b>Caldwell Parish (Unincorporated)</b>   | 7,867          | 744              | 11.6%            |
| Clarks                                    | 1,052          | 87               | 4.8%             |
| Columbia                                  | 277            | 3                | 22.5%            |
| Grayson                                   | 449            | 76               | 3.3%             |
| <b>Total</b>                              | <b>9,645</b>   | <b>910</b>       | <b>9.4%</b>      |

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

Table 2-27: Vulnerable Populations Susceptible to a 100-year Flood Event in Caldwell Parish.  
(Source: Hazus)

| Caldwell Parish (Unincorporated) |               |                                     |
|----------------------------------|---------------|-------------------------------------|
| Category                         | Total Numbers | Percentage of People in Hazard Area |
| <b>Number in Hazard Area</b>     | 744           | 9.5%                                |
| Persons Under 5 Years            | 46            | 6.2%                                |
| Persons Under 18 Years           | 172           | 23.1%                               |
| Persons 65 Years and Over        | 138           | 18.6%                               |
| White                            | 590           | 79.3%                               |
| Minority                         | 154           | 20.7%                               |

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

| Clarks                    |               |                                     |
|---------------------------|---------------|-------------------------------------|
| Category                  | Total Numbers | Percentage of People in Hazard Area |
| Number in Hazard Area     | 87            | 8.3%                                |
| Persons Under 5 Years     | 3             | 3.8%                                |
| Persons Under 18 Years    | 9             | 10.5%                               |
| Persons 65 Years and Over | 8             | 8.7%                                |
| White                     | 44            | 51.1%                               |
| Minority                  | 43            | 48.9%                               |

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

| Columbia                  |               |                                     |
|---------------------------|---------------|-------------------------------------|
| Category                  | Total Numbers | Percentage of People in Hazard Area |
| Number in Hazard Area     | 3             | 1.1%                                |
| Persons Under 5 Years     | 0             | 5.4%                                |
| Persons Under 18 Years    | 0             | 12.5%                               |
| Persons 65 Years and Over | 1             | 29.0%                               |
| White                     | 2             | 75.1%                               |
| Minority                  | 1             | 24.9%                               |

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

| Grayson                   |               |                                     |
|---------------------------|---------------|-------------------------------------|
| Category                  | Total Numbers | Percentage of People in Hazard Area |
| Number in Hazard Area     | 76            | 16.9%                               |
| Persons Under 5 Years     | 11            | 15.1%                               |
| Persons Under 18 Years    | 29            | 38.0%                               |
| Persons 65 Years and Over | 8             | 10.4%                               |
| White                     | 61            | 79.7%                               |
| Minority                  | 15            | 20.3%                               |

#### Vulnerability

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

### Levee Failure

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

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

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

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

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

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

### *Location*

Levees play a vital role in protecting Caldwell Parish from flooding, particularly floods caused by tropical cyclones. Several areas in the eastern and central portion of the parish are protected by levees.

There are currently five levee alignments that exist within the parish:

- AR-LA MS River
- Caldwell Parish Agricultural Levee
- Caldwell Parish Agricultural Levee (South)
- Columbia Local Protection Works
- Ouachita River LA

These levees are tested anytime a high water event such as a tropical cyclone or heavy rainstorm occurs. The levees located in Caldwell Parish are shown in the following figures:

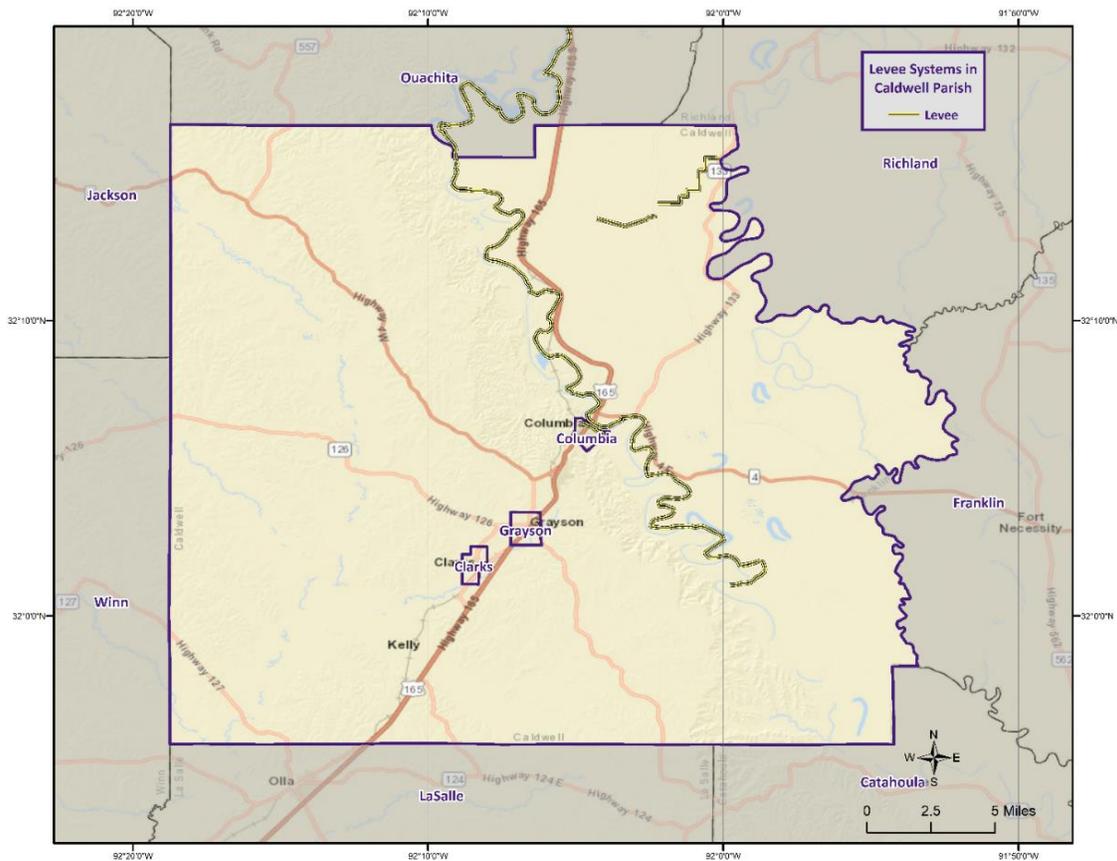


Figure 2-17: Levee Systems in Caldwell Parish.

#### *Previous Occurrences / Extents*

The NCEI Storm Events Database does not record anthropogenic disasters such as levee failures; therefore, it was necessary to rely on local knowledge and media reports. Since the 2017 HMP Update, there has been no flooding event due to levee failure in Caldwell Parish. As a worst-case scenario, the unincorporated area of Caldwell Parish along with the incorporated area of Columbia could expect to experience flood depths of 10 to 20 feet in the event of a levee failure. The extent of the flooding is unknown; therefore, a data deficiency is declared at this time. The incorporated area of Clarks and Grayson are not impacted by levee failure due to their location.

*Frequency / Probability*

It is nearly impossible to predict and model levee failure and its impacts on Caldwell Parish. Due to the unpredictability of levee failures, it is calculated that the probability of a levee failure is less than 1% annually for the unincorporated areas Caldwell Parish and the incorporated area of Columbia. The incorporated areas of Clarks and Grayson are not susceptible to levee failures.

*Estimated Potential Loses*

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

*Table 2-31: Levee Systems and Risk Associated with each System in Caldwell Parish and Surrounding Parishes.*

*(Source: National Levee Database)*

| System                                     | Length (Miles) | People at Risk | Structures at Risk | Property Value at Risk | Overall Risk |
|--|----------------|----------------|--------------------|------------------------|--------------|
| AR-LA MS River                             | 359.64         | 227,280        | 110,450            | \$20.9 billion         | High         |
| Caldwell Parish Agricultural Levee         | 2.12           | 5              | 4                  | \$607,000              | Not Screened |
| Caldwell Parish Agricultural Levee (South) | 3.83           | 0              | 0                  | \$0                    | Not Screened |
| Columbia Local Protection Works            | 1.36           | 299            | 172                | \$36 million           | Low          |
| Ouachita River LA                          | 98.83          | 47,912         | 15,179             | \$5.2 billion          | Moderate     |

*Vulnerability*

See *Appendix C: Critical Facilities* for parish and municipality building exposure to levee failures.

## Thunderstorms

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

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

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

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

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

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

- Hail of 1 inch in diameter or larger
- Wind gusts to 58 mph or greater
- One or more tornadoes

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

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

#### *Hazard Description*

##### Hailstorms

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

Table 2-32: TORRO Hailstorm Intensity Scale.

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

Table 2-33: Spectrum of Hailstone Diameters and their Everyday Description.

(Source: National Weather Service)

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

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

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

#### High Winds

In general, high winds can occur in a number of different ways, within and without thunderstorms. The Federal Emergency Management Agency (FEMA) distinguishes these as shown in *Table 2-34*.

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

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

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

Table 2-35 presents the Beaufort Wind Scale, first developed in 1805 by Sir Francis Beaufort, which aids in determining relative force and wind speed based on the appearance of wind effects.

Table 2-35: Beaufort Wind Scale.

(Source: NOAA's SPC)

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

Major damage directly caused by thunderstorm winds is relatively rare, while minor damage is common and pervasive, and most noticeable when it contributes to power outages. These power outages can have major negative impacts such as increased tendency for traffic accidents, loss of revenue for businesses, increased vulnerability to fire, food spoilage, and other losses that might be sustained by a loss of power.

Power outages may pose a health risk for those requiring electric medical equipment and/or air conditioning.

#### Lightning

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

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

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

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

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

### *Hazard Profile*

#### Hailstorms

##### Location

Hailstorms are a meteorological phenomenon that can occur anywhere. Therefore, the entire planning area for Caldwell Parish and its jurisdictions are equally at risk for hailstorms. The worst-case scenario for hailstorms is hail up to a 1.75" diameter.

##### Previous Occurrences / Extents

Historically, there have been 49 hail incidents in Caldwell Parish. Hailstorm diameters have ranged from 0.75 inches to 1.75 inches per the National Climatic Data Center since 1990. The most frequently recorded hail sizes have been 1-inch in diameter. On the next page is a brief synopsis of significant hailstorm events that have occurred in Caldwell Parish since the 2017 Caldwell Parish HMP update.

Table 2-37: Previous Occurrences for Hailstorm Events since the 2017 Hazard Mitigation Plan Update.  
 (Source: NCEI Storm Events Database)

| Date           | Hail Size (inches) | Property Damage | Crop Damage |
|----------------|--------------------|-----------------|-------------|
| April 2, 2017  | 1.25               | \$0             | \$0         |
| March 28, 2020 | 1                  | \$0             | \$0         |
| April 9, 2021  | 2.75               | \$0             | \$0         |

Frequency

Hailstorms occur frequently within Caldwell Parish with an annual chance of occurrence calculated at 100% based on the records for the past 31 years (1990 - 2021). On the next page, *Figure 2-18* displays the density of hailstorm events in Caldwell Parish, while *Figure 2-19* provides an overview of hailstorm size based on location.

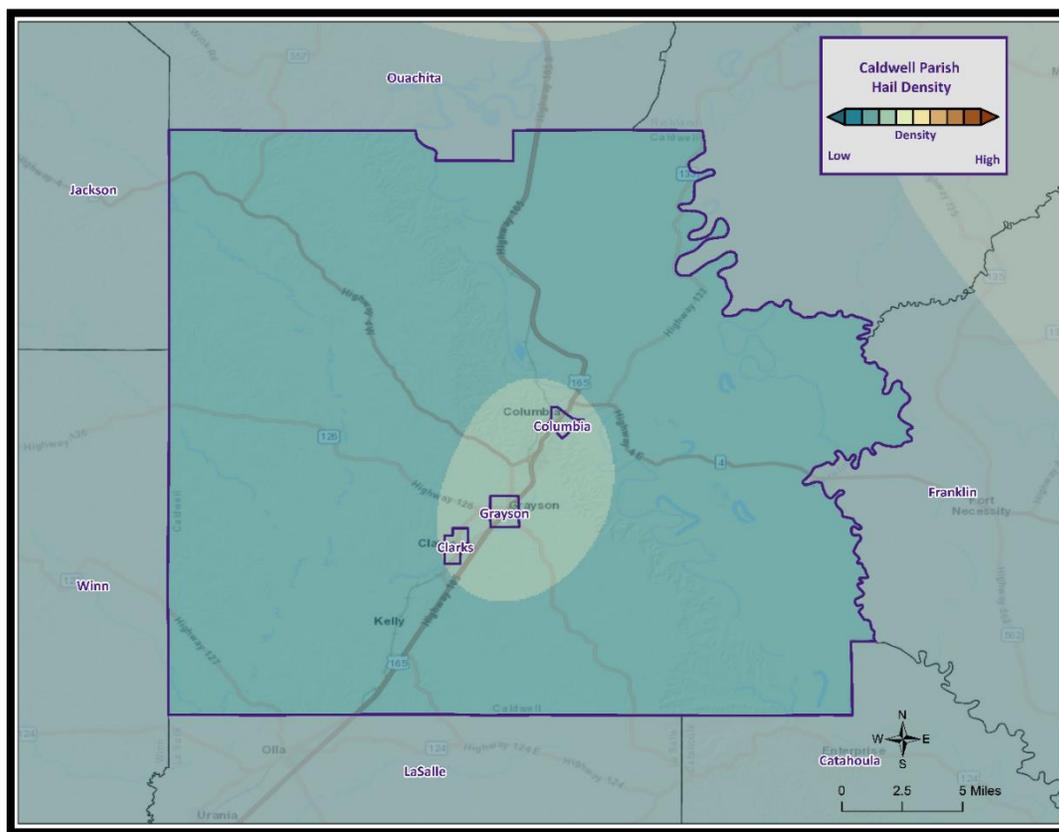


Figure 2-18: Density of Hailstorms by Diameter from 1950-2021.

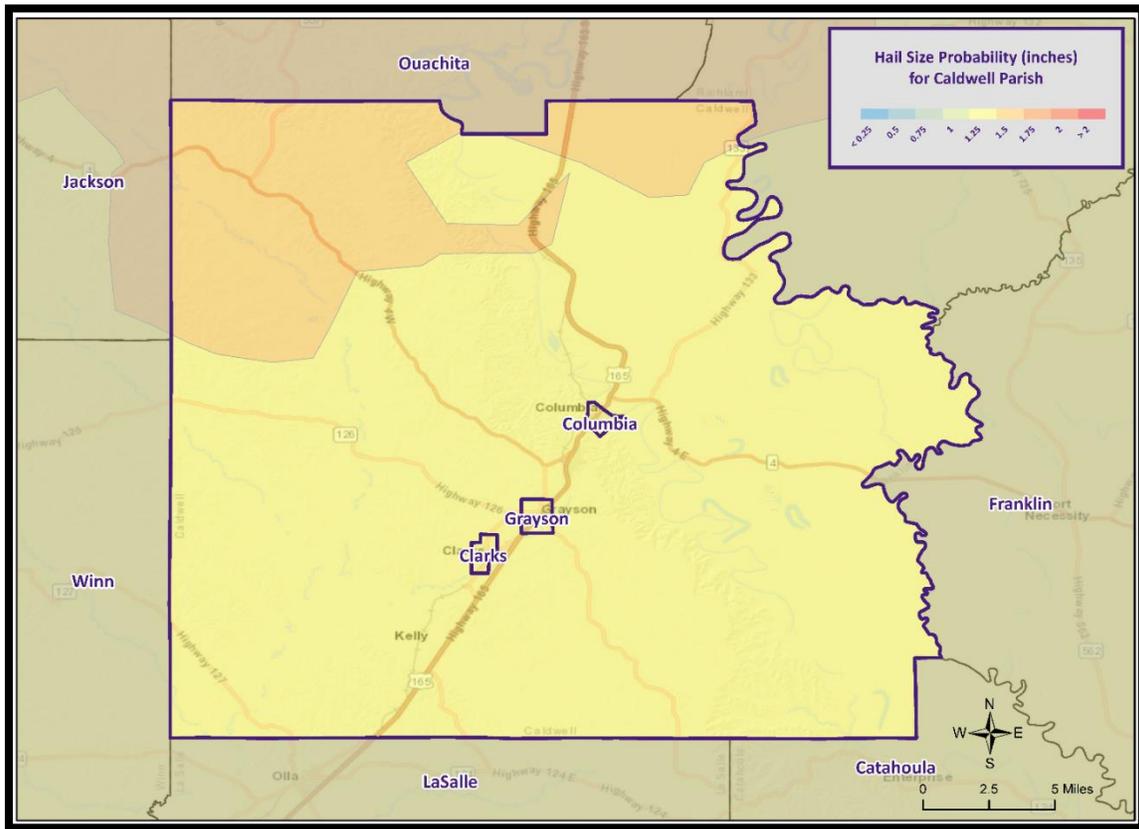


Figure 2-19: Hail Size Probability in Inches for Caldwell Parish.

Estimated Potential Losses

Since 1990, there have been 49 significant hail events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately \$2,500. To estimate the potential losses of a hailstorm event on an annual basis, the total damages recorded for the events was divided by the total number of years of available data in the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential loss of \$81 and \$51 per event. The following table provides an estimate of potential property losses for Caldwell Parish:

Table 2-38: Estimated Annual Losses Caldwell Parish and its Jurisdictions Resulting from Hailstorms.

| Estimated Potential Annual Losses from Hailstorms |        |          |         |
|---|--------|----------|---------|
| Unincorporated Area                               | Clarks | Columbia | Grayson |
| \$66  | \$9    | \$2      | \$4     |

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

Vulnerability

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

## High Winds

### Location

Because high winds are a meteorological phenomenon that can occur anywhere, the entire planning area for Caldwell Parish is equally at risk from high winds. The worst-case scenario for thunderstorm high wind is wind speeds of approximately 90 mph.

### Previous Occurrences / Extents

Historically, there have been 96 thunderstorm high wind events in Caldwell Parish. The high wind events have ranged in windspeeds from 59 mph to 90 mph per the National Climatic Data Center since 1990. Below is a brief synopsis of the events which have impacted Caldwell Parish Planning area since the 2017 Caldwell Parish HMP update.

*Table 2-39: Previous Occurrences for Thunderstorm High Wind Events since the 2017 Hazard Mitigation Plan Update.*

*(Source: NCEI Storm Events Database)*

| Date              | Wind Speed (mph) | Property Damage | Crop Damage |
|-------------------|------------------|-----------------|-------------|
| April 2, 2017     | 81               | \$0             | \$0         |
| May 28, 2017      | 90               | \$0             | \$0         |
| March 28, 2018    | 60               | \$0             | \$0         |
| March 28, 2018    | 64               | \$0             | \$0         |
| March 28, 2018    | 75               | \$0             | \$0         |
| April 6, 2018     | 60               | \$0             | \$0         |
| April 6, 2018     | 64               | \$0             | \$0         |
| July 29, 2018     | 60               | \$0             | \$0         |
| April 13, 2019    | 64               | \$0             | \$0         |
| June 24, 2019     | 75               | \$0             | \$0         |
| June 24, 2019     | 75               | \$0             | \$0         |
| September 9, 2019 | 60               | \$0             | \$0         |
| January 11, 2020  | 64               | \$0             | \$0         |
| March 28, 2020    | 70               | \$0             | \$0         |
| April 24, 2020    | 60               | \$0             | \$0         |
| May 8, 2020       | 64               | \$0             | \$0         |
| May 4, 2021       | 70               | \$0             | \$0         |

### Frequency

High winds are a fairly common occurrence within Caldwell Parish and its jurisdictions with an annual chance of occurrence calculated at 100% based on the records for the past 31 years (1990 - 2021). *Figure 2-20* displays the thunderstorm wind speed probability for Caldwell Parish and its jurisdictions.

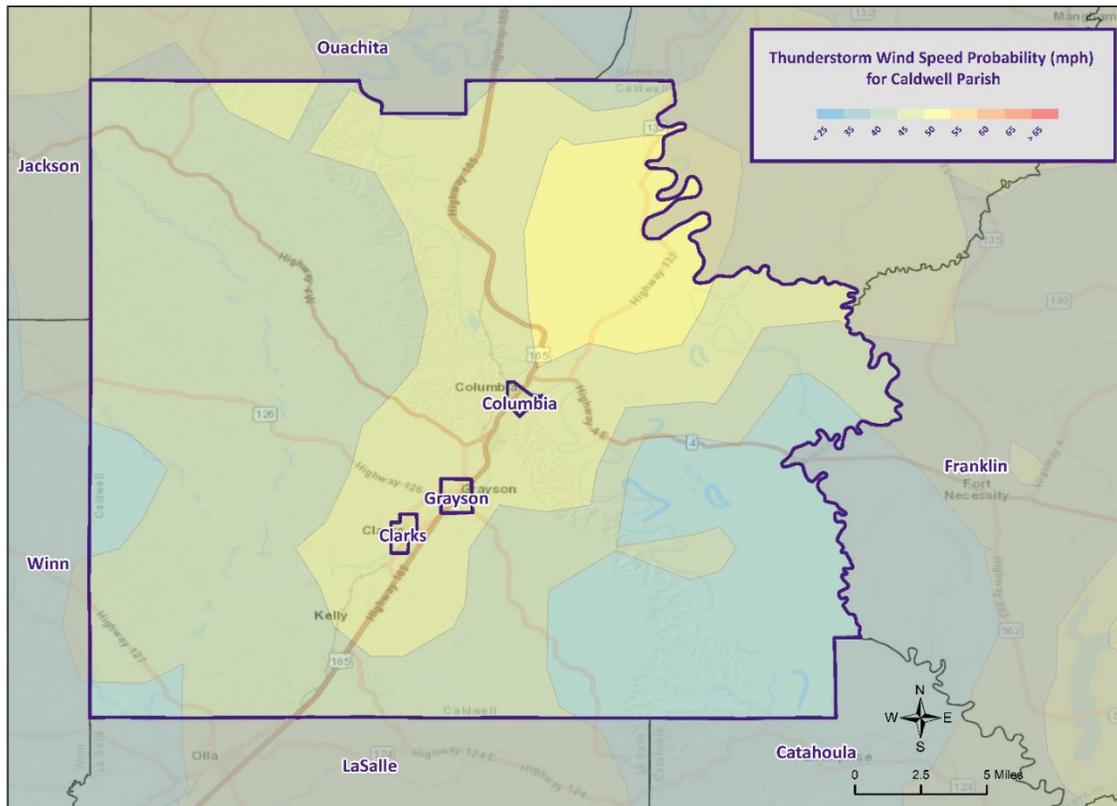


Figure 2-20: Thunderstorm High Wind Speed Probability in Miles Per Hour for Caldwell Parish.

Estimated Potential Losses

Since 1990, there have been 96 significant wind events that have resulted in property damages according to NCEI Storm Events Database. The total property damage associated with this storm totaled approximately \$142,500. To estimate the potential losses of a wind event on an annual basis, the total damages recorded for wind events was divided by the total number of years of available wind data in the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential loss of \$4,597 and \$1,484 per event. The table below provides an estimate of potential property losses for Caldwell Parish.

Table 2-40: Estimated Annual Property Losses in Caldwell Parish resulting from Wind Damage.

| Estimated Potential Annual Losses from High Winds |        |          |         |
|---|--------|----------|---------|
| Unincorporated Area                               | Clarks | Columbia | Grayson |
| \$3,749   | \$501  | \$132    | \$214   |

There have been two injuries and one fatality as a result of a thunderstorm high wind event over the 31-year record.

Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to thunderstorm high winds.

## Lightning

### Location

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

### Previous Occurrences / Extent

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

### Frequency

Lightning can strike anywhere and is produced by every thunderstorm, so the chance of lightning occurring in Caldwell Parish is high. However, lightning that meets the definition that is used by the NCEI Storm Events Database that results in damages to property and injury or death to people is a less likely event. Caldwell Parish experienced no significant lightning events between the years 1990 and 2021 resulting in a less than 1% annual chance of occurrence.

### Estimated Potential Losses

Since 1990, there have been no significant lightning events that have resulted in property damages according to NCEI Storm Events Database.

### Vulnerability

See *Appendix C: Critical Facilities* for parish and municipality building exposure to lightning hazards.

Tornadoes

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

Since February 1, 2007, the Enhanced Fujita (EF) Scale has been used to classify tornado intensity. The EF Scale classifies tornadoes based on their damage pattern rather than wind speed; wind speed is then derived and estimated. This contrasts with the Saffir-Simpson scale used for hurricane classification, which is based on measured wind speed. *Table 2-41* shows the EF scale in comparison with the old Fujita (F) Scale, which was used prior to February 1, 2007. When discussing past tornadoes, the scale used at the time of the hazard is used. Damage and adjustment between scales can be made using the following tables.

*Table 2-41: Comparison of the Enhanced Fujita (EF) Scale to the Fujita (F) Scale.*

| Wind speed (mph) | Enhanced Fujita Scale |        |         |         |         |      |
|------------------|-----------------------|--------|---------|---------|---------|------|
|                  | EF0                   | EF1    | EF2     | EF3     | EF4     | EF5  |
|                  | 65-85                 | 86-110 | 111-135 | 136-165 | 166-200 | >200 |
|                  | Fujita Scale          |        |         |         |         |      |
|                  | F0                    | F1     | F2      | F3      | F4      | F5   |
|                  | <73                   | 73-112 | 113-157 | 158-206 | 207-260 | >261 |

*Table 2-42: Fujita and Enhanced Fujita Tornado Damage Scale.*

| Scale         | Typical Damage   |
|---------------|--|
| <b>F0/EF0</b> | Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.   |
| <b>F1/EF1</b> | Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.   |
| <b>F2/EF2</b> | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; light-object missiles generated; cars lifted off ground.  |
| <b>F3/EF3</b> | Severe damage. Roofs and some walls torn of well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.  |
| <b>F4/EF4</b> | Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.   |
| <b>F5/EF5</b> | Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur. |

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

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

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

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

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

#### *Location*

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

#### *Previous Occurrences / Extent*

The NCEI Storm Events Database reports a total of 11 tornadoes or waterspouts occurring within the boundaries of Caldwell Parish since 1990 ranging in extent from F0 to F2 under the Fujita Scale and EF0 to EF2 on the Enhanced Fujita Scale. Caldwell Parish can expect future tornadoes up to an EF3 under the Enhanced Fujita Scale as a worst-case scenario.

The most destructive tornado to impact Caldwell Parish was a F2 tornado which occurred on November 23, 2004. Numerous trees were blown over and snapped at the Caldwell-La Salle Parish Line. The tornado then tracked northeast to the community of Spaulding where a few homes sustained roof damage. The tornado then tracked along Route 849 to Parish Road 730 where two mobile homes were blown 125 to 150 yards and demolished. In the town of Holum, several homes were heavily damaged where the roof

separated from the home. Since the 2017 HMP Update, four tornadoes have occurred within the boundaries of Caldwell Parish. Below is a list and brief description of the impact for each event.

*Table 2-43: Historical Tornadoes in Caldwell Parish with Locations since the 2017 Update.*

| Date           | Impacts   | Property Damage | Location   | Magnitude |
|----------------|---|-----------------|------------|-----------|
| April 2, 2017  | 0.49 mile path with a width of 1200 yards. A National Weather Service Storm Survey determined that an EF1 tornado first touched down in extreme eastern Caldwell Parish, east southeast of Columbia, Louisiana. The storm snapped and/or uprooted several trees along its path before crossing the Boeuf River and moving into Franklin Parish, Louisiana.  | \$0             | Copenhagen | EF1       |
| April 2, 2017  | 3.85 mile path with a width of 1200 yards. A National Weather Service Storm Survey determined that an EF1 tornado moved out of Franklin Parish and back into extreme eastern Caldwell Parish east of Columbia, Louisiana. The tornado snapped and/or uprooted numerous trees along its short path before crossing the Boeuf River and once again moving into Franklin Parish, Louisiana.  | \$0             | Hebert     | EF1       |
| March 28, 2018 | 1.08 mile path with a width of 350 yards. An EF-1 tornado with estimated maximum winds near 95 mph touched down along Highway 133 just south of the Hebert community where it uprooted a tree. It continued east northeast paralleling Highway 561, where it uprooted or twisted several trees and uplifted shingles and the roofing off of two mobile homes. The tornado then destroyed an out-building and a barn shortly before crossing into Richland Parish.   | \$15,000        | Hebert     | EF1       |
| April 13, 2018 | 4.11 mile path with a width of 340 yards. An EF-2 tornado with estimated maximum winds of 110-115 mph touched down just south of Highway 506, snapping and uprooting trees. As the tornado moved to the north northeast, it tore through the Catahoula National Wildlife Refuge, snapping and uprooting numerous trees. Several outbuildings and campsites were severely damaged by falling trees just off of Childress Road. The tornado turned more northeast at Beaucup Road and Childress Road, before lifting just before Goldwing Lane. | \$50,000        | Kelly      | EF2       |

#### *Frequency / Probability*

Tornadoes occur frequently within Caldwell Parish and its jurisdictions with an annual chance of occurrence calculated at 35% based on the records for the past 31 years (1990 - 2021). On the next page, *Figure 2-21* displays the density of tornado touchdowns in Caldwell Parish and neighboring parishes.

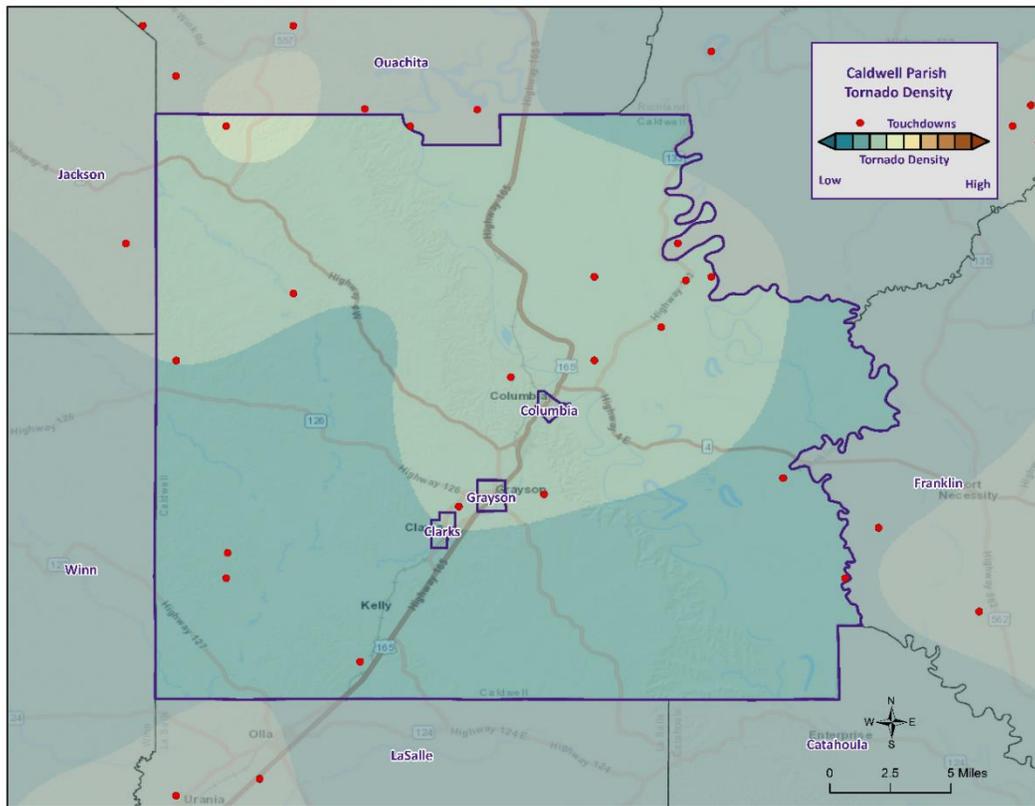


Figure 2-21: Location and Density of Tornadoes to Touchdown in Caldwell Parish. (Source: NOAA/SPC Severe Weather Database)

*Estimated Potential Losses*

According to the NCEI Storm Events Database, there have been 11 tornadoes that have caused some level of property damage. The total damage from the actual claims for property is approximately \$1,590,000 with an average cost of \$144,545 per tornado event. When annualizing the total cost over the 31-year record, total annual losses based on tornadoes are estimated to be \$51,290. The following table provides an annual estimate of potential losses for Caldwell Parish.

Table 2-44: Estimated Annual Property Losses in Caldwell Parish resulting from Tornado Damage.

| Estimated Potential Annual Losses from Tornadoes |          |           |          |
|--|----------|-----------|----------|
| Unincorporated Area                              | Clarks   | Columbia  | Grayson  |
| \$411,175  | \$14,379 | \$440,213 | \$31,868 |

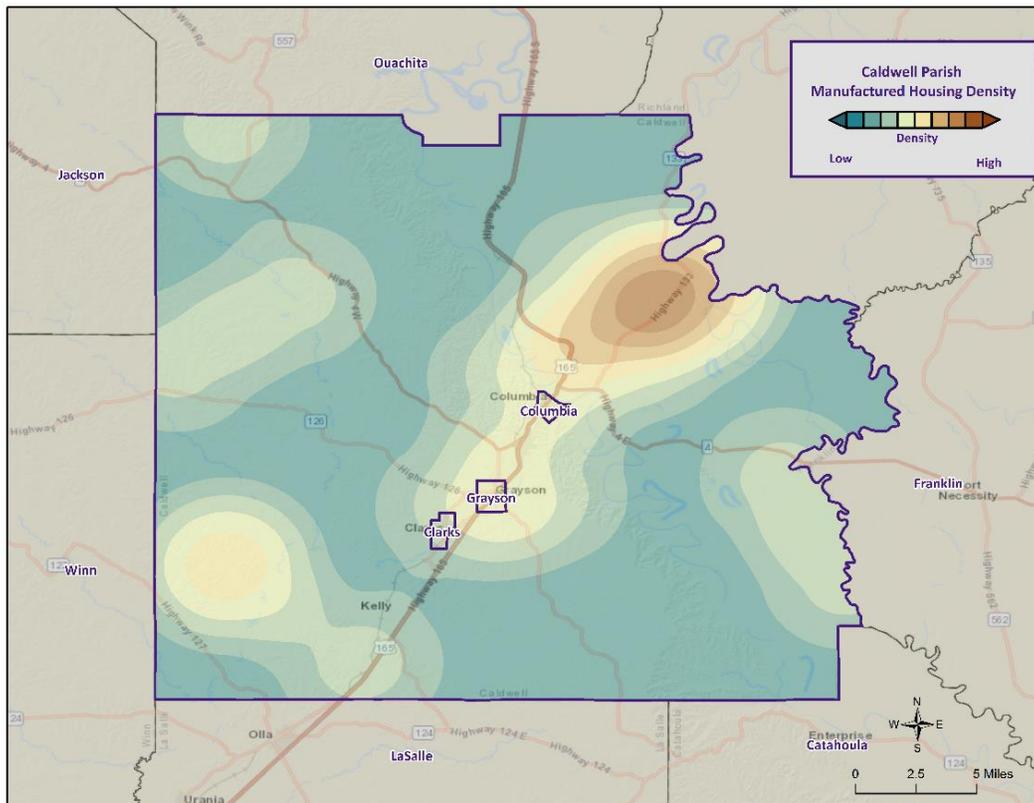
Table 2-45 presents an analysis of building exposure that are susceptible to tornadoes by general occupancy type for Caldwell Parish along with the percentage of building stock that are mobile homes.

Table 2-45: Building Exposure by General Occupancy Type for Tornadoes in Caldwell Parish. (Source: Hazus)

| Building Exposure by General Occupancy Type for Tornadoes (\$1,000) |            |            |              |          |            |           |                  |
|---|------------|------------|--------------|----------|------------|-----------|------------------|
| Residential   | Commercial | Industrial | Agricultural | Religion | Government | Education | Mobile Homes (%) |
| 7,633,964   | 99,179     | 19,648     | 4,187        | 23,870   | 10,194     | 9,353     | 15.0%            |

The Parish has suffered through a total of 11 events in which tornadoes or waterspouts have accounted for no injuries or fatalities during this 31-year period.

In accessing the overall risk to population, the most vulnerable population throughout the parish are those residing in manufacturing housing. Approximately 15% of all housing in Caldwell Parish consists of manufactured housing. The location and density of manufactured houses can be seen in *Figure 2-22*.



*Figure 2-22: Location and Approximate Number of Units in Manufactured Housing Locations throughout Caldwell Parish.*

#### *Vulnerability*

See *Appendix C: Critical Facilities* for parish and municipality building exposure to tornadoes.

### Tropical Cyclones

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

Table 2-46: Saffir-Simpson Hurricane Wind Scale.

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

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

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

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

#### *Location*

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

#### *Previous Occurrences / Extents*

Caldwell Parish has experienced five major tropical cyclone events since 2002. The table on the next page provides a list of tropical cyclones which have impacted Caldwell Parish since 2002.

*Table 2-47: Historical Tropical Cyclone Events in Caldwell Parish from 2002 – 2021.*

| Date | Name   | Storm Type at Time of Impact |
|------|--------|------------------------------|
| 2008 | Gustav | Tropical Storm               |
| 2008 | Ike    | Tropical Storm               |
| 2012 | Isaac  | Tropical Storm               |
| 2020 | Laura  | Tropical Storm               |
| 2020 | Delta  | Tropical Storm               |

Since the last Caldwell Parish HMP update in 2017, there have been two tropical cyclone events which have impacted the parish. Below is a brief description of the events and the impact they had on Caldwell Parish.

#### Tropical Storm Laura (2020)

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

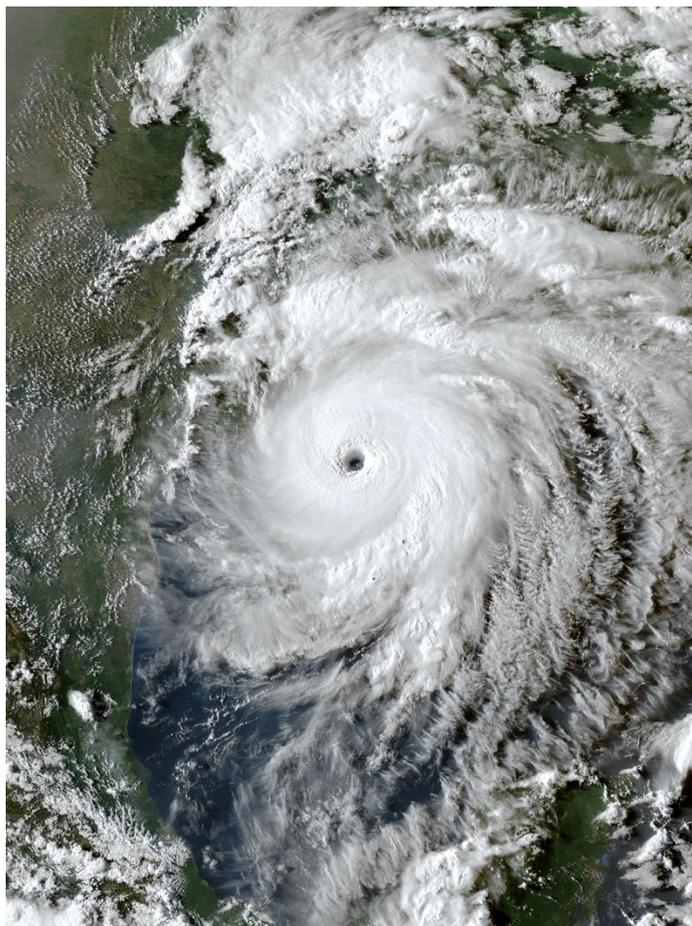
On the morning of August 21<sup>st</sup>, Tropical Depression Thirteen strengthened into Tropical Storm Laura, which was the earliest twelfth named Atlantic storm, beating the previous record of Hurricane Luis of 1995 by eight days. As Laura moved westward, little additional strengthening took place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

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

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

The National Weather Service in Lake Charles, Louisiana recorded a station record highest peak wind gust of 116 knots (133 mph) at 1:42 AM CDT before the Automated Surface Observing System (ASOS) wind equipment failed. However, the ASOS barometer sensor that was safely within the NWS building (which

received very little damage) recorded a station record minimum sea level pressure of 956 millibars (28.23 inches of mercury) at 2:20 AM CDT when the eye of Hurricane Laura passed nearly overhead.



*Figure 2-23: Hurricane Laura in the Gulf Coast Area.*

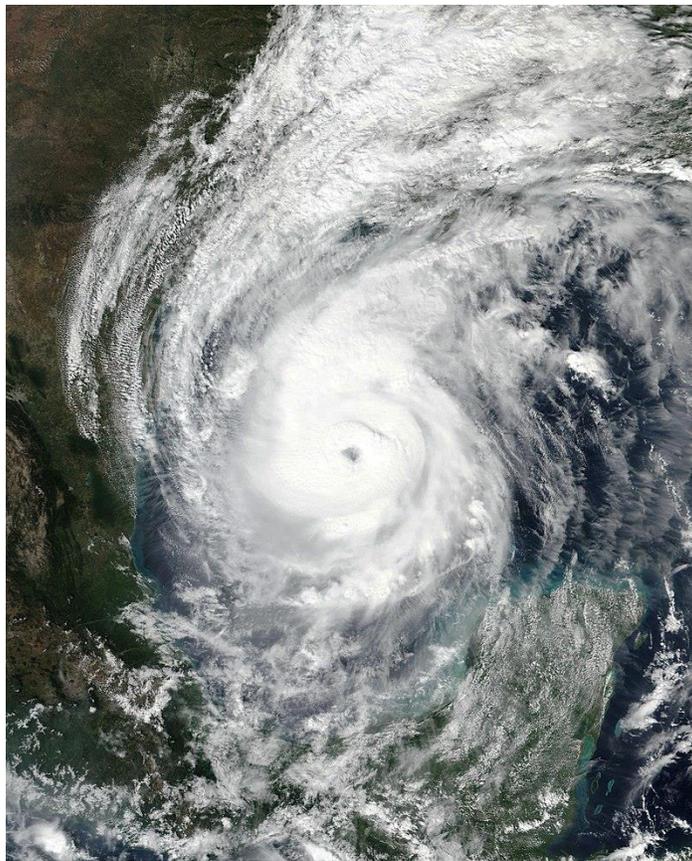
*(Source: NOAA)*

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

In Caldwell Parish, multiple trees and power lines were downed on Highway 4 West between Wiles Road and Mount Pleasant Road. Several other areas throughout the parish also experienced downed trees and power lines.

#### Tropical Storm Delta (2020)

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



*Figure 2-24: Hurricane Delta in the Gulf Coast Area.  
(Source: NOAA)*

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

In Caldwell Parish, scattered trees and power lines were down throughout the parish. A tree fell on a home in Kelly. Power outages to over 30 percent of the parish residents occurred. The auditorium and a

couple of classrooms at the Caldwell Parish High School were flooded. Highway 165 near Kelly was flooded.

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

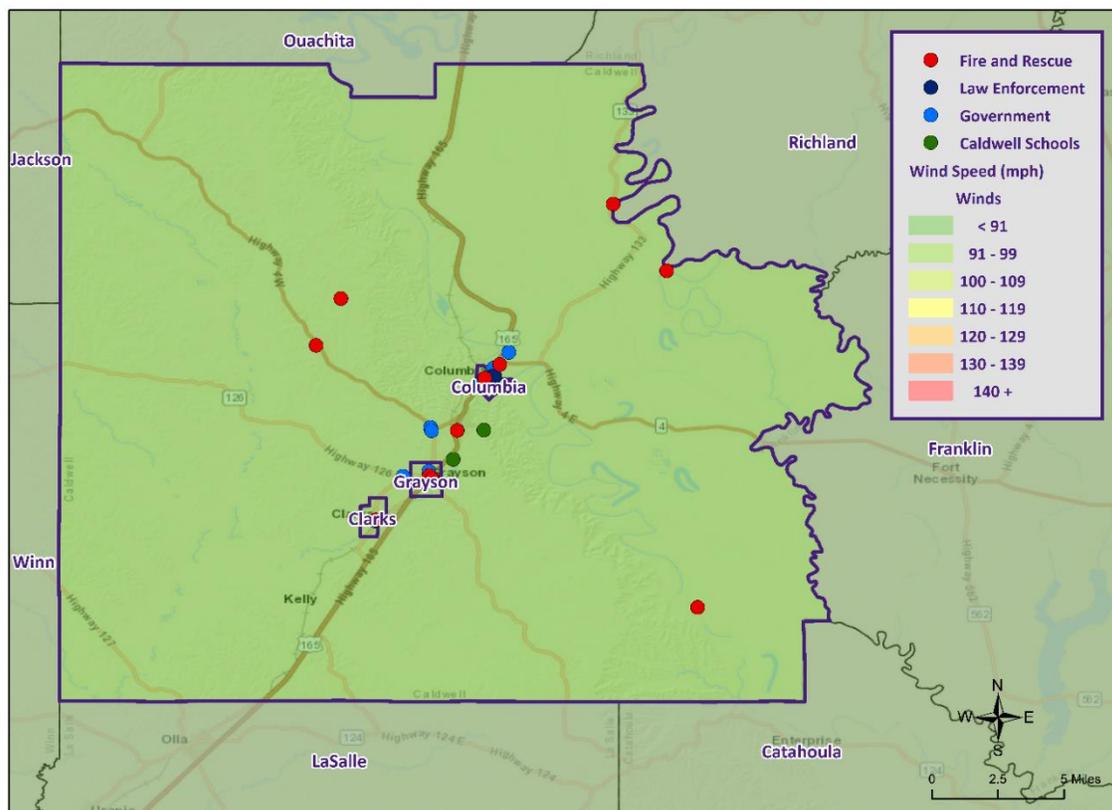


Figure 2-25: Winds Zones for Caldwell Parish in Relation to Critical Facilities

*Frequency / Probability*

Tropical cyclones are large natural hazard events that regularly impact Caldwell Parish. The annual chance of occurrence for a tropical cyclone is estimated at 26% for Caldwell Parish with five events occurring within 19 years (2002 to 2021). The tropical cyclone season for the Atlantic Basin is from June 1st through November 30<sup>th</sup>, with most of the major hurricanes (Saffir-Simpson Categories 3, 4, & 5) occurring between the months of August and October. Based on geographical location alone Caldwell Parish and its jurisdictions are highly vulnerable to tropical cyclones. This area has experienced several tropical cyclone events in the past and can expect more in the future.

*Estimated Potential Losses*

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

Table 2-48: Total Estimated Losses for a 100-Year Hurricane Event  
(Source: Hazus)

| Jurisdiction                            | Estimated Total Losses from 100-Year Hurricane Event |
|---|--|
| <b>Caldwell Parish (Unincorporated)</b> | \$704,238  |
| Clarks                                  | \$94,173   |
| Columbia                                | \$24,796   |
| Grayson                                 | \$40,194   |
| <b>Total</b>                            | <b>\$863,401</b>                                     |

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

Table 2-49: Ratio of Total Losses to Total Estimated Value of Assets for Caldwell Parish  
(Source: Hazus)

| Jurisdiction                            | Estimated Total Losses from 100-Year Hurricane Event | Total Estimated Value of Assets | Ratio of Estimated Losses to Total Value |
|---|--|---------------------------------|--|
| <b>Caldwell Parish (Unincorporated)</b> | \$704,238  | \$7,607,198,000                 | < 0.1%                                   |
| Clarks                                  | \$94,173   | \$52,114,000                    | 0.2%                                     |
| Columbia                                | \$24,796   | \$30,133,000                    | 0.1%                                     |
| Grayson                                 | \$40,194   | \$110,950,000                   | < 0.1%                                   |

Based on the Hazus Hurricane Model, estimated total losses for Caldwell Parish and its jurisdictions ranged from less than 0.1% to 0.2% of the total estimated value of all assets.

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

Table 2-50: Estimated Losses in Unincorporated Caldwell Parish for a 100-Year Hurricane Event  
(Source: Hazus)

| Caldwell Parish (Unincorporated) | Estimated Total Losses from 100-Year Hurricane Event |
|----------------------------------|--|
| Agricultural                     | \$347  |
| Commercial                       | \$1,281  |
| Government                       | \$831  |
| Industrial                       | \$1,605  |
| Religious / Non-Profit           | \$1,958  |
| Residential                      | \$697,453  |
| Schools                          | \$763  |
| <b>Total</b>                     | <b>\$704,238</b>                                     |

Table 2-51: Estimated Losses in Clarks for a 100-Year Hurricane Event  
(Source: Hazus)

| Clarks                 | Estimated Total Losses from 100-Year Hurricane Event |
|------------------------|--|
| Agricultural           | \$46   |
| Commercial             | \$171  |
| Government             | \$111  |
| Industrial             | \$215  |
| Religious / Non-Profit | \$262  |
| Residential            | \$93,266   |
| Schools                | \$102  |
| <b>Total</b>           | <b>\$94,173</b>                                      |

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

| Columbia               | Estimated Total Losses from 100-Year Hurricane Event |
|------------------------|--|
| Agricultural           | \$12   |
| Commercial             | \$45   |
| Government             | \$29   |
| Industrial             | \$56   |
| Religious / Non-Profit | \$69   |
| Residential            | \$24,558   |
| Schools                | \$27   |
| <b>Total</b>           | <b>\$24,796</b>                                      |

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

| Grayson                | Estimated Total Losses from 100-Year Hurricane Event |
|------------------------|--|
| Agricultural           | \$20   |
| Commercial             | \$73   |
| Government             | \$47   |
| Industrial             | \$92   |
| Religious / Non-Profit | \$112  |
| Residential            | \$39,806   |
| Schools                | \$44   |
| <b>Total</b>           | <b>\$40,194</b>                                      |

*Threat to People*

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

*Table 2-54: Number of People Susceptible to a 100-Year Hurricane Event in Caldwell Parish  
(Source: Hazus)*

| <b>Number of People Exposed to Hurricane Hazards</b> |                       |                         |                         |
|--|-----------------------|-------------------------|-------------------------|
| <b>Location</b>                                      | <b># in Community</b> | <b># in Hazard Area</b> | <b>% in Hazard Area</b> |
| <b>Caldwell Parish (Unincorporated)</b>              | 7,867                 | 7,867                   | 100%                    |
| <b>Clarks</b>  | 1,052                 | 1,052                   | 100%                    |
| <b>Columbia</b>                                      | 277                   | 277                     | 100%                    |
| <b>Grayson</b>                                       | 449                   | 449                     | 100%                    |
| <b>Total</b>   | <b>9,645</b>          | <b>9,645</b>            | <b>100%</b>             |

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

*Table 2-55: Vulnerable Populations in Unincorporated Caldwell Parish for a 100-Year Hurricane Event  
(Source: Hazus)*

| <b>Caldwell Parish (Unincorporated)</b> |                      |  |
|---|----------------------|--|
| <b>Category</b>                         | <b>Total Numbers</b> | <b>Percentage of People in Hazard Area</b> |
| <b>Number in Hazard Area</b>            | 7,817                | 99.4%                                      |
| <b>Persons Under 5 Years</b>            | 488                  | 6.2%                                       |
| <b>Persons Under 18 Years</b>           | 1,806                | 23.1%                                      |
| <b>Persons 65 Years and Over</b>        | 1,454                | 18.6%                                      |
| <b>White</b>                            | 6,199                | 79.3%                                      |
| <b>Minority</b>                         | 1,618                | 20.7%                                      |

*Table 2-56: Vulnerable Populations in Clarks for a 100-Year Hurricane Event  
(Source: Hazus)*

| <b>Clarks</b>                    |                      |  |
|----------------------------------|----------------------|--|
| <b>Category</b>                  | <b>Total Numbers</b> | <b>Percentage of People in Hazard Area</b> |
| <b>Number in Hazard Area</b>     | 1,052                | 100.0%                                     |
| <b>Persons Under 5 Years</b>     | 40                   | 3.8%                                       |
| <b>Persons Under 18 Years</b>    | 111                  | 10.5%                                      |
| <b>Persons 65 Years and Over</b> | 91                   | 8.7%                                       |
| <b>White</b>                     | 538                  | 51.1%                                      |
| <b>Minority</b>                  | 514                  | 48.9%                                      |

*Table 2-57: Vulnerable Populations in Columbia for a 100-Year Hurricane Event  
(Source: Hazus)*

| <b>Columbia</b>                  |                      |  |
|----------------------------------|----------------------|--|
| <b>Category</b>                  | <b>Total Numbers</b> | <b>Percentage of People in Hazard Area</b> |
| <b>Number in Hazard Area</b>     | 277                  | 100.0%                                     |
| <b>Persons Under 5 Years</b>     | 15                   | 5.4%                                       |
| <b>Persons Under 18 Years</b>    | 35                   | 12.5%                                      |
| <b>Persons 65 Years and Over</b> | 80                   | 29.0%                                      |
| <b>White</b>                     | 208                  | 75.1%                                      |
| <b>Minority</b>                  | 69                   | 24.9%                                      |

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

| <b>Grayson</b>                   |                      |  |
|----------------------------------|----------------------|--|
| <b>Category</b>                  | <b>Total Numbers</b> | <b>Percentage of People in Hazard Area</b> |
| <b>Number in Hazard Area</b>     | 499                  | 111.1%                                     |
| <b>Persons Under 5 Years</b>     | 75                   | 15.1%                                      |
| <b>Persons Under 18 Years</b>    | 190                  | 38.0%                                      |
| <b>Persons 65 Years and Over</b> | 52                   | 10.4%                                      |
| <b>White</b>                     | 398                  | 79.7%                                      |
| <b>Minority</b>                  | 101                  | 20.3%                                      |

#### *Vulnerability*

See *Appendix C: Critical Facilities* for parish and municipality buildings that are susceptible to tropical cyclones.

## Wildfires

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

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

According to the State of Louisiana Forestry Division, most forest fires in Louisiana are caused by intentional acts (arson) or carelessness and negligence committed by people, exacerbated by human confrontation with nature. The wildland–urban interface is the area in which development meets wildland vegetation, where both vegetation and the built environment provide fuel for fires. As development near wildland settings continues, more people and property are exposed to wildfire danger.

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

Table 2-59: Southern Group of State Foresters Wildfire Risk Assessment Fire Intensity Scale.  
(Source: Southern Wildfire Assessment Portal)

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

Location

Wildfires impact areas that are populated with forests and grasslands. The worse-case scenario for Caldwell Parish and the incorporated area of Clarks is a level 3 and the incorporated areas of Columbia and Grayson a level 3.5. The following figures display the areas of wildland-urban interface and intermix in Caldwell Parish and its jurisdictions.

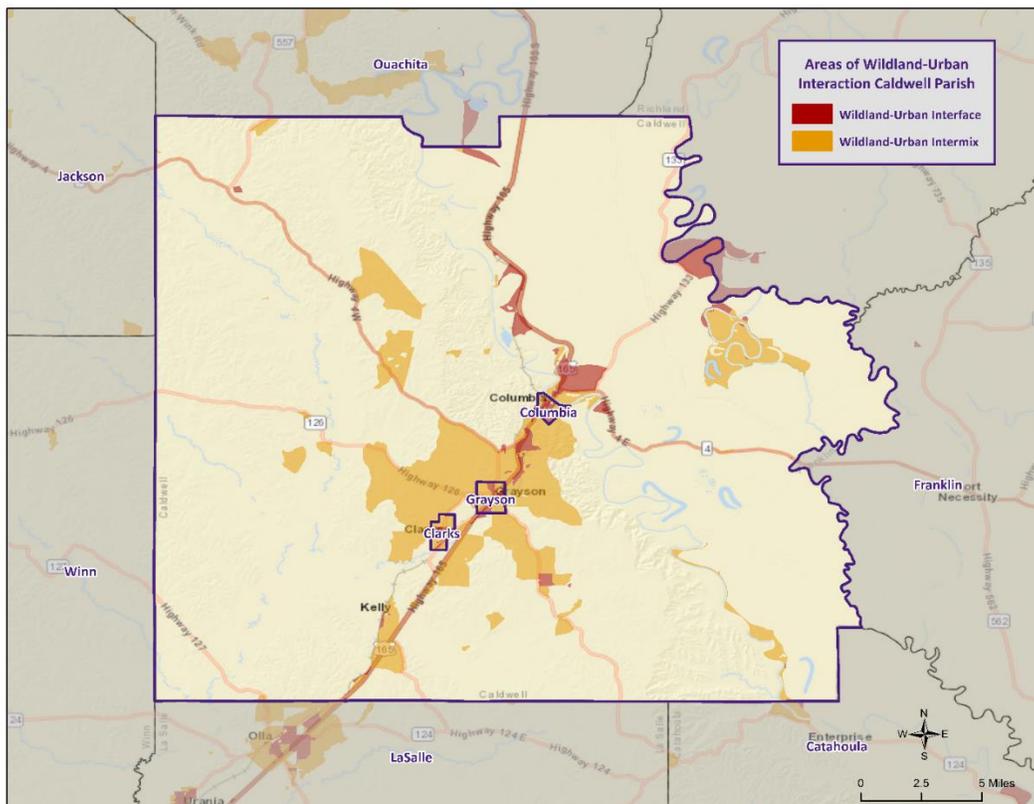


Figure 2-26: Wildland-Urban Interaction in Caldwell Parish.

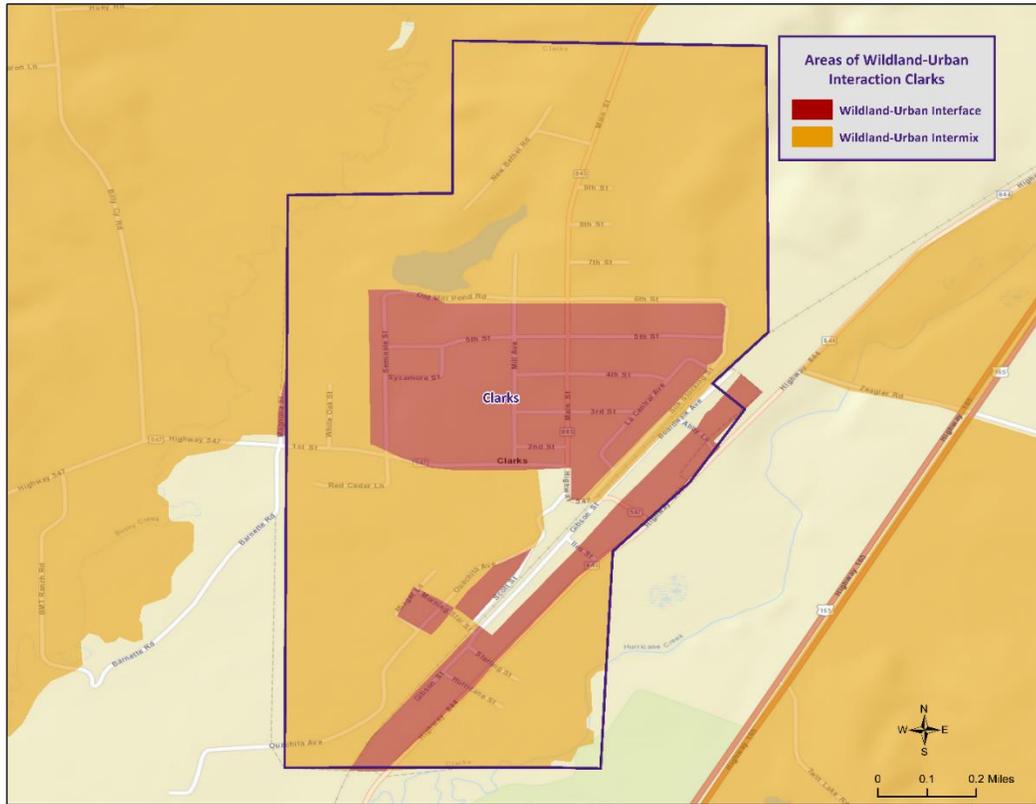


Figure 2-27: Wildland-Urban Interaction in Clarks.

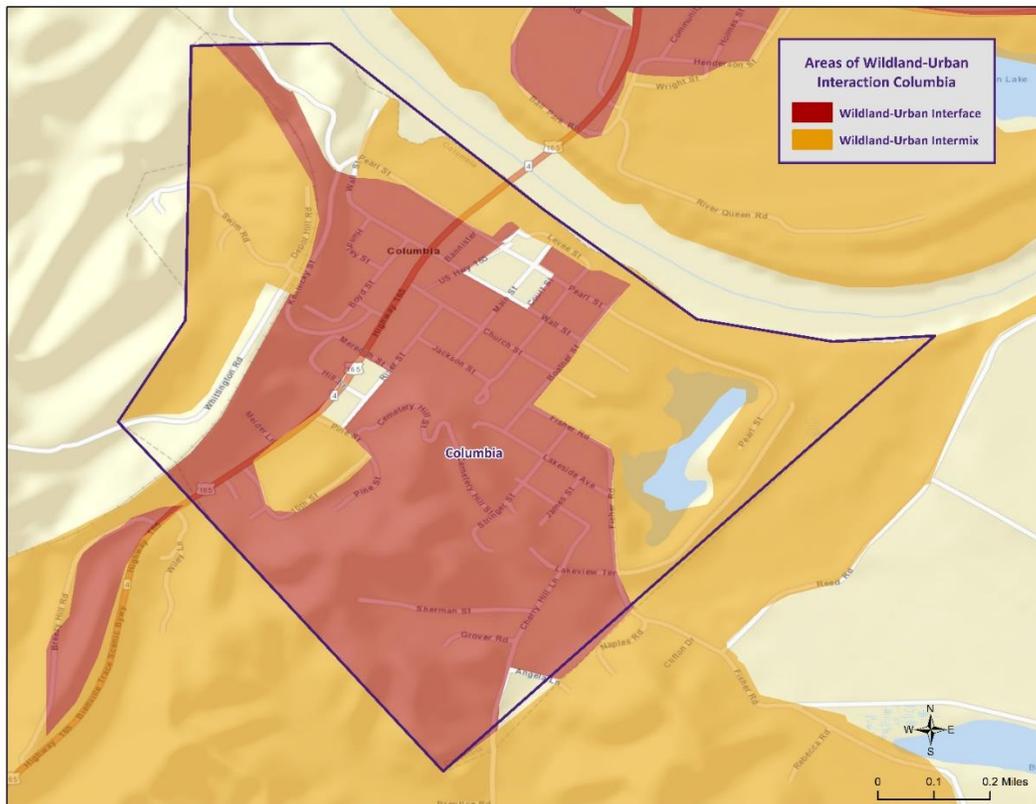


Figure 2-28: Wildland-Urban Interaction in Columbia.

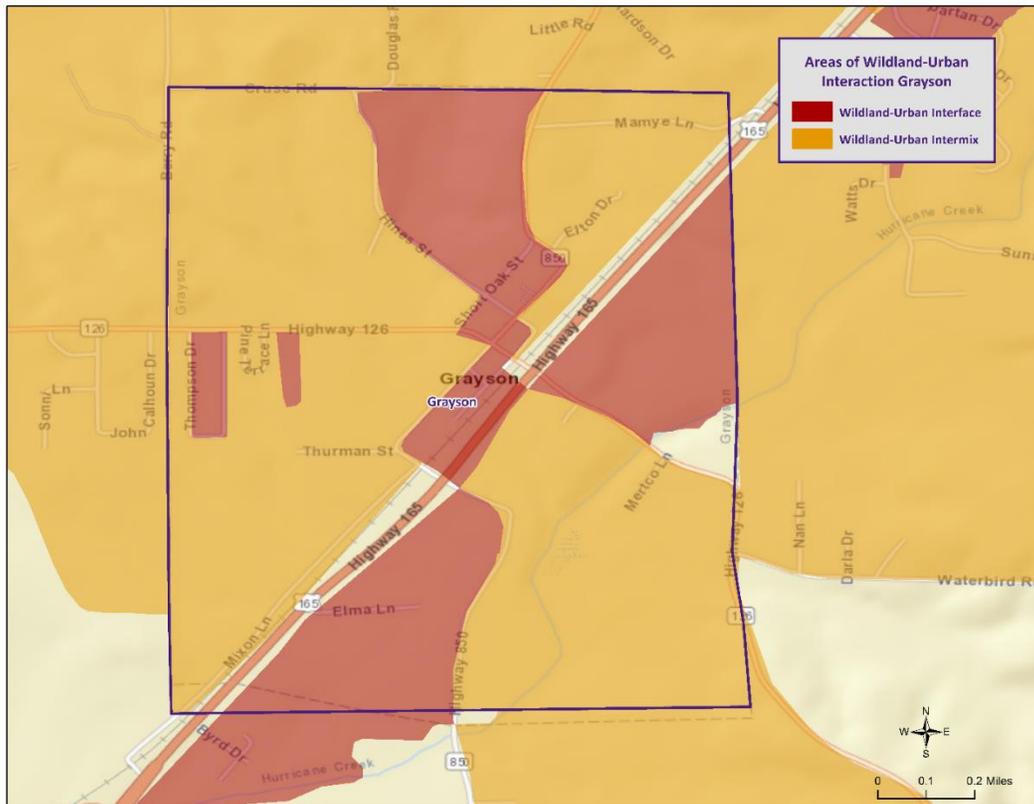


Figure 2-29: Wildland-Urban Interaction in Grayson.

*Previous Occurrences / Extents*

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

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

Table 2-60: Potential Wildfire Intensity Levels for Caldwell Parish.  
(Source: Southern Wildfire Assessment Portal)

| Fire Intensity                          |                                      |
|---|--------------------------------------|
| <b>Caldwell Parish (Unincorporated)</b> | Moderate Intensity Level 3           |
| <b>Clarks</b>                           | Moderate Intensity Level 3           |
| <b>Columbia</b>                         | Moderate to High Intensity Level 3.5 |
| <b>Grayson</b>                          | Moderate to High Intensity Level 3.5 |

*Frequency / Probability*

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

*Estimated Potential Loses*

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

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

*Table 2-61: Total Building Exposure by Wildland-Urban Interaction Areas.  
(Source: Hazus)*

| Jurisdiction                            | Estimated Total Building Exposure |
|---|-----------------------------------|
| <b>Caldwell Parish (Unincorporated)</b> | \$565,660,000                     |
| Clarks                                  | \$52,335,000                      |
| Columbia                                | \$30,113,000                      |
| Grayson                                 | \$70,643,000                      |
| <b>Total</b>                            | <b>\$718,751,000</b>              |

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

*Table 2-62: Estimated Exposure for Unincorporated Caldwell Parish by Sector.  
(Source: Hazus)*

| Caldwell Parish (Unincorporated) | Estimated Total Building Exposure by Sector |
|----------------------------------|---|
| <b>Agricultural</b>              | \$2,756,000                                 |
| <b>Commercial</b>                | \$38,032,000                                |
| <b>Government</b>                | \$3,791,000                                 |
| <b>Industrial</b>                | \$5,424,000                                 |
| <b>Religious / Non-Profit</b>    | \$12,266,000                                |
| <b>Residential</b>               | \$496,150,000                               |
| <b>Schools</b>                   | \$7,241,000                                 |
| <b>Total</b>                     | <b>\$565,660,000</b>                        |

Table 2-63: Estimated Exposure for Clarks by Sector.  
(Source: Hazus)

| Clarks                 | Estimated Total Building Exposure by Sector |
|------------------------|---|
| Agricultural           | \$0   |
| Commercial             | \$3,312,000                                 |
| Government             | \$1,731,000                                 |
| Industrial             | \$219,000                                   |
| Religious / Non-Profit | \$3,623,000                                 |
| Residential            | \$43,450,000                                |
| Schools                | \$0   |
| <b>Total</b>           | <b>\$52,335,000</b>                         |

Table 2-64: Estimated Exposure in Columbia by Sector.  
(Source: Hazus)

| Columbia               | Estimated Total Building Exposure by Sector |
|------------------------|---|
| Agricultural           | \$0   |
| Commercial             | \$4,328,000                                 |
| Government             | \$893,000                                   |
| Industrial             | \$72,000                                    |
| Religious / Non-Profit | \$1,612,000                                 |
| Residential            | \$23,208,000                                |
| Schools                | \$0   |
| <b>Total</b>           | <b>\$30,113,000</b>                         |

Table 2-65: Estimated Exposure in Grayson by Sector.  
(Source: Hazus)

| Grayson                | Estimated Total Building Exposure by Sector |
|------------------------|---|
| Agricultural           | \$102,000                                   |
| Commercial             | \$19,594,000                                |
| Government             | \$1,836,000                                 |
| Industrial             | \$8,715,000                                 |
| Religious / Non-Profit | \$1,354,000                                 |
| Residential            | \$37,152,000                                |
| Schools                | \$1,890,000                                 |
| <b>Total</b>           | <b>\$70,643,000</b>                         |

*Threat to People*

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

*Table 2-66: Population Located within a Wildland-Urban Interaction Areas.  
(Source: 2010 U.S. Census Data)*

| <b>Number of People Located in Wildland-Urban Interaction Areas</b> |                       |                         |                         |
|---|-----------------------|-------------------------|-------------------------|
| <b>Location</b>   | <b># in Community</b> | <b># in Hazard Area</b> | <b>% in Hazard Area</b> |
| <b>Caldwell Parish (Unincorporated)</b>                             | 7,867                 | 7,867                   | 18.7%                   |
| <b>Clarks</b>   | 1,052                 | 1,052                   | 34.7%                   |
| <b>Columbia</b>   | 277                   | 277                     | 119.5%                  |
| <b>Grayson</b>  | 449                   | 449                     | 79.5%                   |
| <b>Total</b>  | <b>9,645</b>          | <b>2,521</b>            | <b>26.1%</b>            |

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

*Table 2-67: Population in Unincorporated Caldwell Parish Located within a Wildland-Urban Interaction Area.*

*(Source: 2010 Census Data)*

| <b>Caldwell Parish (Unincorporated)</b> |                      |  |
|---|----------------------|--|
| <b>Category</b>                         | <b>Total Numbers</b> | <b>Percentage of People in Hazard Area</b> |
| <b>Number in Hazard Area</b>            | 1,468                | 18.7%                                      |
| <b>Persons Under 5 Years</b>            | 92                   | 6.2%                                       |
| <b>Persons Under 18 Years</b>           | 339                  | 23.1%                                      |
| <b>Persons 65 Years and Over</b>        | 273                  | 18.6%                                      |
| <b>White</b>                            | 1,164                | 79.3%                                      |
| <b>Minority</b>                         | 304                  | 20.7%                                      |

*Table 2-68: Population in Clarks Located within a Wildland-Urban Interaction Area.*

*(Source: 2010 Census Data)*

| <b>Clarks</b>                    |                      |  |
|----------------------------------|----------------------|--|
| <b>Category</b>                  | <b>Total Numbers</b> | <b>Percentage of People in Hazard Area</b> |
| <b>Number in Hazard Area</b>     | 365                  | 34.7%                                      |
| <b>Persons Under 5 Years</b>     | 14                   | 3.8%                                       |
| <b>Persons Under 18 Years</b>    | 38                   | 10.5%                                      |
| <b>Persons 65 Years and Over</b> | 32                   | 8.7%                                       |
| <b>White</b>                     | 187                  | 51.1%                                      |
| <b>Minority</b>                  | 178                  | 48.9%                                      |

Table 2-69: Population in Columbia Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)

| Columbia                  |               |                                     |
|---------------------------|---------------|-------------------------------------|
| Category                  | Total Numbers | Percentage of People in Hazard Area |
| Number in Hazard Area     | 331           | 119.5%                              |
| Persons Under 5 Years     | 18            | 5.4%                                |
| Persons Under 18 Years    | 41            | 12.5%                               |
| Persons 65 Years and Over | 96            | 29.0%                               |
| White                     | 249           | 75.1%                               |
| Minority                  | 82            | 24.9%                               |

Table 2-70: Population in Grayson Located within a Wildland-Urban Interaction Area.  
(Source: 2010 Census Data)

| Grayson                   |               |                                     |
|---------------------------|---------------|-------------------------------------|
| Category                  | Total Numbers | Percentage of People in Hazard Area |
| Number in Hazard Area     | 357           | 79.5%                               |
| Persons Under 5 Years     | 54            | 15.1%                               |
| Persons Under 18 Years    | 136           | 38.0%                               |
| Persons 65 Years and Over | 37            | 10.4%                               |
| White                     | 285           | 79.7%                               |
| Minority                  | 72            | 20.3%                               |

#### Vulnerability

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

## Winter Weather

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

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

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

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

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

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

Table 2-71: Sperry-Piltz Ice Accumulation Index

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

*Location*

Because a winter storm is a climatological based hazard and has the same probability of occurring in Caldwell Parish as all of the adjacent parishes, the entire planning area for Caldwell Parish is equally at risk for winter storms. The worse-case scenario for Caldwell Parish and all of its jurisdictions is a level 2 on the Sperry-Piltz Ice Accumulation Index.

*Previous Occurrences / Extents*

The NCEI Storm Events Database reports 19 winter weather events occurring within the boundaries of Caldwell Parish between the years 1990 and 2021. Below is a brief synopsis of the winter weather events which occurred since the last Caldwell Parish HMP Update in 2017.

Table 2-72: Previous Occurrences for Winter Storm Events

| Date              | Synopsis   | Property Damage | Crop Damage |
|-------------------|--|-----------------|-------------|
| January 6, 2017   | Warmer air overrunning the arctic front across portions of Deep East Texas and much of Northcentral Louisiana resulting in areas of light sleet, mixing with freezing rain and light snow during the morning and afternoon of the 6th. Surface temperatures remained near or slightly below freezing, which resulted in freezing rain accumulations of around a tenth of an inch, with sleet accumulations of around a quarter inch or less.   | \$0             | \$0         |
| December 8, 2017  | In Caldwell Parish, 1.0 inches was recorded in Grayson and Columbia, with 0.5 inches falling at Columbia Lock and Dam.   | \$0             | \$0         |
| January 16, 2018  | In Caldwell Parish, Columbia recorded 1.0 inches of snow.  | \$0             | \$0         |
| November 14, 2018 | In Caldwell Parish, 0.1 inches of snow was measured in Columbia.   | \$0             | \$0         |
| February 8, 2019  | Afternoon temperatures over these areas were above freezing as they climbed into the mid 30s to near 40 degrees, such that no ice accumulations occurred initially. However, the warmer air overrunning the cold air mass resulted in a mix of light rain and sleet from the mid-afternoon through the evening. Temperatures cooled to near freezing during the evening through the overnight hours across much of East Texas and North Louisiana along and south of the Interstate 20 corridor as the rain/sleet mix continued, resulting in the light rain changing over to light freezing rain and sleet. | \$0             | \$0         |
| January 10, 2021  | Caldwell Parish: Columbia 4.1 NNW: 4.5 inches, Columbia Lock and Dam: 4.5 inches, Columbia: 3.0 inches of snow.  | \$0             | \$0         |
| February 14, 2021 | Caldwell Parish: Columbia Lock and Dam: 3.5 inches of snow.  | \$0             | \$0         |
| February 16, 2021 | Caldwell Parish: Columbia: 0.25 inches of snow.  | \$0             | \$0         |

*Frequency / Probability*

Based on historical records, there have been 19 significant winter weather events within the boundaries of Caldwell Parish and its jurisdictions; therefore, the annual chance of occurrence for winter weather is estimated at 61%.

*Estimated Potential Loses*

Since 1990, there have been 19 winter weather events that have resulted in property damages according to NCEI Storm Events Database. The total property damages associated with those storms have totaled approximately \$1,000. To estimate the potential losses of a winter weather event on an annual basis, the total damages recorded for winter weather was divided by the total number of years of available winter weather in the NCEI Storm Events Database (1990 - 2021). This provides an annual estimated potential

loss of \$32 and \$53 per event. The following table provides an estimate of potential property losses for Caldwell Parish:

*Table 2-73: Estimated Annual Losses Caldwell Parish and its Jurisdictions Resulting from Winter Weather.*

| Estimated Potential Annual Losses from Winter Weather |        |          |         |
|---|--------|----------|---------|
| Unincorporated Area                                   | Clarks | Columbia | Grayson |
| \$44  | \$2    | \$47     | \$3     |

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

*Vulnerability*

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

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### 3. Capability Assessment

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

Through this assessment, Caldwell Parish and the incorporated jurisdictions are able to identify strengths that could be used to reduce losses and reduce risk throughout the communities. It also identifies areas where mitigation actions might be used to supplement current capabilities and create a more resilient community before, during, and after a hazard event.

#### Policies, Plans and Programs

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

Table 3-1: Planning and Regulatory Capabilities

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

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

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

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

As of the 2023 update, Caldwell Parish and the incorporated communities ensure that all adopted building codes are enforced and in compliance relating to the construction of any structure within the boundaries of the parish. Building permits are required prior to beginning any type of construction or renovation projects, installation of electrical wiring, plumbing or gas piping, moving manufactured/modular or portable buildings, and reroofing or demolitions.

The Caldwell Parish Police Jury is also responsible for enforcing the parish ordinances related to health and safety, property maintenance standards, and condemnation of unsafe structures.

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

While local capabilities for mitigation can vary from community to community, the jurisdictions within the Caldwell Parish planning area as a whole have a system in place to coordinate and share these capabilities through the OHSEP and through this Parish Hazard Mitigation Plan.

Some programs and policies, such as the above described, might use complementary tools to achieve a common end, but fail to coordinate with or support each other. Thus, coordination among local mitigation policies and programs is essential to hazard mitigation.

#### Administration, Technical, and Financial

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

Table 3-2: Administration and Technical Capabilities

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

Financial capabilities are the resources that Caldwell Parish and its incorporated jurisdictions have access to or are eligible to use in order to fund mitigation actions. Costs associated with implementing the actions identified by the parish may vary from little to no cost actions, such as outreach efforts, or substantial action costs such acquisition of flood prone properties.

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

Table 3-3: Financial Capabilities

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

### Education and Outreach

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

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

*Table 3-4: Education and Outreach Capabilities*

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

As reflected with the above existing regulatory mechanisms, programs and resources within the parish, the jurisdictions within the Caldwell Parish planning area remain committed to expanding and improving on the existing capabilities within the parish. Communities will work together along with Caldwell Parish toward increased participation in funding opportunities and available mitigation programs. Should funding become available, the hiring of additional personnel to dedicate to hazard mitigation initiatives and programs, as well as increasing ordinances within the parish, will enhance and expand overall risk reduction for the entirety of Caldwell Parish.

### Flood Insurance and Community Rating System

Participation in the CRS strengthens local capabilities by lowering flood insurance premiums for jurisdictions that exceed NFIP minimum requirements. As noted in the CRS Eligible Communities List effective October 1, 2022, neither Caldwell Parish nor any of the incorporated jurisdictions within the parish participate in the CRS program.

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

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

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

| CLASS | DISCOUNT | CLASS | DISCOUNT |
|-------|----------|-------|----------|
| 1     | 45%      | 6     | 20%      |
| 2     | 40%      | 7     | 15%      |
| 3     | 35%      | 8     | 10%      |
| 4     | 30%      | 9     | 5%       |
| 5     | 25%      | 10    | –        |

SFHA (Zones A, AE, A1–A30, V, V1–V30, AO, and AH): Discount varies depending on class.  
 SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO): 10% discount for Classes 1–6; 5% discount for Classes 7–9.\*  
 Non-SFHA (Zones B, C, X, D): 10% discount for Classes 1–6; 5% discount for Classes 7–9.

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

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

in St. Tammany Parish. Of the top fifty Louisiana communities, in terms of total flood insurance policies held by residents, 29 participate in the CRS. The remaining 21 communities present an outreach opportunity for encouraging participation in the CRS.

The CRS provides an incentive not just to start new mitigation programs, but to keep them going. There are two requirements that “encourage” a community to implement flood mitigation activities. Once the parish has obtained a CRS rating and is a participant, the parish will receive CRS credit for this plan when it is adopted. To retain that credit, though, the parish must submit an evaluation report on progress toward implementing this plan to FEMA by October 1 of each year. That report must be made available to the media and the public. Second, the parish must annually recertify to FEMA that it is continuing to implement its CRS credited activities. Failure to maintain the same level of involvement in flood protection can result in a loss of CRS credit points and a resulting increase in flood insurance rates to residents.

In 2011<sup>1</sup>, the National Flood Insurance Program (NFIP) completed a comprehensive review of the Community Rating System (CRS) that resulted in the release of a new CRS Coordinator’s Manual. The changes to the 2013 CRS Coordinator’s Manual are the result of a multi-year program evaluation that included input from a broad group of contributors to evaluate the CRS and refine the program to meet its stated goals. The changes helped to drive new achievements in the following six core flood loss reduction areas important to the NFIP: (1) reduce liabilities to the NFIP Fund; (2) improve disaster resiliency and sustainability of communities; (3) integrate a Whole Community approach to addressing emergency management; (4) promote natural and beneficial functions of floodplains; (5) increase understanding of risk, and; (6) strengthen adoption and enforcement of disaster-resistant building codes.

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

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

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

Typically, CRS communities do not request credit for all the activities they are currently implementing unless it would earn enough credit to advance the community to a higher CRS Class. A community that finds itself losing CRS credit with the 2017 manual could likely identify activities deserving credit they had not previously received. Due to the changes in both activities and CRS points, community CRS coordinators should speak with their ISO/CRS Specialist to understand how the 2017 manual will impact their community and when.

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

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

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

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

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

3. A community can evaluate the effectiveness of its flood program against a nationally recognized benchmark.

4. Technical assistance in designing and implementing a number of activities is available at no charge from the Insurance Services Office.

5. The public information activities will build a knowledgeable constituency interested in supporting and improving flood protection measures.

6. A community would have an added incentive to maintain its flood programs over the years. The fact that its CRS status could be affected by the elimination of a flood related activity or a weakening of the regulatory requirements for new developments would be taken into account by the governing board when considering such actions.

7. Every time residents pay their insurance premiums, they are reminded that the community is working to protect them from flood losses, even during dry years.

## NFIP Worksheets

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

## 4. Mitigation Strategy

### Introduction

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

Officials from all jurisdictions within the planning area confirmed the goals, objectives, actions and projects over the period of the hazard mitigation plan update process. The mitigation actions and projects in this 2023 HMP update are a product of analysis and review of the Caldwell Parish Hazard Mitigation Plan Planning Committee under the coordination of the Caldwell Parish Office of Homeland Security and Emergency Preparedness. The committee was presented a list of projects and actions, new and from the 2017 plan, for review from November 2022 – January 2023.

An online public opinion survey of Caldwell Parish residents was conducted between November 2022 to January 2023. The survey was designed to capture public perceptions and opinions regarding natural hazards in the Caldwell Parish planning area. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards.

This activity was created in an effort to confirm that the goals and action items developed by the Caldwell Parish Hazard Mitigation Plan Planning Committee are representative of the outlook of the community at large. However, because there were so few responses to the survey, this public feedback could not be incorporated into the plan. The full Caldwell Parish survey can be found at the following link:

[https://www.surveymonkey.com/results/SM-F6NuDtOJRM\\_2BZxfO5tzRx5g\\_3D\\_3D/](https://www.surveymonkey.com/results/SM-F6NuDtOJRM_2BZxfO5tzRx5g_3D_3D/)

### Goals

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

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

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

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

The goals are as follows:

1. Identify and pursue mitigation measures that will reduce future damages
2. Enhance public awareness and understanding of disaster preparedness
3. Reduce repetitive flood losses in the parish
4. Facilitate sound development in the parish to reduce or eliminate the potential impact of hazards

The Mitigation Action Plan focuses on actions to be taken by Caldwell Parish and its communities. All of the activities in the Mitigation Action Plan will be focused on helping the parish and its communities in developing and funding projects that are not only cost effective but also meet the other DMA 2000 criteria of environmental compatibility and technical feasibility.

After the adoption of the 2017 Caldwell Parish Hazard Mitigation Plan, large portions of North Louisiana were impacted by a flooding event whose ramifications are still being felt by the population. Because of this event, Caldwell Parish and its jurisdictions reprioritized its efforts and became much more aggressive in seeking funding for flood mitigation efforts, particularly related to drainage. Pressure was placed on political leaders throughout the parish and jurisdictions to ensure that money and resources were sought and made available to mitigate against such events in the future.

The Hazard Mitigation Plan Planning Committee reviewed and evaluated the potential action and project lists in which consideration was given to a variety of factors. Such factors include determining a project's eligibility for federal mitigation grants as well as its ability to be funded. This process required evaluation of each project's engineering feasibility, cost effectiveness, and environmental and cultural factors.

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

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

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

- **Local Plans and Regulations** – These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and Infrastructure Projects** – These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area, and also includes projects to construct manmade structures to reduce the impact of hazards.

- **Natural System Protection** – These actions minimize the damage and losses and also preserve or restore the functions of natural systems.
- **Education and Awareness Programs** – These actions inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

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

Caldwell Parish Mitigation Actions  
Previous Action Update

| Unincorporated Caldwell Parish Mitigation Actions   |   |                  |                        |  |   |         |  |
|---|---|------------------|------------------------|--|---|---------|--|
| Jurisdiction-Specific Action  | Action Description  | Funding Source   | Target Completion Date | Responsible Party, Agency, or Department | Hazard                                      | Goal    | Status   |
| CAL1: Building Retrofits  | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds and helps assure that the public buildings can be used, occupied and operable during or after storms.  | FEMA HGMP, Local | 1-5 years              | Caldwell Parish OHSEP                    | Thunderstorms, Tornadoes, Tropical Cyclones | 1, 2, 4 | Not Started - Carried Over (See Caldwell Parish Mitigation Action 1) |
| CAL2: Drainage Improvement  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA HGMP, Local | 1-5 years              | Caldwell Parish OHSEP                    | Flooding, Tropical Cyclones                 | 1, 3, 4 | In Progress  |
| CAL3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   | FEMA HGMP, Local | 1-5 years              | Caldwell Parish OHSEP                    | Flooding, Tropical Cyclones                 | 1, 3, 4 | Not Started - Carried Over (See Mitigation Action 2)                 |
| CAL4: Safe Room Projects  | Construction of a safe room for first responders located in Caldwell Parish. Other locations will be identified based on funding availability.  | FEMA HGMP, Local | 1-5 years              | Caldwell Parish OHSEP                    | Thunderstorms, Tornadoes, Tropical Cyclones | 1       | Not Started - Carried Over (See Mitigation Action 3)                 |

|   |   |                  |           |                       |   |            |  |
|---|---|------------------|-----------|-----------------------|---|------------|--|
| CAL5:<br>Education and Outreach                                 | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA HGMP, Local | 1-5 years | Caldwell Parish OHSEP | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2, 3, 4 | Not Started - Carried Over (See Mitigation Action 4) |
| CAL6:<br>Generators for Continuity of Operations and Government | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   | FEMA HGMP, Local | 1-5 years | Caldwell Parish OHSEP | Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather                               | 1, 2       | Not Started - Carried Over (See Mitigation Action 5) |
| CAL7:<br>Lightning Mitigation                                   | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property  | FEMA HGMP, Local | 1-5 years | Caldwell Parish OHSEP | Thunderstorms   | 1          | Not Started - Carried Over (See Mitigation Action 6) |
| CAL8: Warning Systems   | Update/upgrade public warning system components throughout Caldwell Parish as necessary. Install audible and/or reverse 911 warning system(s).  | FEMA HGMP, Local | 1-5 years | Caldwell Parish OHSEP | Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather                    | 1, 2       | Not Started - Carried Over (See Mitigation Action 7) |
| CAL9: Potable Water   | Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.  | FEMA HGMP, Local | 1-5 years | Caldwell Parish OHSEP | Drought, Thunderstorms, Tornadoes, Tropical Cyclones                                      | 1, 2       | Not Started - Carried Over (See Mitigation Action 8) |
| CAL10:<br>Promote Flood Insurance                               | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).   | FEMA HGMP, Local | 1-5 years | Caldwell Parish OHSEP | Dam Failure, Flooding, Levee Failure, Tropical Cyclones                                   | 1, 2, 3, 4 | Not Started - Carried Over (See Mitigation Action 9) |

|  |  |  |           |  |   |            |   |
|--|--|--|-----------|--|---|------------|---|
| CAL11: Dam and Levee Failure Working Group | Create a working group in order to assess the extent and determine the possible effects of a dam or levee failure.   | FEMA HGMP, Local                               | 1-5 years | Caldwell Parish OHSEP and Mayors                         | Dam Failure, Flooding Levee Failure   | 1, 2, 3, 4 | Not Started - Carried Over (See Mitigation Action 10) |
| CAL12: Public Awareness                    | Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding flood hazards, SFHA's, and potential mitigation measures using the local newspaper, utility bill inserts, inserts in the phone book, and parish hazards awareness website, and an educational program for school age children or "how to" classes in retrofitting by local merchants. Integrate "Disaster Resistance Education" into the public school curriculum. Provide public education on the importance of maintaining the ditches. Implement a public notification system, such as sirens or a call down system with a backup communication system. | Parish Budget, Grant Funding                   | 1-5 years | Parish School Board and OHLSEP Director                  | Dam Failure, Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2, 3, 4 | Deleted - Duplicate of CAL5                           |
| CAL13: Multi-Hazard Awareness              | Sponsor a "Multi-Hazard Awareness Week", to educate the public on hurricanes, tornadoes and severe storms (sheltering in place, evacuation, emergency preparedness, and structural retrofitting), flooding (evacuation, emergency preparedness, retrofitting, and flood insurance), thunderstorms and lightning (emergency preparedness).  | Parish and Town Budgets, Business and Industry | 1-5 years | Mayors and OHLSEP Director                               | Dam Failure, Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2, 3, 4 | Deleted - Duplicate of CAL5                           |
| CAL14: Master Drainage Plan                | Develop a master drainage plan which will evaluate drainage projects at major drainage laterals to determine best method of increasing drainage  | Parish and/or Drainage Board Budget            | 1-5 years | Parish Engineer and/or Parish Department of Public Works | Flooding  | 1, 3, 4    | Deleted - Duplicate of CAL2                           |

|   |  |  |           |  |          |         |   |
|---|--|--|-----------|--|----------|---------|---|
|   | capacity. Implement recommended projects resulting from drainage plan.   |  |           |  |          |         |   |
| CAL15:<br>Community Rating System                                       | Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums. | Parish Budget  | 1-5 years | Floodplain Manager   | Flooding | 1, 3, 4 | Not Started - Carried Over (See Mitigation Action 11) |
| CAL16:<br>Elevation, Acquisition, and Flood Proofing of Loss Structures | Pursue elevation/ acquisition/ flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA                                  | Parish Budget  | 1-5 years | Floodplain Manager   | Flooding | 1, 3, 4 | Deleted - Duplicate of CAL3                           |
| CAL17:<br>Interior Drainage Project                                     | Investigate and implement a localized interior drainage project in the repetitive loss areas and reduce its flood potential.   | Community Development Block Grant (CDBG), Flood Mitigation Assistance (FMA) Project Funds, Hazard Mitigation Grant Program (HMGP), Small Business Administration (SBA), U.S. Army Corps of Engineers - Section 205, and State Capital Outlay, Local Drainage Funds | 1-5 years | Parish and Town Floodplain Managers/ Public Works Director | Flooding | 1, 3, 4 | Deleted - Duplicate of CAL2                           |

|                           |  |                          |           |  |   |         |                             |
|---------------------------|--|--------------------------|-----------|--|---|---------|-----------------------------|
| CAL18: Back Up Generators | Add back up power supply/generators and construct safe rooms at the Corey Fire Station, Sandy Bayou Fire Station, Eastside Fire Station and the Hebert Fire Station. Add back up power supply/generators at the East Columbia Water Tank and the Hebert Water Tank.                  | Parish Budget            | 1-5 years | OHSEP Director   | Dam Failure, Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2, 4 | Deleted - Duplicate of CAL6 |
| CAL19: Improve Drainage   | Improve drainage ways, along the Ouachita and Boeuf Rivers, by enlarging any inferior culverts and replacing any substandard bridges along the major drainage laterals.  | Parish Budget            | 1-5 years | Parish Engineer and/or Parish Department of Public Works | Dam Failure, Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 3, 4 | Deleted - Duplicate of CAL2 |
| CAL20: Improve Drainage   | Improve drainage ways along Hurricane Creek A at Columbia Heights. Improve drainage ways along Hurricane Creek B- at Collins Road. Improve drainage ways along Hurricane Creek C- at Caldwell High School. Improve drainage ways along Hurricane Creek D- at LA 126 to Zeagler Road. | HMGP, PDM, Parish Budget | 1-5 years | Parish Police Jury                                       | Dam Failure, Flooding, Levee Failure, Tropical Cyclones   | 1, 4    | Deleted - Duplicate of CAL2 |

New Mitigation Actions

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 1</b>                                    | Building Retrofits   |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness<br>4. Facilitate sound development in the Parish and municipalities to reduce or eliminate the potential impact of hazards |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Retrofit public buildings exterior shell to maintain use during and after storm events   |
| <b>Type of Mitigation Action</b>  | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                  | Reduces damage from high wind related events, and helps assure that the public buildings can be used, occupied and operable during or after storms.  |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Thunderstorms, Tornadoes, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |   |
|---|---|
| DESCRIPTION   |   |
| <b>CALDWELL PARISH MITIGATION ACTION 2</b>                                    | Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures   |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP   |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury   |
| <b>TIMELINE</b>   | 1-5 years   |
| <b>COST ESTIMATE</b>  | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the Parish and municipalities to reduce or eliminate the potential impact of hazards |
| <b>PRIORITY</b>   | High  |
| <b>Action Description</b>   | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   |
| <b>Type of Mitigation Action</b>  | Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                  | Eliminates flooding risk of repetitive and severe repetitive loss structures.   |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>   | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 3</b>                                    | Safe Room Projects   |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards  |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Construction of a safe room for first responders located in Caldwell Parish. Other locations will be identified based on funding availability. |
| <b>Type of Mitigation Action</b>  | Structure and Infrastructure projects  |
| <b>How Action Aligns with Risk Reduction</b>                                  | Allows for continued operations of essential personal to actively respond during a natural hazard event  |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Thunderstorms, Tornadoes, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 4</b>                                    | Education and Outreach   |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for dam and levee failure, drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas   |
| <b>Type of Mitigation Action</b>  | Education and Awareness Programs   |
| <b>How Action Aligns with Risk Reduction</b>                                  | Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.   |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |   |
|---|---|
| DESCRIPTION   |   |
| <b>CALDWELL PARISH MITIGATION ACTION 5</b>                                    | Generators for continuity of operations and government  |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP   |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury   |
| <b>TIMELINE</b>   | 1-5 years   |
| <b>COST ESTIMATE</b>  | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>2. Enhance public awareness and understanding of disaster preparedness. |
| <b>PRIORITY</b>   | Medium  |
| <b>Action Description</b>   | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   |
| <b>Type of Mitigation Action</b>  | Local Plans and Regulations, Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                  | Installation of generators will allow public facilities to run accordingly and aid with local relief efforts  |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>   | Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 6</b>                                    | Lightning Mitigation   |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards  |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property   |
| <b>Type of Mitigation Action</b>  | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                  | The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity. |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Thunderstorms  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |   |
|---|---|
| DESCRIPTION   |   |
| <b>CALDWELL PARISH MITIGATION ACTION 7</b>                                    | Warning Systems   |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP   |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury   |
| <b>TIMELINE</b>   | 1-5 years   |
| <b>COST ESTIMATE</b>  | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness |
| <b>PRIORITY</b>   | Medium  |
| <b>Action Description</b>   | Update/upgrade public warning system components throughout Caldwell Parish as necessary. Install audible and/or reverse 911 warning system(s).                      |
| <b>Type of Mitigation Action</b>  | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                  | An upgraded public warning system will increase the likelihood of public notification immediately prior to an event   |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>   | Flooding, Dam Failure, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITGATION ACTION 8</b>                                     | Potable Water  |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness  |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. |
| <b>Type of Mitigation Action</b>  | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                  | Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.  |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 9</b>                                    | Promote Flood Insurance  |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>   | High   |
| <b>Action Description</b>   | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).  |
| <b>Type of Mitigation Action</b>  | Education and Awareness Programs   |
| <b>How Action Aligns with Risk Reduction</b>                                  | Educating the public on flood insurance will allow public to obtain insurance at a cost that's affordable to them and will help gain relief to their home and personal items during post-flood events  |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Dam Failure, Flooding, Levee Failure, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 10</b>                                   | Dam and Levee Failure Working Group  |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP and Mayors   |
| <b>SUPPORTING AGENCIES</b>  | US Army Corps of Engineers   |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>   | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Create a working group in order to assess the extent and determine the possible impact of a dam or levee failure.  |
| <b>Type of Mitigation Action</b>  | Natural System Protection  |
| <b>How Action Aligns with Risk Reduction</b>                                  | Creation of working group will allow dams and levees to be assessed and determine the possible outcomes during failure. This is a preventive measure that will allow the group to call upon others to reinforce structures if failure event is imminent.   |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Dam Failure, Flooding, Levee Failure   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>CALDWELL PARISH |  |
|---|--|
| DESCRIPTION   |  |
| <b>CALDWELL PARISH MITIGATION ACTION 11</b>                                   | Community Rating System  |
| <b>LEAD AGENCY</b>  | Caldwell Parish OHSEP  |
| <b>SUPPORTING AGENCIES</b>  | Caldwell Parish Police Jury  |
| <b>TIMELINE</b>   | 1-5 years  |
| <b>COST ESTIMATE</b>  | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>   | Parish Budget  |
| <b>ASSOCIATED GOALS</b>   | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.  |
| <b>PRIORITY</b>   | Medium   |
| <b>Action Description</b>   | Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums. |
| <b>Type of Mitigation Action</b>  | Education and Awareness Programs, Local Plans and Regulations  |
| <b>How Action Aligns with Risk Reduction</b>                                  | Education of CRS program can result in flood insurance premium discounts allowing the public to invest in flood insurance or to have other items covered.  |
| <b>Current Status of Action</b>   | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>   | Flooding   |

**Additional Supporting Information:**

Town of Clarks Mitigation Actions  
Previous Action Update

| Town of Clarks  |   |                        |                        |  |   |         |   |
|---|---|------------------------|------------------------|--|---|---------|---|
| Jurisdiction-Specific Action  | Action Description  | Funding Source         | Target Completion Date | Responsible Party, Agency, or Department | Hazard                                      | Goal    | Status  |
| CLA1: Building Retrofits  | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds and helps assure that the public buildings can be used, occupied and operable during or after storms.  | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Clarks/Caldwell Parish OHSEP     | Thunderstorms, Tornadoes, Tropical Cyclones | 1, 2, 4 | Not Started<br>Carried Over (See Mitigation Action 1)   |
| CLA2: Drainage Improvement  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Clarks/Caldwell Parish OHSEP     | Flooding, Tropical Cyclones                 | 1, 3, 4 | Not Started -<br>Carried Over (See Mitigation Action 2) |
| CLA3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Clarks/Caldwell Parish OHSEP     | Flooding, Tropical Cyclones                 | 1, 3, 4 | Not Started -<br>Carried Over (See Mitigation Action 3) |
| CLA4: Safe Room Projects  | Construction of a safe room for first responders located in Clarks. Other locations will be identified based on funding availability.   | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Clarks/Caldwell Parish OHSEP     | Thunderstorms, Tornadoes, Tropical Cyclones | 1       | Not Started -<br>Carried Over (See Mitigation Action 4) |

|   |   |   |           |  |   |               |  |
|---|---|---|-----------|--|---|---------------|--|
| CLA5:<br>Education and Outreach                                 | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, winter weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA<br>HGMP,<br>Local                                | 1-5 years | Town of<br>Clarks/Caldwell<br>Parish OHSEP | Drought, Flooding,<br>Thunderstorms,<br>Tornadoes, Tropical<br>Cyclones, Wildfires,<br>Winter Weather | 1, 2,<br>3, 4 | Not Started -<br>Carried Over (See<br>Mitigation Action<br>5)  |
| CLA6:<br>Generators for Continuity of Operations and Government | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   | FEMA<br>HGMP,<br>Local                                | 1-5 years | Town of<br>Clarks/Caldwell<br>Parish OHSEP | Thunderstorms,<br>Tornadoes, Tropical<br>Cyclones, Winter<br>Weather                                  | 1, 2          | Not Started -<br>Carried Over (See<br>Mitigation Action<br>6)  |
| CLA7:<br>Lightning Mitigation                                   | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property  | FEMA<br>HGMP,<br>Local                                | 1-5 years | Town of<br>Clarks/Caldwell<br>Parish OHSEP | Thunderstorms   | 1             | Not Started -<br>Carried Over (See<br>Mitigation Action<br>7)  |
| CLA8:<br>Warning Systems  | Update/upgrade public warning system components throughout Clarks as necessary. Install audible and/or reverse 911 warning system(s).   | FEMA<br>HGMP,<br>Local                                | 1-5 years | Town of<br>Clarks/Caldwell<br>Parish OHSEP | Thunderstorms,<br>Tornadoes, Tropical<br>Cyclones, Wildfires,<br>Winter Weather                       | 1, 2          | Not Started -<br>Carried Over (See<br>Mitigation Action<br>8)  |
| CLA9: Potable Water   | Create redundancy of potable water supply to critical facilities, especially hospitals, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations.  | FEMA<br>HGMP,<br>Local                                | 1-5 years | Town of<br>Clarks/Caldwell<br>Parish OHSEP | Drought,<br>Thunderstorms,<br>Tornadoes, Tropical<br>Cyclones   | 1, 2          | Not Started -<br>Carried Over (See<br>Mitigation Action<br>9)  |
| CLA10:<br>Promote Flood Insurance                               | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).   | FEMA<br>HGMP,<br>Local                                | 1-5 years | Town of<br>Clarks/Caldwell<br>Parish OHSEP | Flooding, Tropical<br>Cyclones  | 1, 2,<br>3, 4 | Not Started -<br>Carried Over (See<br>Mitigation Action<br>10) |
| CLA11: Public Awareness   | Implement a public education program  | Town<br>Budget,<br>HMGP,<br>Local<br>Partnership<br>s | 1-5 years | OHSEP Director,<br>Mayor's Office          | Drought, Flooding,<br>Thunderstorms,<br>Tornadoes, Tropical<br>Cyclones, Wildfires,<br>Winter Weather | 1, 2,<br>3, 4 | Deleted -<br>Duplicate of CLA5                                 |

|                                      |  |                             |           |  |   |         |   |
|--------------------------------------|--|-----------------------------|-----------|--|---|---------|---|
| CLA12:<br>Installation of Generators | Install a generator to Town Hall   | Town Budget, HMGP           | 1-5 years | OHSEP Director, Mayor's Office                     | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1       | Deleted - Duplicate of CLA5                           |
| CLA13:<br>Installation of Generators | Procure mobile generators for sewer lift stations  | Town Budget, HMGP           | 1-5 years | OHSEP Director, Public Works Department            | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1       | Deleted - Duplicate of CLA6                           |
| CLA14:<br>Installation of Generators | Install a generator at sewage treatment plants   | Town Budget, HMGP           | 1-5 years | OHSEP Director, Public Works Department            | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1       | Deleted - Duplicate of CLA6                           |
| CLA15:<br>Emergency Plan             | Encourage churches and community groups to assist person at risk during power outages and to develop an emergency plan | Local Partnerships          | 1-5 years | OHSEP Director, Mayor's Office, Volunteer Agencies | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2, 4 | Not Started - Carried Over (See Mitigation Plan 12)   |
| CLA16:<br>Drainage Project           | Develop a drainage project for the Minger Lane area to reduce flooding   | Town Budget, HMGP, FMA, PDM | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Tropical Cyclones   | 1, 3, 4 | Deleted - Duplicate of CLA2                           |
| CLA17: Sewer Project                 | Develop sewer rehabilitation project   | Town Budget, HMGP, FMA, PDM | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Tropical Cyclones   | 1, 4    | Not Started - Carried Over (See Mitigation Action 13) |
| CLA18:<br>Culvert Extension          | Culvert extension project for the Sixth Street area at the north end of town   | Town Budget, HMGP, FMA, PDM | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Tropical Cyclones   | 1, 3, 4 | Not Started - Carried Over (See Mitigation Action 14) |
| CLA19:<br>Maintain Drainage          | Maintain drainage ditch that runs past the fire station  | Town Budget                 | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Tropical Cyclones   | 1, 3, 4 | Deleted - Duplicate of CLA2                           |
| CLA20: Resize Culverts               | Resize 4-5 culverts throughout town to reduce flooding   | Town Budget, HMGP, PDM, FMA | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Tropical Cyclones   | 1, 3, 4 | Not Started - Carried Over (See Mitigation Action 15) |
| CLA21:<br>Retrofit Roof              | Retrofit roof of Town Hall   | Town Budget, HMGP, PDM      | 1-5 years | OHSEP Director, Mayor's Office                     | Thunderstorms, Tornadoes, Tropical Cyclones   | 1, 2, 4 | Completed   |

|  |   |                                     |           |   |  |            |   |
|--|---|-------------------------------------|-----------|---|--|------------|---|
| CLA22:<br>Window<br>Hardening                | Harden Town Hall windows with shatter-resistant film  | Town Budget, HMGP, PDM              | 1-5 years | OHSEP Director, Mayor's Office                                  | Thunderstorms, Tornadoes, Tropical Cyclones                | 1, 4       | Deleted - Duplicate of CLA1                           |
| CLA23:<br>Removal of<br>Debris               | Remove trees and other potential debris from areas around water wells and Town Hall   | Town Budget, HMGP, PDM              | 1-5 years | OHSEP Director, Mayor's Office                                  | Thunderstorms, Tornadoes, Tropical Cyclones                | 1, 4       | Not Started - Carried Over (See Mitigation Action 16) |
| CLA24:<br>Improve<br>Drainage                | Assist Parish to improve drainage ways, along the Ouachita and Boeuf Rivers, by enlarging any inferior culverts and replacing any substandard bridges along the major drainage laterals.  | Parish Budget                       | 1-5 years | Mayor, Parish Engineer and/or Parish Department of Public Works | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather | 1, 3, 4    | Deleted - Duplicate of CLA2                           |
| CLA25:<br>Develop<br>Master<br>Drainage Plan | Assist Parish to develop a master drainage plan, which will evaluate drainage projects at major drainage laterals to determine best method of increasing drainage capacity. Implement recommended projects resulting from drainage plan | Parish and/or Drainage Board Budget | 1-5 years | Mayor, Parish Engineer and/or Parish Department of Public Works | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather | 1, 2, 3, 4 | Deleted - Duplicate of CLA2                           |
| CLA26: Flood Insurance                       | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).   | Town Budget                         | 1-5 years | Mayor, Parish Emergency Manager                                 | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather | 1, 2, 3, 4 | Deleted - Duplicate of CLA 10                         |

|                                       |   |  |                  |  |  |                   |  |
|---------------------------------------|---|--|------------------|--|--|-------------------|--|
| <p>CLA27: Public Awareness</p>        | <p>Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding flood hazards, SFHA's, and potential mitigation measures using the local newspaper, utility bill inserts, inserts in the phone book, and parish hazards awareness website, and an educational program for school age children or "how to" classes in retrofitting by local merchants. Integrate "Disaster Resistance Education" into the public school curriculum. Provide public education on the importance of maintaining the ditches. Implement a public notification system, such as sirens or a call down system with a backup communication system.</p> | <p>Town Budget, Grant Funding</p>  | <p>1-5 years</p> | <p>Mayors, Parish School Board, and Parish Emergency Manager</p> | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p>            | <p>1, 2, 3, 4</p> | <p>Deleted - Duplicate of CLA6</p>                           |
| <p>CLA28: Multi-Hazard Awareness</p>  | <p>Assist Parish to sponsor a "Multi-Hazard Awareness Week", to educate the public on hurricanes, tornadoes and severe storms (sheltering in place, evacuation, emergency preparedness, and structural retrofitting), flooding (evacuation, emergency preparedness, retrofitting, and flood insurance), thunderstorms and lightning (emergency preparedness).</p>   | <p>Parish and Town Budgets; Businesses and Industry</p>  | <p>1-5 years</p> | <p>Mayors and Parish Emergency Manager</p>                       | <p>Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather</p> | <p>1, 2, 3, 4</p> | <p>Deleted - Duplicate of CLA6</p>                           |
| <p>CLA29: Flood Proofing Projects</p> | <p>Pursue elevation / acquisition / flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA.</p>   | <p>CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds</p> | <p>1-5 years</p> | <p>Floodplain Manager</p>  | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p>            | <p>1, 3, 4</p>    | <p>Not Started - Carried Over (See Mitigation Action 17)</p> |

|   |   |  |                  |  |   |                |  |
|---|---|--|------------------|--|---|----------------|--|
| <p>CLA30:<br/>Interior<br/>Drainage<br/>Project</p> | <p>Investigate and implement a localized interior drainage project in the repetitive loss areas, and reduce its flood potential.</p>  | <p>CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds</p> | <p>1-5 years</p> | <p>Parish and Town Floodplain Managers / Public Works Director</p> | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p> | <p>1, 3, 4</p> | <p>Deleted – Duplicate of CLA2</p>                           |
| <p>CLA31:<br/>Community<br/>Rating<br/>System</p>   | <p>Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums.</p>   | <p>Town Budget</p>   | <p>1-5 years</p> | <p>Mayor, Floodplain Manager</p>                                   | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p> | <p>1, 3, 4</p> | <p>Not Started - Carried Over (See Mitigation Action 18)</p> |
| <p>CLA32:<br/>Regulate New<br/>Development</p>      | <p>Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; storm water retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages.</p> | <p>Town Budget</p>   | <p>1-5 years</p> | <p>Mayor, Planning Director</p>                                    | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p> | <p>1, 3, 4</p> | <p>Not Started - Carried Over (See Mitigation Action 19)</p> |

New Mitigation Actions

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS<br/>MITIGATION ACTION 1</b>                                | Building Retrofits   |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING<br/>SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness<br>4. Facilitate sound development in the Parish and municipalities to reduce or eliminate the potential impact of hazards |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high wind events and helps assure that the public buildings can be used, occupied and operable during or after storms.   |
| <b>Type of Mitigation<br/>Action</b>   | Structure and Infrastructure   |
| <b>How Action Aligns with Risk<br/>Reduction</b>                             | Reduces damage from high wind related events, and helps assure that the public buildings can be used, occupied and operable during or after storms.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITGATION ACTION 2</b>                                     | Drainage Improvement  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.              |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITGATION ACTION 3</b>                                     | Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures   |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   |
| <b>Type of Mitigation Action</b>   | Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Eliminates flooding risk of repetitive and severe repetitive loss structures.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITGATION ACTION 4</b>                                     | Safe Room Projects  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.  |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Construction of a safe room for first responders located in Clarks. Other locations will be identified based on funding availability. |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Allows for continued operations of essential personal to actively respond during a natural hazard event                               |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITIGATION ACTION 5</b>                                    | Education and Outreach   |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for dam and levee failure, drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter weather hazards as well as providing information on high risk areas   |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS<br/>MITIGATION ACTION 6</b>                                | Generators for continuity of operations and government  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Department   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING<br/>SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>2. Enhance public awareness and understanding of disaster preparedness. |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   |
| <b>Type of Mitigation<br/>Action</b>   | Local Plans and Regulations, Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk<br/>Reduction</b>                             | Installation of generators will allow public facilities to run accordingly and aid with local relief efforts  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITGATION ACTION 7</b>                                     | Lightning Mitigation   |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                 | The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity. |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITGATION ACTION 8</b>                                     | Warning Systems   |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Update/upgrade public warning system components throughout Clarks as necessary. Install audible and/or reverse 911 warning system(s).                               |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure  |
| <b>How Action Aligns with Risk Reduction</b>                                 | An upgraded public warning system will increase the likelihood of public notification immediately prior to an event   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITGATION ACTION 9</b>                                     | Potable Water  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Create redundancy of potable water supply to critical facilities, especially hospitals, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                 | Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Drought, Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITIGATION ACTION 10</b>                                   | Promote Flood Insurance  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High   |
| <b>Action Description</b>  | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).  |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITIGATION ACTION 11</b>                                   | Emergency Plan  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | OHSEP Director, Volunteer Agencies  |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Local Partnerships  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Encourage churches and community groups to assist person at risk during power outages and to develop an emergency plan  |
| <b>Type of Mitigation Action</b>   | Local Plans and Regulations   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Creation of emergency plans will allow for a fluent transition from preparedness to response in mitigation cycle. Will also help prevent the chances of death among at risk groups  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITIGATION ACTION 12</b>                                   | Sewer Project  |
| <b>LEAD AGENCY</b>   | OHSEP Director   |
| <b>SUPPORTING AGENCIES</b>   | Public Works Department  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, FMA, PDM  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Develop sewer rehabilitation project   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                 | Sewer rehabilitation project will allow sewer system to remain up to code and prevent further hazards that may occur in the event of a natural disaster  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITIGATION ACTION 13</b>                                   | Culvert Extension   |
| <b>LEAD AGENCY</b>   | OHSEP Director  |
| <b>SUPPORTING AGENCIES</b>   | Public Works Department   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, FMA, PDM   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Culvert extension project for the Sixth Street area at the north end of town  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Culvert extension project will allow for standing water flood chances to be decreased   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITIGATION ACTION 14</b>                                   | Resize Culverts   |
| <b>LEAD AGENCY</b>   | OHSEP Director  |
| <b>SUPPORTING AGENCIES</b>   | Public Works Department   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, PDM, FMA   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Resize 4-5 culverts throughout town to reduce flooding  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Resizing of culverts will allow more water to pass through the conduit preventing backwater flooding  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITIGATION ACTION 15</b>                                   | Removal of Debris  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | OHSEP Director   |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, PDM   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Remove trees and other potential debris from areas around water wells and Town Hall  |
| <b>Type of Mitigation Action</b>   | Natural Systems protection   |
| <b>How Action Aligns with Risk Reduction</b>                                 | Removal of debris from public access roads as well as well as water wells will ensure a stronger level of public safety as well as prevent backup in wells   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITGATION ACTION 16</b>                                    | Flood Proofing Projects   |
| <b>LEAD AGENCY</b>   | Floodplain Manager  |
| <b>SUPPORTING AGENCIES</b>   | Town of Clarks Mayor’s Office   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Pursue elevation / acquisition / flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA.                            |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects, Natural System Protection  |
| <b>How Action Aligns with Risk Reduction</b>                                 | Flood proofing projects will allow for additional building code reform to prevent repetitive flood loss that certain facilities face  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF CLARKS MITIGATION ACTION 17</b>                                   | Community Rating System  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Floodplain Manager   |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damage from hazards.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>     |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums. |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs, Local Plans and Regulations  |
| <b>How Action Aligns with Risk Reduction</b>                                 | Education of CRS program can result in flood insurance premium discounts allowing the public to invest in flood insurance or to have other items covered.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF CLARKS |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF CLARKS MITIGATION ACTION 18</b>                                   | Regulate New Development  |
| <b>LEAD AGENCY</b>   | Town of Clarks Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Planning Director   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.   |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; storm water retention ponds; dikes; levees and floodwalls if appropriate and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages. |
| <b>Type of Mitigation Action</b>   | Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                 | New development plans will allow for less repercussions from natural disasters  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather  |

**Additional Supporting Information:**

Town of Columbia Mitigation Actions  
Previous Action Update

| Town of Columbia  |   |                        |                        |   |  |         |  |
|---|---|------------------------|------------------------|---|--|---------|--|
| Jurisdiction-Specific Action  | Action Description  | Funding Source         | Target Completion Date | Responsible Party, Agency, or Department      | Hazard   | Goal    | Status   |
| COL1: Building Retrofits  | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds and helps assure that the public buildings can be used, occupied and operable during or after storms.  | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Columbia/<br>Caldwell Parish<br>OHSEP | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones | 1, 2, 4 | Completed  |
| COL2: Drainage Improvement  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Columbia/<br>Caldwell Parish<br>OHSEP | Flooding,<br>Tropical<br>Cyclones                    | 1, 3, 4 | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 1) |
| COL3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Columbia/<br>Caldwell Parish<br>OHSEP | Flooding,<br>Tropical<br>Cyclones                    | 1, 3, 4 | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 2) |
| COL4: Safe Room Projects  | Construction of a safe room for first responders located in Columbia. Other locations will be identified based on funding availability.   | FEMA<br>HGMP,<br>Local | 1-5 years              | Town of Columbia/<br>Caldwell Parish<br>OHSEP | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones | 1       | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 3) |

|  |   |                        |           |  |  |               |  |
|--|---|------------------------|-----------|--|--|---------------|--|
| COL5:<br>Education<br>and Outreach   | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, winter weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Drought,<br>Flooding,<br>Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones,<br>Wildfires,<br>Winter Weather | 1, 2, 3,<br>4 | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 4) |
| COL6:<br>Generators<br>for<br>Continuity of<br>Operations<br>and<br>Government | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones,<br>Winter Weather  | 1, 2          | In Progress  |
| COL7:<br>Lightning<br>Mitigation   | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property  | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Thunderstorms  | 1             | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 5) |
| COL8:<br>Warning<br>Systems  | Update/upgrade public warning system components throughout Columbia as necessary. Install audible and/or reverse 911 warning system(s).   | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones,<br>Wildfires,<br>Winter Weather                          | 1, 2          | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 6) |
| COL9:<br>Potable<br>Water  | Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/ installation of backflow preventers at appropriate critical locations.   | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Drought,<br>Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones   | 1, 2          | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 7) |
| COL10:<br>Promote<br>Flood<br>Insurance  | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).   | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Flooding, Levee<br>Failure, Tropical<br>Cyclones   | 1, 2, 3,<br>4 | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 8) |
| COL11: Levee<br>Failure<br>Working<br>Group                                    | Create a working group in order to assess the extent and determine the possible effects of a dam or levee failure.  | FEMA<br>HGMP,<br>Local | 1-5 years | Town of<br>Columbia/<br>Caldwell Parish<br>OHSEP | Flooding Levee<br>Failure  | 1, 2, 3,<br>4 | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 9) |

|  |  |   |           |  |  |         |   |
|--|--|---|-----------|--|--|---------|---|
| COL12: Public Education                    | Implement public education program   | Town Budget, HMGP, Local Partnerships   | 1-5 years | OHSEP Director, Mayor's Office                     | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2    | Deleted - Duplicate of COL5                           |
| COL13: Portable Generators                 | Purchase portable generator(s) for lift stations   | Town Budget, HMGP                       | 1-5 years | OHSEP Director, Public Works Department            | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1       | Deleted - Duplicate of COL6                           |
| COL14: Installation of Permanent Generator | Install permanent generator for sewer system   | Town Budget, HMGP                       | 1-5 years | OHSEP Director, Public Works Department            | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1       | Deleted - Duplicate of COL6                           |
| COL15: Installation of Generator           | Install generator at Town pump   | Town Budget, HMGP                       | 1-5 years | OHSEP Director, Public Works Department            | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 3, 4 | Deleted - Duplicate of COL6                           |
| COL16: At Risk Citizens Assist             | Identify at-risk citizens; encourage churches and other community groups to assist them during power outages, and to develop emergency plans to provide shelter during power outages | Local Partnerships                      | 1-5 years | OHSEP Director, Mayor's Office, Volunteer Agencies | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2, 4 | Not Started - Carried Over (See Mitigation Action 10) |
| COL17: Flood Solution                      | Identify solution to Pearl Street flooding caused by poorly maintained drain on private property   | Town Budget, Grants                     | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Levee Failure, Tropical Cyclones   | 1, 3, 4 | In Progress   |
| COL18: Surface Level Solution              | Identify issues associated with a potential 18" change in surface levels to the sump area, resulting from the Sherman Lake Cleanup Project   | Town Budget, HMGP, FMA, PDM             | 1-5 years | OHSEP Director, Public Works Department            | Flooding, Levee Failure, Tropical Cyclones   | 1, 3, 4 | Not Started - Carried Over (See Mitigation Action 11) |
| COL19: New Pumps                           | Procure engineering study to consider size for new pumps   | OHSEP Director, Public Works Department | 1-5 years | Town Budget  | Flooding, Levee Failure, Tropical Cyclones   | 1, 3, 4 | In Progress   |

|   |   |   |           |   |  |         |   |
|---|---|---|-----------|---|--|---------|---|
| COL20:<br>Rehabilitate<br>Drainage          | Procure engineering study to determine solutions to storm water infiltration of sewer lines; Rehabilitate drainage structures to prevent storm water infiltration into sewer lines  | OHSEP<br>Director,<br>Public<br>Works<br>Department | 1-5 years | Town<br>Budget,<br>HMGP,<br>FMA, PDM  | Flooding,<br>Levee Failure,<br>Tropical<br>Cyclones                                      | 1, 3, 4 | Deleted -<br>Duplicate of<br>COL1                                 |
| COL21:<br>Flooding<br>Issues                | Address flooding issues in<br>Town Hall area  | OHSEP<br>Director,<br>Public<br>Works<br>Department | 1-5 years | Town<br>Budget,<br>HMGP,<br>FMA, PDM  | Flooding,<br>Levee Failure,<br>Tropical<br>Cyclones                                      | 1, 3, 4 | Completed   |
| COL22:<br>Resize<br>Culverts                | Resize existing 72" culverts to match 96" culverts installed by Highway Department along Highway 165  | OHSEP<br>Director,<br>Public<br>Works<br>Department | 1-5 years | Town<br>Budget,<br>HMGP,<br>FMA, PDM  | Flooding,<br>Levee Failure,<br>Tropical<br>Cyclones                                      | 1, 3, 4 | Not Started -<br>Carried Over<br>(See<br>Mitigation<br>Action 12) |
| COL23:<br>Retrofit Roof                     | Retrofit Town Hall roof   | Town<br>Budget,<br>HMGP,<br>PDM                     | 1-5 years | OHSEP<br>Director,<br>Mayor's Office  | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones                                     | 1       | Completed   |
| COL24: Assist<br>in Drainage<br>Improvement | Assist Parish to improve drainage ways, along the Ouachita and Boeuf Rivers, by enlarging any inferior culverts and replacing any substandard bridges along the major drainage laterals.  | Parish<br>Budget                                    | 1-5 years | Mayor, Parish<br>Engineer<br>and/or Parish<br>Department of<br>Public Works | Flooding, Levee<br>Failure,<br>Thunderstorms,<br>Tropical<br>Cyclones,<br>Winter Weather | 1, 3, 4 | Deleted-<br>Duplicate of<br>COL6                                  |
| COL25:<br>Master<br>Drainage<br>Plan        | Assist Parish to develop a master drainage plan, which will evaluate drainage projects at major drainage laterals to determine best method of increasing drainage capacity. Implement recommended projects resulting from drainage plan | Parish<br>and/or<br>Drainage<br>Board<br>Budget     | 1-5 years | Mayor, Parish<br>Engineer<br>and/or Parish<br>Department of<br>Public Works | Flooding, Levee<br>Failure,<br>Thunderstorms,<br>Tropical<br>Cyclones,<br>Winter Weather | 1, 3, 4 | Deleted -<br>Duplicate of<br>COL2                                 |

|                                  |  |   |           |   |  |         |   |
|----------------------------------|--|---|-----------|---|--|---------|---|
| COL26:<br>Public Awareness       | Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding flood hazards, SFHA's, and potential mitigation measures using the local newspaper, utility bill inserts, inserts in the phone book, and parish hazards awareness website, and an educational program for school age children or "how to" classes in retrofitting by local merchants. Integrate "Disaster Resistance Education" into the public school curriculum. Provide public education on the importance of maintaining the ditches. Implement a public notification system, such as sirens or a call down system with a backup communication system. | Town Budget, Grant Funding  | 1-5 years | Mayors, Parish School Board, and Parish Emergency Manager   | Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather |         | Deleted - Duplicate of COL5                           |
| COL27:<br>Multi-Hazard Awareness | Assist Parish to sponsor a "Multi-Hazard Awareness Week", to educate the public on hurricanes, tornadoes and severe storms (sheltering in place, evacuation, emergency preparedness, and structural retrofitting), flooding (evacuation, emergency preparedness, retrofitting, and flood insurance), thunderstorms and lightning (emergency preparedness)  | Parish and Town Budes; Businesses and Industry  | 1-5 years | Mayors and Parish Emergency Manager                         | Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather |         | Deleted - Duplicate of COL5                           |
| COL28: Flood Proofing            | Pursue elevation/acquisition/flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA.   | CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds | 1-5 years | Floodplain Manager  | Flooding, Levee Failure, Thunderstorms, Tropical Cyclones, Winter Weather            | 1, 3, 4 | Not Started - Carried Over (See Mitigation Action 13) |
| COL29:<br>Interior Drainage      | Investigate and implement a localized interior drainage project in the repetitive loss areas, and reduce its flood potential.  | CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds | 1-5 years | Parish and Town Floodplain Managers / Public Works Director | Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather |         | Deleted - Duplicate of COL2                           |

|  |   |                    |                  |                                  |   |                |  |
|--|---|--------------------|------------------|----------------------------------|---|----------------|--|
| <p>COL30:<br/>Community Rating System</p>  | <p>Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums.</p>   | <p>Town Budget</p> | <p>1-5 years</p> | <p>Mayor, Floodplain Manager</p> | <p>Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather</p> | <p>1, 3, 4</p> | <p>Not Started - Carried Over (See Mitigation Action 14)</p> |
| <p>COL31:<br/>Regulate New Development</p> | <p>Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; storm water retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages.</p> | <p>Town Budget</p> | <p>1-5 years</p> | <p>Mayor, Planning Director</p>  | <p>Flooding, Levee Failure, Thunderstorms, Tropical Cyclones, Winter Weather</p>            | <p>1, 3, 4</p> | <p>Not Started - Carried Over (See Mitigation Action 15)</p> |

New Mitigation Actions

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 1</b>                                    | Drainage Improvement  |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.              |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 2</b>                                    | Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures   |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   |
| <b>Type of Mitigation Action</b>   | Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Eliminates flooding risk of repetitive and severe repetitive loss structures.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017  |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITGATION ACTION 3</b>                                     | Safe Room Projects  |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.  |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Construction of a safe room for first responders located in Columbia. Other locations will be identified based on funding availability. |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Allows for continued operations of essential personal to actively respond during a natural hazard event                                 |
| <b>Current Status of Action</b>  | Not Started - Carried Over  |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF COLUMBIA MITGATION ACTION 4</b>                                     | Education and Outreach   |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>                                       |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for dam and levee failure, drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, and winter storm hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 5</b>                                    | Lightning Mitigation   |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                   | The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity. |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITGATION ACTION 6</b>                                     | Warning Systems   |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Update/upgrade public warning system components throughout Columbia as necessary. Install audible and/or reverse 911 warning system(s).                             |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure  |
| <b>How Action Aligns with Risk Reduction</b>                                   | An upgraded public warning system will increase the likelihood of public notification immediately prior to an event   |
| <b>Current Status of Action</b>  | Not Started – Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Dam Failure, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF COLUMBIA MITGATION ACTION 7</b>                                     | Potable Water  |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Create redundancy of potable water supply to critical facilities, especially hospitals in Parish, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                   | Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Drought, Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF COLUMBIA MITGATION ACTION 8</b>                                     | Promote Flood Insurance  |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High   |
| <b>Action Description</b>  | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).  |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Levee Failure, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 9</b>                                    | Levee Failure Working Group  |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Create a working group in order to assess the extent and determine the possible effects of a dam or levee failure.   |
| <b>Type of Mitigation Action</b>   | Natural Systems Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Creation of working group will allow dams and levees to be assessed and determine the possible outcomes during failure. This is a preventive measure that will allow the group to call upon others to reinforce structures if failure event is imminent.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding Levee Failure   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA<br/>MITIGATION ACTION 10</b>                               | At Risk Citizens Assist   |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor's Office   |
| <b>SUPPORTING AGENCIES</b>   | OHSEP Director, Volunteer Agencies  |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING<br/>SOURCE(S)</b>  | Local Partnerships  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Identify at-risk citizens; encourage churches and other community groups to assist them during power outages, and to develop emergency plans to provide shelter during power outages  |
| <b>Type of Mitigation<br/>Action</b>   | Local Plans and Regulations   |
| <b>How Action Aligns with Risk<br/>Reduction</b>                               | Creation of emergency plans will allow for a fluent transition from preparedness to response in mitigation cycle. Will also help prevent the chances of death among at risk groups  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 11</b>                                   | Surface Level Solution  |
| <b>LEAD AGENCY</b>   | OHSEP Director  |
| <b>SUPPORTING AGENCIES</b>   | Public Works Department   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, FMA, PDM   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Identify issues associated with a potential 18” change in surface levels to the sump area, resulting from the Sherman Lake Cleanup Project  |
| <b>Type of Mitigation Action</b>   | Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Identifying issues will ensure necessary actions are taken for the sump to function properly in removing undesirable materials in accordance with the Sherman Lake Cleanup Project  |
| <b>Current Status of Action</b>  | Not Started – Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Levee Failure, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 12</b>                                   | Resize Culverts   |
| <b>LEAD AGENCY</b>   | OHSEP Director  |
| <b>SUPPORTING AGENCIES</b>   | Public Works Department   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, FMA, PDM   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Resize existing 72” culverts to match 96” culverts installed by Highway Department along Highway 165  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                   | Resizing of culverts will allow more water to pass through the conduit preventing backwater flooding  |
| <b>Current Status of Action</b>  | Not Started – Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Levee Failure, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |   |
|--|---|
| DESCRIPTION  |   |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 13</b>                                   | Flood Proofing  |
| <b>LEAD AGENCY</b>   | Floodplain Manager  |
| <b>SUPPORTING AGENCIES</b>   | Town of Columbia Mayor’s Office   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Pursue elevation / acquisition / flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA.                            |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects, Natural System Protection  |
| <b>How Action Aligns with Risk Reduction</b>                                   | Flood proofing projects will allow for additional building code reform to prevent repetitive flood loss that certain facilities face  |
| <b>Current Status of Action</b>  | Not Started – Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Levee Failure, Thunderstorms, Tropical Cyclones, Winter Weather   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>TOWN OF COLUMBIA |  |
|--|--|
| DESCRIPTION  |  |
| <b>TOWN OF COLUMBIA MITIGATION ACTION 14</b>                                   | Community Rating System  |
| <b>LEAD AGENCY</b>   | Town of Columbia Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Floodplain Manager   |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damage from hazards.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>     |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums. |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs, Local Plans and Regulations  |
| <b>How Action Aligns with Risk Reduction</b>                                   | Education of CRS program can result in flood insurance premium discounts allowing the public to invest in flood insurance or to have other items covered.  |
| <b>Current Status of Action</b>  | Not Started – Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather   |

**Additional Supporting Information:**

Village of Grayson Mitigation Actions  
Previous Action Update

| Village of Grayson  |   |                  |                        |   |   |         |  |
|---|---|------------------|------------------------|---|---|---------|--|
| Jurisdiction-Specific Action  | Action Description  | Funding Source   | Target Completion Date | Responsible Party, Agency, or Department        | Hazard                                      | Goal    | Status   |
| GRA1: Building Retrofits  | Retrofit public buildings exterior shell to maintain use during and after storm events. Benefits: Reduces damage from high winds, and helps assure that the public buildings can be used, occupied and operable during or after storms.   | FEMA HGMP, Local | 1-5 years              | Village of Grayson/<br>Caldwell Parish<br>OHSEP | Thunderstorms, Tornadoes, Tropical Cyclones | 1, 2, 4 | Not Started - Carried Over (See Mitigation Action 1) |
| GRA2: Drainage Improvement  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation. Benefits: Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods. | FEMA HGMP, Local | 1-5 years              | Village of Grayson/<br>Caldwell Parish<br>OHSEP | Flooding, Tropical Cyclones                 | 1, 3, 4 | No Started – Carried Over (See Mitigation Action 2)  |
| GRA3: Mitigation of Repetitive Loss and Severe Repetitive Loss Properties and Other Hazard Prone Structures | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   | FEMA HGMP, Local | 1-5 years              | Village of Grayson/<br>Caldwell Parish<br>OHSEP | Flooding, Tropical Cyclones                 | 1, 3, 4 | Not Started- Carried Over (See Mitigation Action 3)  |
| GRA4: Safe Room Projects  | Construction of a safe room for first responders located in Grayson. Other locations will be identified based on funding availability.  | FEMA HGMP, Local | 1-5 years              | Village of Grayson/<br>Caldwell Parish<br>OHSEP | Thunderstorms, Tornadoes, Tropical Cyclones | 1       | Not Started- Carried Over (See Mitigation Action 4)  |

|   |   |                        |           |  |  |            |   |
|---|---|------------------------|-----------|--|--|------------|---|
| GRA5:<br>Education<br>and Outreach  | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for drought, flooding, thunderstorms, tornadoes, tropical cyclones, wildfires, winter weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. | FEMA<br>HGMP,<br>Local | 1-5 years | Village of<br>Grayson/<br>Caldwell Parish<br>OHSEP | Drought,<br>Flooding,<br>Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones,<br>Wildfires,<br>Winter Weather | 1, 2, 3, 4 | Not Started-<br>Carried Over<br>(See<br>Mitigation<br>Action 5) |
| GRA6:<br>Generators<br>for Continuity<br>of Operations<br>and<br>Government | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   | FEMA<br>HGMP,<br>Local | 1-5 years | Village of<br>Grayson/<br>Caldwell Parish<br>OHSEP | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones,<br>Winter Weather  | 1, 2       | Not Started-<br>Carried Over<br>(See<br>Mitigation<br>Action 6) |
| GRA7:<br>Lightning<br>Mitigation  | Procurement and Installation of Lightning rods and surge protectors for public buildings to preserve life and property  | FEMA<br>HGMP,<br>Local | 1-5 years | Village of<br>Grayson/<br>Caldwell Parish<br>OHSEP | Thunderstorms  | 1          | Not Started-<br>Carried Over<br>(See<br>Mitigation<br>Action 7) |
| GRA8:<br>Warning<br>Systems   | Update/upgrade public warning system components throughout Grayson as necessary. Install audible and/or reverse 911 warning system(s).  | FEMA<br>HGMP,<br>Local | 1-5 years | Village of<br>Grayson/<br>Caldwell Parish<br>OHSEP | Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones,<br>Wildfires,<br>Winter Weather                          | 1, 2       | Not Started-<br>Carried Over<br>(See<br>Mitigation<br>Action 8) |
| GRA9:<br>Potable<br>Water   | Create redundancy of potable water supply to critical facilities, especially hospitals, and provide protection of potable water supply by acquisition/ installation of backflow preventers at appropriate critical locations.   | FEMA<br>HGMP,<br>Local | 1-5 years | Village of<br>Grayson/<br>Caldwell Parish<br>OHSEP | Drought,<br>Thunderstorms,<br>Tornadoes,<br>Tropical<br>Cyclones   | 1, 2       | Not Started-<br>Carried Over<br>(See<br>Mitigation<br>Action 9) |

|                                   |   |                        |           |  |   |            |   |
|-----------------------------------|---|------------------------|-----------|--|---|------------|---|
| GRA10:<br>Promote Flood Insurance | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP). | FEMA HGMP, Local       | 1-5 years | Village of Grayson/<br>Caldwell Parish OHSEP | Flooding, Tropical Cyclones   | 1, 2, 3, 4 | Not Started-<br>Carried Over (See Mitigation Action 10) |
| GRA11:<br>Warning System          | Implementing a warning system for the Town (i.e.: NOAA all hazards radios or warning sirens)  | Town Budget, HMGP      | 1-5 years | OHSEP Director, Mayor's Office               | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2       | Deleted – Duplicate of GRA8                             |
| GRA12:<br>Generator Installation  | Install generator at Town Hall  | Town Budget, HMGP      | 1-5 years | OHSEP Director, Mayor's Office               | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2       | Deleted - Duplicate of GRA 6                            |
| GRA13:<br>Generator Installation  | Install generators at 2 Fire Stations   | Town Budget, HMGP      | 1-5 years | OHSEP Director, Fire Department              | Drought, Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather | 1, 2       | Deleted - Duplicate of GRA6                             |
| GRA14:<br>Drainage Project        | Drainage project to resolve flooding issues during large rain events at private residence (Willow Creek and Highway 850 near Highway 126 area)                  | Town Budget, HMGP, FMA | 1-5 years | OHSEP Director, Public Works Department      | Flooding, Tropical Cyclones   | 1, 3, 4    | Deleted - Duplicate of GRA2                             |
| GRA15:<br>Elevation Project       | Road elevation project for east end of Hines Street   | Town Budget, HMGP, FMA | 1-5 years | OHSEP Director, Public Works Department      | Flooding, Tropical Cyclones   | 1, 3, 4    | Not Started-<br>Carried Over (See Mitigation Action 12) |
| GRA16:<br>Resizing of Culvert     | Resize culvert on Elmer Lane  | Town Budget, HMGP, FMA | 1-5 years | OHSEP Director, Public Works Department      | Flooding, Tropical Cyclones   | 1, 3, 4    | Not Started-<br>Carried Over (See Mitigation Action 13) |
| GRA17:<br>Resizing of Culvert     | Resize culvert on Mixon Road (gravel surface)   | Town Budget, HMGP, FMA | 1-5 years | OHSEP Director, Public Works Department      | Flooding, Tropical Cyclones   | 1, 3, 4    | Not Started-<br>Carried Over (See Mitigation Action 14) |

|                                |  |                                     |           |   |  |            |   |
|--------------------------------|--|-------------------------------------|-----------|---|--|------------|---|
| GRA18: Roof Retrofitting       | Retrofit roof of Town Hall   | Town Budget, HMGP, PDM              | 1-5 years | OHSEP Director, Public Works Department                         | Thunderstorms, Tornadoes, Tropical Cyclones                | 1, 4       | Deleted - Duplicate of GRA1                         |
| GRA19: Wind Rods               | Maintain wind rods on water wells  | Town Budget                         | 1-5 years | OHSEP Director, Public Works Department                         | Thunderstorms, Tornadoes, Tropical Cyclones                | 1, 4       | Not Started-Carried Over (See Mitigation Action 15) |
| GRA20: Town Hall Retrofitting  | Retrofit Town Hall by hardening windows and doors  | Town Budget, HMGP, PDM              | 1-5 years | OHSEP Director, Public Works Department                         | Thunderstorms, Tornadoes, Tropical Cyclones                | 1, 4       | Deleted - Duplicate of GRA1                         |
| GRA21: Safe Room               | Retrofit safe room into existing Town Hall   | Town Budget, HMGP, PDM              | 1-5 years | OHSEP Director, Public Works Department                         | Thunderstorms, Tornadoes, Tropical Cyclones                | 1, 2, 4    | Deleted - Duplicate of GRA4                         |
| GRA22: Improve Drainage Way    | Assist Parish to improve drainage ways, along the Ouachita and Boeuf Rivers, by enlarging any inferior culverts and replacing any substandard bridges along the major drainage laterals. Benefits: To ensure water flows freely within the drainage system, which will protect the surrounding area from flooding.   | Parish Budget                       | 1-5 years | OHSEP Director, Public Works Department                         | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather | 1, 3, 4    | Deleted - Duplicate of GRA2                         |
| GRA23: Master Drainage Plan    | Assist Parish to develop a master drainage plan, which will evaluate drainage projects at major drainage laterals to determine best method of increasing drainage capacity. Implement recommended projects resulting from drainage plan. Benefits: Reduces the number of flooded structures by increasing the volume of water the pumps can handle at the final outfall. | Parish and/or Drainage Board Budget | 1-5 years | Mayor, Parish Engineer and/or Parish Department of Public Works | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather | 1, 3, 4    | Deleted - Duplicate of GRA2                         |
| GRA24: Promote Flood Insurance | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).  | Town Budget                         | 1-5 years | Mayor, Parish Emergency Manager                                 | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather | 1, 2, 3, 4 | Not Started-Carried Over (See Mitigation Action 16) |

|                                      |   |   |                  |  |  |                   |                                    |
|--------------------------------------|---|---|------------------|--|--|-------------------|------------------------------------|
| <p>GRA25: Public Awareness</p>       | <p>Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding flood hazards, SFHA's, and potential mitigation measures using the local newspaper, utility bill inserts, inserts in the phone book, and parish hazards awareness website, and an educational program for school age children or "how to" classes in retrofitting by local merchants. Integrate "Disaster Resistance Education" into the public school curriculum. Provide public education on the importance of maintaining the ditches. Implement a public notification system, such as sirens or a call down system with a backup communication system.</p> | <p>Town Budget, Grant Funding</p>                       | <p>1-5 years</p> | <p>Mayors, Parish School Board, and Parish Emergency Manager</p> | <p>Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather</p> | <p>1, 2, 3, 4</p> | <p>Deleted - Duplicate of GRA5</p> |
| <p>GRA26: Multi-Hazard Awareness</p> | <p>Assist Parish to sponsor a "Multi-Hazard Awareness Week", to educate the public on hurricanes, tornadoes and severe storms (sheltering in place, evacuation, emergency preparedness, and structural retrofitting), flooding (evacuation, emergency preparedness, retrofitting, and flood insurance), thunderstorms and lightning (emergency preparedness).</p>   | <p>Parish and Town Budgets; Businesses and Industry</p> | <p>1-5 years</p> | <p>Mayors and Parish Emergency Manager</p>                       | <p>Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather</p> | <p>1, 2, 3, 4</p> | <p>Deleted - Duplicate of GRA5</p> |

|   |   |  |                  |  |  |                |   |
|---|---|--|------------------|--|--|----------------|---|
| <p>GRA27: Flood Solution Projects</p>   | <p>Pursue elevation / acquisition / flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA.</p>                               | <p>CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds</p> | <p>1-5 years</p> | <p>Floodplain Manager</p>  | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p>            | <p>1, 3, 4</p> | <p>Not Started- Carried Over (See Mitigation Action 17)</p> |
| <p>GRA28: Interior Drainage Project</p> | <p>Investigate and implement a localized interior drainage project in the repetitive loss areas, and reduce its flood potential</p>   | <p>CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds</p> | <p>1-5 years</p> | <p>Parish and Town Floodplain Managers / Public Works Director</p> | <p>Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Winter Weather</p> | <p>1, 3, 4</p> | <p>Deleted - Duplicate of GRA2</p>                          |
| <p>GRA29: Community Rating System</p>   | <p>Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums.</p> | <p>Town Budget</p>   | <p>1-5 years</p> | <p>Mayor, Floodplain Manager</p>                                   | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p>            | <p>1, 3, 4</p> | <p>Not Started- Carried Over (See Mitigation Action 18)</p> |

|  |   |                    |                  |                                 |   |                |  |
|--|---|--------------------|------------------|---------------------------------|---|----------------|--|
| <p>GRA30:<br/>Regulate New Development</p> | <p>Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; storm water retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages.</p> | <p>Town Budget</p> | <p>1-5 years</p> | <p>Mayor, Planning Director</p> | <p>Flooding, Thunderstorms, Tropical Cyclones, Winter Weather</p> | <p>1, 3, 4</p> | <p>Not Started-Carried Over (See Mitigation Action 19)</p> |
|--|---|--------------------|------------------|---------------------------------|---|----------------|--|

New Mitigation Actions

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 1</b>  | Building Retrofits   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness<br>4. Facilitate sound development in the Parish and municipalities to reduce or eliminate the potential impact of hazards |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Retrofit public buildings exterior shell to maintain use during and after storm events   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                     | Reduces damage from high wind related events and helps assure that the public buildings can be used, occupied and operable during or after storms.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 2</b>  | Drainage Improvement  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Will relieve flooding problems, reduce flood damage and costs of damage, overtopping of roads with drain water, while also keeping open roadways during periods of high precipitation.  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Relieves Parish or local government and property owners of the continual flooding problems, with closed roadways (loss of function). Saves public funds for road repairs, drainage ditch repairs, sandbagging and blocking of roadways during storm periods.              |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 3</b>  | Mitigation of repetitive loss and severe repetitive loss properties and other hazard prone structures   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Elevation, acquisition-demolition, acquisition-relocations, and reconstruction of repetitive loss or flooding or other hazard prone properties.   |
| <b>Type of Mitigation Action</b>   | Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Eliminates flooding risk of repetitive and severe repetitive loss structures  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 4</b>  | Safe Room Projects  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.  |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Construction of a safe room for first responders located in Grayson. Other locations will be identified based on funding availability |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Allows for continued operations of essential personnel to actively respond during a natural hazard event                              |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 5</b>  | Education and Outreach  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol>  |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Enhance the public outreach programs for the parish and all communities by increasing awareness of risks and safety for Dam Failure, Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfire and Winter Weather hazards as well as providing information on high risk areas. Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities. |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs  |
| <b>How Action Aligns with Risk Reduction</b>                                     | Informing communities, business and citizens on proper mitigation efforts and activities will create resiliency within the parish and its communities.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Drought, Flooding, Levee Failure, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 6</b>  | Generators for continuity of operations and government  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>2. Enhance public awareness and understanding of disaster preparedness. |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Procurement and Installation of generators at public facilities to ensure continued operations during and after events.   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Installation of generators will allow public facilities to run accordingly and aid with local relief efforts  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 7</b>  | Lightning Mitigation   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Procurement and Installation of lightning rods and surge protectors for public buildings to preserve life and property   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                     | The installation of lightning rods and surge protectors in public buildings and critical infrastructure will reduce losses due to lightning strikes and surges in electricity. |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 8</b>  | Warning Systems   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness |
| <b>PRIORITY</b>  | Medium  |
| <b>Action Description</b>  | Update/upgrade public warning system components throughout Grayson as necessary. Install audible and/or reverse 911 warning system(s).                              |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | An upgraded public warning system will increase the likelihood of public notification immediately prior to an event   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tornadoes, Tropical Cyclones, Wildfires, Winter Weather  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 9</b>  | Potable Water  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>2. Enhance public awareness and understanding of disaster preparedness  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Create redundancy of potable water supply to critical facilities, especially hospitals, and provide protection of potable water supply by acquisition/installation of backflow preventers at appropriate critical locations. |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                     | Creating a redundancy of potable water for critical facilities will reduce downtime and allow for the continuity of essential operations during and after an event.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Drought, Thunderstorms, Tornadoes, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 10</b>                                       | Promote flood insurance  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness.</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High   |
| <b>Action Description</b>  | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects  |
| <b>How Action Aligns with Risk Reduction</b>                                     | Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 11</b>                                       | Elevation Project   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the Parish and municipalities to reduce or eliminate the potential impact of hazards |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Road elevation project for east end of Hines Street   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Elevation of roadway will allow the area to be less susceptible to areal and backwater flooding.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 12</b>                                       | Resizing of Culvert   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, FMA, PDM   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Resize culvert on Elmer Lane  |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Resizing of culverts will allow more water to pass through the conduit preventing backwater flowing   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 13</b>                                       | Resizing of Culvert   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget, HMGP, FMA, PDM   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards. |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Resize Culvert on Mixon Road (gravel surface)   |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Resizing of culvert will allow more water to pass through the conduit preventing backwater flowing  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 14</b>                                       | Wind Rods  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local   |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards<br>4. Facilitate sound development in the Parish and municipalities to reduce or eliminate the potential impact of hazards |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Maintain wind rods on water wells  |
| <b>Type of Mitigation Action</b>   | Natural System Protection  |
| <b>How Action Aligns with Risk Reduction</b>                                     | Maintaining the stability of the wind rods will allow the well pump station to function at full capacity, lessening the chances for failure to the system.   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Thunderstorms, Tornadoes, Tropical Cyclones  |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |   |
|--|---|
| DESCRIPTION  |   |
| <b>GRAYSON PARISH MITIGATION ACTION 15</b>                                       | Promote Flood Insurance   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office   |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP   |
| <b>TIMELINE</b>  | 1-5 years   |
| <b>COST ESTIMATE</b>   | Unknown   |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | FEMA HGMP, Local  |
| <b>ASSOCIATED GOALS</b>  | <ol style="list-style-type: none"> <li>1. Identify and pursue preventative measures that will reduce future damages from hazards.</li> <li>2. Enhance public awareness and understanding of disaster preparedness</li> <li>3. Reduce repetitive flood losses in the parish</li> <li>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.</li> </ol> |
| <b>PRIORITY</b>  | High  |
| <b>Action Description</b>  | Promote the purchase of flood insurance. Advertise the availability, cost, and coverage of flood insurance through the National Flood Insurance Program (NFIP).   |
| <b>Type of Mitigation Action</b>   | Education and Awareness   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Educating the public on flood insurance will allow public to obtain insurance at a cost that’s affordable to them and will help gain relief to their home and personal items during post-flood events   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan   |
| <b>Hazard Addressed</b>  | Flooding, Tropical Cyclones   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 16</b>                                       | Flood Solution Projects  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | CDBG, FMA, HMGP, SBA, USACE Section 205, and State Capital Outlay, Local Drainage Funds  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.                                |
| <b>PRIORITY</b>  | High   |
| <b>Action Description</b>  | Pursue elevation/acquisition/flood proofing projects and structural solutions to flooding using available grant funding for the 15 repetitive loss structures and the one repetitive target structure. Annually review and correct the Repetitive Loss List by submitting correction worksheets to FEMA. |
| <b>Type of Mitigation Action</b>   | Structure and Infrastructure Projects, Natural System Protection   |
| <b>How Action Aligns with Risk Reduction</b>                                     | Flood proofing projects will allow for additional building code reform to prevent repetitive flood loss that certain facilities face   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 17</b>                                       | Community Rating System  |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damage from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.   |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Participate in the "Community Rating system (CRS)" of the NFIP. Inform the public about the CRS program and the fact that it could result in a discount in Flood Insurance Premiums. Review the existing floodplain ordinance and see how it could be augmented to increase CRS potential and further reduce the flood insurance premiums. |
| <b>Type of Mitigation Action</b>   | Education and Awareness Programs, Local Plans and Regulations  |
| <b>How Action Aligns with Risk Reduction</b>                                     | Education of CRS program can result in flood insurance premium discounts allowing the public to invest in flood insurance or to have other items covered.  |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather   |

**Additional Supporting Information:**

| IMPLEMENTATION KEY FOR POTENTIAL HAZARD MITIGATION ACTIONS<br>VILLAGE OF GRAYSON |  |
|--|--|
| DESCRIPTION  |  |
| <b>GRAYSON PARISH MITIGATION ACTION 18</b>                                       | Regulate New Development   |
| <b>LEAD AGENCY</b>   | Village of Grayson Mayor’s Office  |
| <b>SUPPORTING AGENCIES</b>   | Caldwell Parish OHSEP  |
| <b>TIMELINE</b>  | 1-5 years  |
| <b>COST ESTIMATE</b>   | Unknown  |
| <b>POSSIBLE FUNDING SOURCE(S)</b>  | Town Budget  |
| <b>ASSOCIATED GOALS</b>  | 1. Identify and pursue preventative measures that will reduce future damages from hazards.<br>3. Reduce repetitive flood losses in the parish<br>4. Facilitate sound development in the parish and municipalities to reduce or eliminate the potential impact of hazards.  |
| <b>PRIORITY</b>  | Medium   |
| <b>Action Description</b>  | Develop and pass ordinances to help regulate new development in the Parish, such as requiring proper drainage with adequate sloping; storm water retention ponds; dikes; levees and floodwalls if appropriate, and requiring freeboard above the Base Flood Elevation (BFE) in flood prone areas. Encourage new subdivision developments to install underground utilities, which would help reduce the chances of power outages. |
| <b>Type of Mitigation Action</b>   | Local Plans and Regulations, Structure and Infrastructure Projects, Natural System Protection  |
| <b>How Action Aligns with Risk Reduction</b>                                     | New development plans will allow for less repercussions from natural disasters   |
| <b>Current Status of Action</b>  | Not Started - Carried Over from 2017 Plan  |
| <b>Hazard Addressed</b>  | Flooding, Thunderstorms, Tropical Cyclones, Winter Weather   |

**Additional Supporting Information:**

### Action Prioritization

During the prioritization process, the planning committee considered the costs and relative benefits of each new action. Costs can usually be listed in terms of dollars, although at times it involves staff time rather than the purchase of equipment or services that can be readily measured in dollars. In most cases, benefits, such as lives saved or future damage prevented, are hard to measure in dollars. Therefore, many projects were prioritized with these factors in mind. In addition, prioritization of the mitigation actions was performed based on the following economic criteria: i) whether the action can be performed with the existing parish resources; ii) whether the action requires additional funding from external sources; and iii) relative costs of the mitigation actions.

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

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

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

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## Appendix A: Planning Process

### Purpose

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

### The Caldwell Parish Hazard Mitigation Plan Update

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

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

| Date                | Meeting or Outreach                       | Location     | Public Invited | Purpose  |
|---------------------|---|--------------|----------------|--|
| 10/26/2022          | Kick Off Meeting                          | Zoom Call    | No             | Discuss with the Parish OHSEP Director expectations and requirements of the project. Discuss meeting schedules, committee make up, and next steps.   |
| 11/7/2022           | Initial Planning Committee Meeting        | Columbia, LA | No             | Discuss with Caldwell Parish Hazard Mitigation Planning Committee the process and expectations of plan participants. Discuss timeline and action items for parish and each jurisdiction.   |
| 12/6/2022           | Mitigation Action Workshop                | Columbia, LA | No             | Discussion with Caldwell Parish Hazard Mitigation Planning Committee of the outstanding data required for plan update, as well as discussion of mitigation actions (old and new) for plan update.  |
| 01/09/2023          | Planning Committee Risk Assessment Review | Columbia, LA | Yes            | Presentation of Risk Assessment and profiled hazards to Planning Committee.  |
| 01/09/2023          | Public Meeting                            | Columbia, LA | Yes            | Presentation of Risk Assessments and profiled hazards to public. Presentation also includes current mitigation project highlights within communities and public survey discussion.   |
| 11/7/2022-1/17/2023 | Public Opinion Survey                     | Online       | Yes            | This survey asked participants about public perceptions and opinions regarding natural hazards in Caldwell Parish. In addition, questions covered the methods and techniques preferred for reducing the risks and losses associated with these hazards. Survey results discussed further in <i>Mitigation Strategy</i> . |

### Planning

The plan update process consisted of several phases:

|                                       | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>Plan Revision</b>                  |         |         |         |         |         |         |         |         |
| <b>Data Collection</b>                |         |         |         |         |         |         |         |         |
| <b>Risk Assessment</b>                |         |         |         |         |         |         |         |         |
| <b>Public Input</b>                   |         |         |         |         |         |         |         |         |
| <b>Mitigation Strategy</b>            |         |         |         |         |         |         |         |         |
| <b>Plan Review by GOHSEP and FEMA</b> |         |         |         |         |         |         |         |         |
| <b>FEMA APA</b>                       |         |         |         |         |         |         |         |         |
| <b>Plan Adoptions</b>                 |         |         |         |         |         |         |         |         |
| <b>Final Plan Approval</b>            |         |         |         |         |         |         |         |         |

### Coordination

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

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

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

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

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

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

- Participation in Hazard Mitigation planning meetings at the local and parish level
- Sharing local data and information with jurisdictions
- Incorporation of other planning documents, studies and efforts
- Action item development and action progress from 2017 update
- Risk Assessment review
- Plan document draft review
- Formal adoption of the Hazard Mitigation Plan

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

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

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

| Caldwell Parish Hazard Mitigation Planning Committee |              |                                     |  |
|--|--------------|-------------------------------------|--|
| Name   | Title        | Agency                              | Email  |
| Freddy Mercer  | Director     | Caldwell OHSEP                      | <a href="mailto:Caldwellohsep@bellsouth.net">Caldwellohsep@bellsouth.net</a>           |
| Dianne Childress                                     | Secretary    | Caldwell Parish Police Jury         | <a href="mailto:Dianne.Childress@caldwellppj.org">Dianne Childress@caldwellppj.org</a> |
| Denita Temple  | Director 911 | Caldwell Parish E-911/Permit Office | <a href="mailto:Denita@911.org">Denita@911.org</a>                                     |
| Jessica Morris                                       | Mayor        | Town of Clarks                      | <a href="mailto:Mayortownofclarksla@gmail.com">Mayortownofclarksla@gmail.com</a>       |
| Wanda Stowe  | Mayor        | Village of Grayson                  | <a href="mailto:VillageofGrayson1@gmail.com">VillageofGrayson1@gmail.com</a>           |
| Hannah Springer                                      | Mayor        | Town of Columbia                    | <a href="http://MayortownofColumbia.net">MayortownofColumbia.net</a>                   |

### Program Integration

Local governments are required to describe how their mitigation planning process is integrated with other ongoing local and area planning efforts. This subsection describes Caldwell Parish programs and planning.

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

Caldwell Parish will continue to integrate the requirements of this Hazard Mitigation Plan into other local planning mechanisms that are to be identified through future meetings of the parish, and through the five-year review process described in *Appendix B: Plan Maintenance*. The primary means for integrating

mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of any individual municipal plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the Caldwell Parish Hazard Mitigation Planning Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their communities or agencies are consistent with the goals and actions of the Hazard Mitigation Plan and will not contribute to increased hazard vulnerability in the parish. Existing plans, studies, and technical information were incorporated in the planning process. Examples include flood data from FEMA and the U. S. Geological Survey. Much of this data was incorporated into the Risk Assessment component of the plan relative to plotting historical events and the magnitude of damages that occurred. The parish's 2017 Hazard Mitigation Plan was also used in the planning process. Other existing data and plans used in the planning process include those listed below.

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

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

### Meeting Documentation and Public Outreach Activities

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

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

**Date:** October 26, 2022

**Location:** Zoom Call

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

**Public Invitation:** No

**Meeting Invitees:**

| Caldwell Parish Hazard Mitigation Planning Committee |                 |                |
|--|-----------------|----------------|
| Name   | Title           | Agency         |
| Freddy Mercer  | Director        | Caldwell OHSEP |
| Ashleigh Dozier                                      | EM Specialist   | LSU-SDMI       |
| Chris Rippetoe                                       | Program Manager | LSU-SDMI       |

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

**Date:** November 7, 2022**Location:** Columbia, LA**Purpose:** Discuss the expectations and requirements of the hazard mitigation plan update process and establish an initial project timeline with the Parish's Hazard Mitigation Plan Planning Committee. Assign each individual tasks related to the parish data collection for the plan update.**Public Invitation:** No**Meeting Invitees:**

| Caldwell Parish Hazard Mitigation Planning Committee |              |                                     |   |
|--|--------------|-------------------------------------|---|
| Name   | Title        | Agency                              | Email   |
| Freddy Mercer  | Director     | Caldwell OHSEP                      | <a href="mailto:Caldwellohsep@bellsouth.net">Caldwellohsep@bellsouth.net</a>          |
| Dianne Childress                                     | Secretary    | Caldwell Parish Police Jury         | <a href="mailto:DianneChildress@caldwellppj.org">Dianne Childress@caldwellppj.org</a> |
| Denita Temple  | Director 911 | Caldwell Parish E-911/Permit Office | <a href="mailto:Denita@911.org">Denita@911.org</a>                                    |
| Jessica Morris                                       | Mayor        | Town of Clarks                      | <a href="mailto:Mayortownofclarksla@gmail.com">Mayortownofclarksla@gmail.com</a>      |
| Wanda Stowe  | Mayor        | Village of Grayson                  | <a href="mailto:VillageofGrayson1@gmail.com">VillageofGrayson1@gmail.com</a>          |
| Hannah Springer                                      | Mayor        | Town of Columbia                    | <a href="http://MayortownofColumbia.net">MayortownofColumbia.net</a>                  |

## Meeting #3: Hazard Mitigation Plan Update Mitigation Action Workshop

**Date:** December 6, 2022**Location:** Columbia, LA**Purpose:** Discussion with Caldwell Parish Hazard Mitigation Planning Committee of the outstanding data required for plan update, as well as discussion of mitigation actions (old and new) for plan update. Continued timeline discussions.**Public Invitation:** No**Meeting Invitees:**

| Caldwell Parish Hazard Mitigation Planning Committee |              |                                     |   |
|--|--------------|-------------------------------------|---|
| Name   | Title        | Agency                              | Email   |
| Freddy Mercer  | Director     | Caldwell OHSEP                      | <a href="mailto:Caldwellohsep@bellsouth.net">Caldwellohsep@bellsouth.net</a>          |
| Dianne Childress                                     | Secretary    | Caldwell Parish Police Jury         | <a href="mailto:DianneChildress@caldwellppj.org">Dianne Childress@caldwellppj.org</a> |
| Denita Temple  | Director 911 | Caldwell Parish E-911/Permit Office | <a href="mailto:Denita@911.org">Denita@911.org</a>                                    |
| Jessica Morris                                       | Mayor        | Town of Clarks                      | <a href="mailto:Mayortownofclarksla@gmail.com">Mayortownofclarksla@gmail.com</a>      |
| Wanda Stowe  | Mayor        | Village of Grayson                  | <a href="mailto:VillageofGrayson1@gmail.com">VillageofGrayson1@gmail.com</a>          |
| Hannah Springer                                      | Mayor        | Town of Columbia                    | <a href="http://MayortownofColumbia.net">MayortownofColumbia.net</a>                  |

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

**Date:** January 9, 2023**Location:** Columbia, LA**Purpose:** Presentation of Risk Assessment hazards and maps to Planning Committee.**Public Invitation:** No**Meeting Invitees:**

| Caldwell Parish Hazard Mitigation Planning Committee |              |                                     |  |
|--|--------------|-------------------------------------|--|
| Name   | Title        | Agency                              | Email  |
| Freddy Mercer  | Director     | Caldwell OHSEP                      | <a href="mailto:Caldwellohsep@bellsouth.net">Caldwellohsep@bellsouth.net</a>           |
| Dianne Childress                                     | Secretary    | Caldwell Parish Police Jury         | <a href="mailto:Dianne.Childress@caldwellppj.org">Dianne Childress@caldwellppj.org</a> |
| Denita Temple  | Director 911 | Caldwell Parish E-911/Permit Office | <a href="mailto:Denita@911.org">Denita@911.org</a>                                     |
| Jessica Morris                                       | Mayor        | Town of Clarks                      | <a href="mailto:Mayortownofclarksla@gmail.com">Mayortownofclarksla@gmail.com</a>       |
| Wanda Stowe  | Mayor        | Village of Grayson                  | <a href="mailto:VillageofGrayson1@gmail.com">VillageofGrayson1@gmail.com</a>           |
| Hannah Springer                                      | Mayor        | Town of Columbia                    | <a href="http://MayortownofColumbia.net">MayortownofColumbia.net</a>                   |

## Meeting #5: Hazard Mitigation Plan Update Public Meeting

**Date:** January 9, 2023**Location:** Columbia, LA**Purpose:** The Public Meeting allowed the public and community stakeholders to participate and provide input into the hazard mitigation planning process. Presentation also included highlights of current mitigation projects highlights, as well as public survey discussion.**Public Invitation:** Yes**Meeting Invitees:**

| Caldwell Parish Hazard Mitigation Planning Committee |              |                                     |  |
|--|--------------|-------------------------------------|--|
| Name   | Title        | Agency                              | Email  |
| Freddy Mercer  | Director     | Caldwell OHSEP                      | <a href="mailto:Caldwellohsep@bellsouth.net">Caldwellohsep@bellsouth.net</a>           |
| Dianne Childress                                     | Secretary    | Caldwell Parish Police Jury         | <a href="mailto:Dianne.Childress@caldwellppj.org">Dianne Childress@caldwellppj.org</a> |
| Denita Temple  | Director 911 | Caldwell Parish E-911/Permit Office | <a href="mailto:Denita@911.org">Denita@911.org</a>                                     |
| Jessica Morris                                       | Mayor        | Town of Clarks                      | <a href="mailto:Mayortownofclarksla@gmail.com">Mayortownofclarksla@gmail.com</a>       |
| Wanda Stowe  | Mayor        | Village of Grayson                  | <a href="mailto:VillageofGrayson1@gmail.com">VillageofGrayson1@gmail.com</a>           |
| Hannah Springer                                      | Mayor        | Town of Columbia                    | <a href="http://MayortownofColumbia.net">MayortownofColumbia.net</a>                   |

**Meeting Announcement:**

CALDWELL PARISH OFFICE OF HOMELAND SECURITY & EMERGENCY PREPAREDNESS

**PUBLIC MEETING ANNOUNCEMENT****Caldwell Parish and its partners are seeking community input for the 2023 Caldwell Parish Hazard Mitigation Plan update!**

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

Are you passionate about building a more resilient future for your parish? Do you have questions about the natural hazards your community is at risk to? Please join us on Monday January 9, for a public meeting at 10:00AM to learn more about the plan and share your input on the risks and vulnerabilities that most impact you and your community. |

**Meeting Location:**

Caldwell Parish Police Jury Meeting Room  
201 Main St  
Columbia, LA 71418

Residents of Caldwell Parish are asked to participate in a survey about public perceptions and opinions regarding natural hazards in the parish. The survey results will be used in the development of the plan. This short web-based survey can be found at the following link:

<https://www.surveymonkey.com/r/CaldwellHM2022>

The Parish appreciates your input.

If you have questions, please contact: Caldwell Parish OHSEP

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

**Date:** Ongoing throughout planning process

**Location:** Web survey

**Public Invitation:** Yes

As referenced in the *Mitigation Strategy* section of this document, an online public opinion survey of Caldwell Parish residents was conducted between November 2022 and January 2023. The survey was designed to capture public perceptions and opinions regarding natural hazards in Caldwell Parish. In addition, the survey collected information regarding the methods and techniques preferred by the respondents for reducing the risks and losses associated with local hazards. As of January 17, 2023, there were so few responses that they could not be incorporated in the Caldwell Parish plan. Full survey results can be found here: [https://www.surveymonkey.com/results/SM-F6NuDtOJRM\\_2BZxfO5tzRx5g\\_3D\\_3D/](https://www.surveymonkey.com/results/SM-F6NuDtOJRM_2BZxfO5tzRx5g_3D_3D/)

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

**Date:** January 9, 2023

**Location:** Public Meeting

**Public Invitation:** Yes

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

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

**Date:** Ongoing

**Location:** SDMI Hazard Mitigation Website

**Public Initiation:** Yes

After an initial review by the Caldwell Parish Planning Committee was completed, the 2023 Caldwell Parish Hazard Mitigation Plan was made available for public review and comment. The plan was hosted on SDMI's Hazard Mitigation website: <https://hmplans.sdmi.lsu.edu/Home/Parish/caldwell>

## CALDWELL PARISH PUBLIC MEETING

### PUBLIC ACTIVITY: INCIDENT/ ISSUE QUESTIONNAIRE

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

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

#### F. OTHER:

#### 2. DESCRIBE INCIDENT OR ISSUE:

#### 3. LOCATION:

A. CITY:

B. ADDRESS OR AREA:

C. LOCALIZED OR DISPERSED:

#### 4. INTENSITY:

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

B. WIND STRENGTH

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

A. IF RE-OCCURRING, HOW OFTEN?

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

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

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

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## Appendix B: Plan Maintenance

### Purpose

The section of the Code of Federal Regulations (CFR) pertaining to Local Mitigation Plans lists five required components for each plan: a description of the planning process; risk assessments; mitigation strategies; a method and system for plan maintenance; and documentation of plan adoption. This section details the method and system for plan maintenance, following the CFR's guidelines that the Plan Update must include (1) "a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle," (2) "a process by which local governments incorporated the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans", and (3) "discussion on how the community will continue public participation in the plan maintenance process."

### Monitoring, Evaluating, and Updating the Plan

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

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

### Responsible Parties

Caldwell Parish has developed a method to ensure that a regular review and update of this Hazard Mitigation Plan occurs. This will be the responsibility of the planning committee, which consists of representatives from governmental organizations, local businesses, and private citizens, who will be involved in the process of monitoring, evaluating and updating the plan. All committee members in this plan will remain active in the planning committee.

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

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

Caldwell Parish has developed a method to ensure monitoring, evaluating, and updating of the HMP occurs during the five-year cycle of the plan. The planning committee will seek to become a permanent body and will be responsible for monitoring, evaluating, and updating of the plan. The planning committee meeting will be held annually in order to monitor, evaluate, and update the plan. The Caldwell Parish OHSEP Director will be responsible for conducting the annual planning committee meetings.

The lead person of the agency responsible for the implementation of a specific mitigation action will submit a progress report to the Director at least thirty days prior to the planning committee meeting. The progress report will provide project status monitoring to include the following: whether the project has started; if not started, reason for not starting; if started, status of the project; if the project is completed, whether it has eliminated the problem; and any changes recommended to improve the implementation of the project etc. In addition, the progress report will provide status monitoring on the plan evaluation, changes to the hazard profile, changes to the risk assessment, and public input on the Hazard Mitigation Plan updates and reviews.

Progress on the mitigation action items and projects will be reviewed during the annual planning committee meeting. The criteria that would be utilized in the project review will include the following:

- 1) Whether the action was implemented and reasons, if the action was not implemented
- 2) What were the results of the implemented action
- 3) Were the outcomes as expected, and reasons if the outcomes were not as expected
- 4) Did the results achieve the stated goals and objectives
- 5) Was the action cost-effective
- 6) What were the losses avoided after completion of the project
- 7) In case of a structural project, did it change the hazard profile

In addition to monitoring and evaluating the progress of the mitigation plan actions and projects, the mitigation plan is required to be maintained and monitored annually, and fully updated every five years. The annual maintenance, monitoring and evaluation of the plan will be conducted in the annual planning committee meeting. The planning committee will review each goal to determine their relevance to changing situations in the parish, as well as changes to state or federal policy, and to ensure that they are addressing current and expected conditions. The planning committee will evaluate if any change in hazard profile and risk in the parish occurred during the past year. In addition, the evaluation will include the following criteria in respect of plan implementation:

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

The HMP will be updated every five years to remain eligible for continued HMGP funding. The planning committee will be responsible for updating the HMP. The OHSEP Director will be the lead person for the HMP update. The HMP update process will commence at least one year prior to the expiration of the plan. The HMP will be updated after a major disaster if an annual evaluation of the plan indicates a substantial change in hazard profile and risk assessment in the parish.

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

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

Annual reports on the progress of actions, plan maintenance, monitoring, evaluation, incorporation into existing planning programs, and continued public involvement will be documented at each annual meeting of the committee and kept by the Caldwell Parish OHSEP Director. The planning committee will work together as a team, with each member sharing responsibility for completing the monitoring, evaluation and updates. It is the responsibility of the Caldwell Parish OHSEP Director for contacting committee members, organizing the meeting and providing public noticing for the meeting to solicit public input.

### 2023 Plan Version Plan Method and Schedule Evaluation

For the current plan update, the previously approved plan's method and schedule were evaluated to determine if the elements and processes involved in the required 2023 update. Based on this analysis, the method and schedule were deemed to be acceptable, and nothing was changed for this update.

### Incorporation into Existing Planning Programs

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

- Comprehensive/Master Plan
- Economic Development Plan
- Local Emergency Operations Plan
- Continuity of Operations Plan
- Transportation Plan

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the Caldwell Parish Hazard Mitigation Planning Committee and through the five-year review process described herein. The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (e.g. risk assessment, plan amendments, ordinance revisions, capital improvement projects, etc.). While there have been no instances of the mitigation strategy being incorporated into other planning documents since the adoption of the 2017 Caldwell Hazard Mitigation Plan, the committee members recognize the importance of a holistic approach across all planning efforts and will use their standing to integrate the mitigation strategy outlined in the 2023 Caldwell Hazard Mitigation Plan into other planning documents when appropriate. Most notably, Caldwell Parish is in the process of updating their Master

Plan and will incorporate the mitigation strategy from this FEMA approved hazard mitigation plan into the Master Plan process and document.

During the planning process for new and updated local planning documents at the parish and jurisdiction level, such as a risk assessment, comprehensive plan, capital improvements plan, or emergency operations plan, the jurisdictions will provide a copy of the Parish Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Parish Hazard Mitigation Plan and will not contribute to increased hazards.

Although it is recognized that there are many possible benefits to integrating components of this plan into other parish and jurisdiction planning mechanisms, the development and maintenance of this stand-alone Hazard Mitigation Plan is deemed by the planning committee to be the most effective and appropriate method to ensure implementation of Parish and local hazard mitigation actions.

On behalf of the Town of Clarks, Town of Columbia, and Village of Grayson, Caldwell Parish has the authority to incorporate the contents of the Hazard Mitigation Plan into the parish’s existing regulatory mechanisms. Agreements are currently in place with jurisdictions to allow for the parish incorporation mechanisms to take place.

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

|  |                   |                       |   |
|--|-------------------|-----------------------|---|
| <b>Caldwell Parish</b>                 |                   |                       |   |
| <i>Comprehensive Master Plan</i>       | Updated as needed | Caldwell Parish OHSEP | ✓ |
| <i>Continuity of Operations Plan</i>   | Updated as needed | Caldwell Parish OHSEP | ✓ |
| <i>Local Emergency Operations Plan</i> | Updated as needed | Caldwell Parish OHSEP | ✓ |
| <i>Transportation Plan</i>             | Updated as needed | Caldwell Parish OHSEP | ✓ |
| <i>Economic Development Plan</i>       | Updated as needed | Caldwell Parish OHSEP | ✓ |

**Town of Clarks**

*\*\*\*There are no additional plans to integrate into the mitigation planning process\*\*\**

**Town of Columbia**

*\*\*\*There are no additional plans to integrate into the mitigation planning process\*\*\**

### Village of Grayson

*\*\*\*There are no additional plans to integrate into the mitigation planning process\*\*\**

#### Continued Public Participation

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

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

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### Appendix C: Critical Facilities

Critical Facilities within the Caldwell Parish Planning Area

| Type                                | Name   | Dam Failure | Drought | Flooding | Levee Failure | Thunder storms | Tornadoes | Tropical Cyclones | Wildfires | Winter Weather |
|-------------------------------------|--|-------------|---------|----------|---------------|----------------|-----------|-------------------|-----------|----------------|
| Government Facilities               | Caldwell Parish Courthouse                       |             | X       |          |               | X              | X         | X                 |           | X              |
|                                     | Caldwell Parish E-911/Courthouse Annex           |             | X       |          |               | X              | X         | X                 |           | X              |
|                                     | Caldwell Parish Public Works                     |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Columbia Project Engineer Office                 |             | X       | X        | X             | X              | X         | X                 | X         | X              |
|                                     | East Columbia Water System - Bill Payment Office |             | X       | X        |               | X              | X         | X                 | X         | X              |
|                                     | Grayson Town Hall                                |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Caldwell Parish Library                          |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Columbia Town Hall                               |             | X       |          |               | X              | X         | X                 |           | X              |
|                                     | Clarks Town Hall                                 |             | X       |          |               | X              | X         | X                 |           | X              |
|                                     | Caldwell Parish Recreation Center (Shelter)      |             | X       | X        |               | X              | X         | X                 | X         | X              |
|                                     | Hebert Water System                              |             | X       | X        |               | X              | X         | X                 | X         | X              |
|                                     | Holum Water System                               |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Cotton Plant Water System                        |             | X       |          |               | X              | X         | X                 |           | X              |
|                                     | Kelly Water System                               |             | X       |          |               | X              | X         | X                 |           | X              |
|                                     | Ward 4&5 Water System                            |             | X       |          |               | X              | X         | X                 |           | X              |
| Fire & SAR                          | Columbia Heights Volunteer Fire Department       |             | X       |          | X             | X              | X         | X                 | X         | X              |
|                                     | Columbia Volunteer Fire Department               |             | X       |          | X             | X              | X         | X                 | X         | X              |
|                                     | East Columbia Volunteer Fire Department          |             | X       | X        | X             | X              | X         | X                 | X         | X              |
|                                     | Ward 5 Fire Department                           |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Hebert Volunteer Fire Department #1              |             | X       | X        |               | X              | X         | X                 |           | X              |
|                                     | Fire Lookout Tower                               |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Grayson Volunteer Fire Department #2             |             | X       |          |               | X              | X         | X                 | X         | X              |
|                                     | Grayson Volunteer Fire Department #1             |             | X       |          |               | X              | X         | X                 | X         | X              |
| Hebert Volunteer Fire Department #2 |  | X           | X       |          | X             | X              | X         | X                 | X         |                |

|                        |  |  |   |   |   |   |   |   |   |   |
|------------------------|--|--|---|---|---|---|---|---|---|---|
|                        | Corey Volunteer Fire Department        |  | X | X |   | X | X | X |   | X |
|                        | Sandy Bayou Volunteer Fire Department  |  | X |   |   | X | X | X |   | X |
|                        | Clarks Volunteer Fire Department       |  | X |   |   | X | X | X | X | X |
|                        | Kelly Volunteer Fire Department        |  | X |   |   | X | X | X | X | X |
|                        | Cotton Plant Volunteer Fire Department |  | X |   |   | X | X | X |   | X |
| <b>Law Enforcement</b> | Caldwell Parish Sheriff                |  | X |   |   | X | X | X |   | X |
|                        | Caldwell Correctional Center           |  | X |   |   | X | X | X | X | X |
|                        | Columbia Police Department             |  | X |   | X | X | X | X | X | X |
|                        | Clarks Police Department               |  | X |   |   | X | X | X | X | X |
|                        | Grayson Police Department              |  | X |   |   | X | X | X | X | X |
| <b>Public Health</b>   | Caldwell Parish Health Unit            |  | X |   |   | X | X | X | X | X |
|                        | Caldwell Memorial Hospital             |  | X |   |   | X | X | X | X | X |
| <b>Education</b>       | Caldwell Parish High School            |  | X | X |   | X | X | X | X | X |
|                        | Caldwell Parish Junior High School     |  | X | X |   | X | X | X | X | X |
|                        | Columbia Elementary School             |  | X |   | X | X | X | X | X | X |
|                        | Grayson Elementary School              |  | X |   |   | X | X | X | X | X |
|                        | Union Central Elementary School        |  | X |   |   | X | X | X | X | X |
|                        | Caldwell Parish Pre-K                  |  | X | X |   | X | X | X | X | X |
|                        | Caldwell Parish Head Start             |  | X |   |   | X | X | X |   | X |
|                        | Caldwell Parish School Board           |  | X |   |   | X | X | X | X | X |

Appendix D: Plan Adoption  
Caldwell Parish

***Caldwell Parish Police Jury***

Post Office Box 1737 Columbia, Louisiana 71418  
Phone 318.649.2681 - Fax 318.649.5930

Mark Black  
President

Kenneth Graham  
Vice President

Dianne Childress  
Secretary/Treasurer

\* \* \* \* \*  
On motion by Kenneth "Speck" Graham, seconded by C.M. "B-Line" Exline the following resolution was offered:

**RESOLUTION 23 – 046**

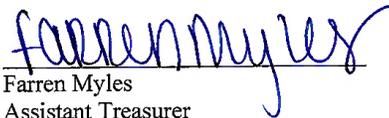
BE IT RESOLVED BY the Police Jury of the Parish of Caldwell, State of Louisiana, in regular session duly convened on this 3<sup>rd</sup> day of April 2023 that this Police Jury does hereby agree to approve the Caldwell Parish Hazard Mitigation Plan.

Resolution adopted this 3<sup>rd</sup> day of April 2023 with the following vote recorded:

YEAS: 7  
NAYS: 0  
ABSENT: 0



Mark Black  
President



Farren Myles  
Assistant Treasurer

District 1  
Kenneth "Speck" Graham

District 2  
Lanny Dark

District 3  
Mark Black

District 4  
Kevin Martin

District 5  
Gary Watts

District 6  
C.M. B-Line Exline

District 7  
Holden Valentine

Town of Clarks

**ALDERPERSON**  
EDWARD GIBSON  
JOHNNY EDGAR  
LISA MELTON  
MARILYN RATCLIFF  
TAYLOR BARTON

**TOWN OF CLARKS**  
1714 HWY 845  
P.O. BOX 360  
CLARKS, LA 71415  
318-649-7218  
TownofClarksLA@gmail.com

**MAYOR**  
JESSICA MORRIS  
**CHIEF OF POLICE**  
DONNIE BROOKS JR.  
**MUNICIPAL CLERK**  
PEGGY HOLLIS

TOWN OF CLARKS

LOUISIANA

RESOLUTION NO. 03-31

A RESOLUTION OF THE TOWN OF CLARKS

CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN APRIL 10, 2023

WHEREAS the TOWN OF CLARKS recognizes the threat that natural hazards pose to people and property within TOWN OF CLARKS; and

WHEREAS the TOWN OF CLARKS has prepared a multi-hazard mitigation plan, hereby known AS CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN APRIL 10, 2023 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS TOWN OF CLARKS MITIGATION PLAN APRIL 10, 2023 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in TOWN OF CLARKS from the impacts of future hazards and disasters; and

WHEREAS adoption by the TOWN OF CLARKS demonstrates their commitment to the hazard mitigation and achieving the goals outlined in CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN APRIL 10, 2023.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF CLARKS, LOUISIANA, THAT:

Section 1. In accordance with, THE TOWN OF CLARKS adopts the 2023 CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN APRIL 10, 2023

ADOPTED by a vote of 5 in favor and \_\_\_\_\_ against, and \_\_\_\_\_ abstaining, this 10TH day of APRIL, 2023.

By: \_\_\_\_\_

(print name)

ATTEST:

By: \_\_\_\_\_

(print name)

APPROVED AS TO FORM:

By: *Sumia Morris Mayor Town of Clarks*

*Peggy Hollis Municipal Clerk Town of Clarks*

Town of Columbia

Office of  
**TOWN OF COLUMBIA**

TOWN HALL

POST OFFICE DRAWER 10

COLUMBIA, LA 71418

PH. (318)649-6174 FAX (318)649-0758

Hannah Springer, Mayor  
Sedric Meredith, Chief of Police  
Teri Ann Black

ALDERMEN  
James Stuart  
Sonja Carroll  
Bonnie Crockett  
Penny Brown  
Wes Williamson

**RESOLUTION**

**CALDWELL PARISH HAZARD MITIGATION PLAN**

CALDWELL PARISH LOUISIANA

A RESOLUTION OF THE Town of Columbia

WHEREAS the Town of Columbia recognizes the threat that natural hazards pose to people and property within Caldwell Parish and

WHEREAS the Caldwell Parish Hazard Mitigation Committee has prepared a multi-hazard mitigation plan, hereby known as 2023 CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS as 2023 CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Caldwell Parish from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Columbia demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the 2023 CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.

NOW THEREFORE, BE IT RESOLVED BY THE Town of Columbia, LOUISIANA, THAT:

Section 1. In accordance with, Town of Columbia does agree to adopt the 2023 CALDWELL PARISH MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.

The foregoing resolution was read the roll was called on the adoption thereof, and the resolution was adopted by the following votes:

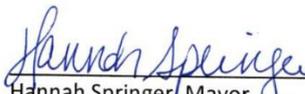
YEAS: 4  
NAYS: 0

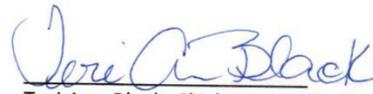
ABSTAINED: 0  
ABSENT: Bonnie Crockett

CERTIFICATE

I hereby certify that the foregoing is a true and exact copy of the resolution adopted at the council meeting held on May 15, 2023, at which meeting a quorum was present and voting.

The Town of Columbia, Louisiana, this 15<sup>th</sup> day of May 2023.

  
Hannah Springer, Mayor

  
Teri Ann Black, Clerk

## Village of Grayson

**Town Council**

Hannah Sinclair  
Dwayne Carter  
Jeannie McCoy



**MAYOR**  
Wanda Stowe

**Chief of Police**

Mitch Bratton

**Clerk**

Teresa Roberts

PARISH OF CALDWELL, LOUISIANA

RESOLUTION NO. 08-23

A RESOLUTION OF THE VILLAGE OF GRAYSON

WHEREAS the VILLAGE OF GRAYSON recognizes the threat that natural hazards pose to people and property within PARISH OF CALDWELL; and

WHEREAS the PARISH OF CALDWELL has prepared a multi-hazard mitigation plan, hereby known as HAZARD MITIGATION PLAN, APRIL 18, 2023 in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS HAZARD MITIGATION PLAN, APRIL 18, 2023 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in PARISH OF CALDWELL from the impacts of future hazards and disasters; and

WHEREAS adoption by the VILLAGE OF GRAYSON demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the HAZARD MITIGATION PLAN, APRIL 18, 2023.

NOW THEREFORE, BE IT RESOLVED BY THE PARISH OF CALDWELL, LOUISIANA, THAT:

Section 1. In accordance with, THE VILLAGE OF GRAYSON adopts the HAZARD MITIGATION PLAN, APRIL 18, 2023.

ADOPTED by a vote of 2 in favor, 1 absent, 0 against, and 0 abstaining, this 18th day of April, 2023.

Wanda Stowe  
Mayor

Teresa Roberts  
Clerk

## Appendix E: State Required Worksheets

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

### Mitigation Planning Team

| Caldwell Parish Hazard Mitigation Planning Committee |              |                                     |  |
|--|--------------|-------------------------------------|--|
| Name   | Title        | Agency                              | Email  |
| Freddy Mercer  | Director     | Caldwell OHSEP                      | <a href="mailto:Caldwellohsep@bellsouth.net">Caldwellohsep@bellsouth.net</a>           |
| Dianne Childress                                     | Secretary    | Caldwell Parish Police Jury         | <a href="mailto:Dianne.Childress@caldwellppj.org">Dianne.Childress@caldwellppj.org</a> |
| Denita Temple  | Director 911 | Caldwell Parish E-911/Permit Office | <a href="mailto:Denita@911.org">Denita@911.org</a>                                     |
| Jessica Morris                                       | Mayor        | Town of Clarks                      | <a href="mailto:Mayortownofclarksla@gmail.com">Mayortownofclarksla@gmail.com</a>       |
| Wanda Stowe  | Mayor        | Town of Grayson                     | <a href="mailto:VillageofGrayson1@gmail.com">VillageofGrayson1@gmail.com</a>           |
| Hannah Springer                                      | Mayor        | Town of Columbia                    | <a href="http://MayortownofColumbia.net">MayortownofColumbia.net</a>                   |

Capability Assessment  
Unincorporated Caldwell Parish

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

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

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

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

Town Of Clarks

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

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

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

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

Town of Columbia

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

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

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

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

Village of Grayson

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

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

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

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

## Building Inventory

| Caldwell Parish and Jurisdiction Owned Building Information |                        |                             |          |            |             |                |            |                   |
|---|------------------------|-----------------------------|----------|------------|-------------|----------------|------------|-------------------|
| Unincorporated Caldwell Parish                              |                        |                             |          |            |             |                |            |                   |
| Name of Building  | Purpose of Building    | Address                     | City     | Latitude   | Longitude   | Assessed Value | Date Built | Construction Type |
| Columbia Heights Volunteer Fire Department                  | Fire Search and Rescue | 495 Collins Rd              | Columbia | 32.0760263 | -92.0943137 | \$26,700.00    | 1960       | Metal             |
| Caldwell Parish Health Unit                                 | Public Health          | 501 Collins Rd              | Columbia | 32.07553   | -92.09448   |                |            | Concrete          |
| Caldwell Parish Sheriff                                     | Law Enforcement        | 201 Main Street #2          | Columbia | 32.105359  | -92.075365  | \$50,085.00    | 1960       |                   |
| Columbia Elementary   | Education              | 205 Church St               | Columbia | 32.1030425 | -92.0749088 | \$650,160.00   | 1975       | Metal             |
| Caldwell Parish High School                                 | Education              | 163 Spartan Dr              | Columbia | 32.0602186 | -92.0965986 | \$923,535.00   | 1970       | Metal             |
| Union Central Elementary                                    | Education              | 694 Hwy 849                 | Columbia | 32.0762192 | -92.0797175 | \$454,950.00   | 1970       | Metal             |
| Columbia Volunteer Fire Department                          | Fire Search and Rescue | 403 Boyd St                 | Columbia | 32.104695  | -92.079281  | \$11,100.00    | 1980       | Metal             |
| East Columbia Volunteer Fire Department                     | Fire Search and Rescue | 166 Community Center Street | Columbia | 32.1122066 | -92.0710386 | \$19,200.00    | 1980       | Metal             |
| Ward 5 Fire Department                                      | Fire Search and Rescue | 5174 Hwy 846 North          | Columbia | 32.1483687 | -92.1581526 | \$11,700.00    | 1975       | Metal             |
| Hebert Volunteer Fire Department #1                         | Fire Search and Rescue | 2895 Hwy 561                | Columbia | 32.2001977 | -92.0088202 | \$21,975.00    | 1990       | Metal             |
| Fire Lookout Tower  | Fire Search and Rescue | 9331 Hwy 4 West             | Columbia | 32.1227023 | -92.1716835 | \$525.00       | 1990       | Metal             |
| Caldwell Parish Courthouse                                  | Civil Government       | 201 Main Street #1          | Columbia | 32.1056227 | -92.0744822 | \$39,015.00    | 1960       | Concrete          |
| Caldwell Parish E-911/Courthouse Annex                      | Civil Government       | 219 Main St                 | Columbia | 32.1051134 | -92.0748678 |                | 1965       | Concrete          |
| Caldwell Parish Public Works                                | Civil Government       | 6903 Hwy 4 West             | Columbia | 32.0776797 | -92.1089786 | \$51,350.00    | 1970       | Metal             |
| Columbia Project Engineer Office                            | Civil Government       | 333 Ball Park Road          | Columbia | 32.1103162 | -92.0743946 | \$15,255.00    | 1960       | Concrete          |
| East Columbia Water System - Bill Payment Office            | Civil Government       | 190 Tank St                 | Columbia | 32.1188743 | -92.0659997 | \$485,775.00   | 1960       | Metal             |

|   |                        |                       |          |            |             |                |      |          |
|---|------------------------|-----------------------|----------|------------|-------------|----------------|------|----------|
| Grayson Elementary School                   | Education              | 5237 Hwy 126 East     | Grayson  | 32.0486933 | -92.1087708 | \$478,710.00   | 1980 | Concrete |
| Grayson Volunteer Fire Department #2        | Fire Search and Rescue | 5230 Hwy 126 East     | Grayson  | 32.0496579 | -92.1081283 | \$15,075.00    |      | Metal    |
| Grayson Town Hall                           | Civil Government       | 5228 Hwy 126 East     | Grayson  | 32.04956   | -92.10787   | \$11,700.00    | 1975 | Brick    |
| Grayson Volunteer Fire Department #1        | Fire Search and Rescue | 145 Hines St          | Grayson  | 32.0514191 | -92.1096065 | \$18,375.00    | 1970 | Metal    |
| Caldwell Parish Library                     | Civil Government       | 211 Jackson St        | Columbia | 32.10492   | -92.0737    |                |      | Concrete |
| Caldwell Parish Jr High School              | Education              | 114 Trojan Dr         | Columbia | 32.05813   | -92.09619   |                |      | Concrete |
| Caldwell Parish Pre-K                       | Education              | 182 Spartan Dr        | Columbia | 32.05945   | -92.09722   |                |      |          |
| Caldwell Parish Head Start                  | Education              | 3351 Hwy 506 West     | Kelly    | 31.97959   | -92.174     |                |      |          |
| Columbia Town Hall                          | Civil Government       | 7010 US Hwy 165       | Columbia | 32.10322   | -92.07974   | \$165,000      | 2005 | Metal    |
| Caldwell Parish School Board                | Education              | 7112 US Hwy 165       | Columbia | 32.10217   | -92.08116   | \$243,936.00   |      |          |
| Hebert Volunteer Fire Department #2         | Fire Search and Rescue | 124 Templeton Bend Rd | Columbia | 32.16303   | -91.97963   | \$24,000.00    |      |          |
| Corey Volunteer Fire Department             | Fire Search and Rescue | 2390 US Hwy 165       | Columbia | 32.21107   | -92.11334   | \$25,000.00    |      |          |
| Sandy Bayou Volunteer Fire Department       | Fire Search and Rescue | 4063 Hwy 559          | Columbia | 31.97911   | -91.96241   | \$24,000.00    |      |          |
| Clarks Volunteer Fire Department            | Fire Search and Rescue | 1611 Hwy 845          | Clarks   | 32.02701   | -92.13893   |                |      |          |
| Kelly Volunteer Fire Department             | Fire Search and Rescue | 3434 Hwy 506 West     | Kelly    | 31.98112   | -92.17538   |                |      |          |
| Cotton Plant Volunteer Fire Department      | Fire Search and Rescue | 8573 Hwy 126 West     | Grayson  | 32.08352   | -92.2117    |                |      |          |
| Clarks Town Hall (Oasis Building)           | Civil Government       | 1714 Hwy 845          | Clarks   | 32.02647   | -92.13945   |                |      |          |
| Caldwell Correctional Center                | Law Enforcement        | 671 & 701 Hwy 845     | Grayson  | 32.03513   | -92.14003   | \$1,973,500.00 |      |          |
| Caldwell Parish Recreation Center (Shelter) | Civil Government       | 6539 US Hwy 165       | Columbia | 32.11278   | -92.07092   |                |      |          |
| Caldwell Parish Community Center            | Recreation             | 6551 US Hwy 165       | Columbia | 32.1126325 | -92.0712307 |                |      |          |
| Caldwell Garden Center                      | Recreation             | 105 Henderson St      | Columbia | 32.111345  | -92.0715344 |                |      |          |

|                                    |                  |                   |          |          |           |  |  |  |
|------------------------------------|------------------|-------------------|----------|----------|-----------|--|--|--|
| Hebert Water System (Office/Tower) | Civil Government | 6252 Hwy 561      | Columbia | 32.1809  | -91.98806 |  |  |  |
| Holum Water System                 | Civil Government | 3469 Hwy 126 East | Grayson  | 32.00565 | -92.08294 |  |  |  |
| Cotton Plant Water System          | Civil Government | 8068 Hwy 506 West | Kelly    | 32.03237 | -92.28004 |  |  |  |
| Kelly Water System                 | Civil Government | 3361 Hwy 506 West | Kelly    | 31.98045 | -92.17353 |  |  |  |
| Ward 4 & 5 Water System            | Civil Government | 148 McIlwain Rd   | Columbia | 31.98056 | -92.17434 |  |  |  |

#### Town of Clarks

| Name of Building              | Purpose of Building    | Address             | City   | Latitude  | Longitude  | Assessed Value | Date Built | Construction Type |
|-------------------------------|------------------------|---------------------|--------|-----------|------------|----------------|------------|-------------------|
| Clarks Volunteer Fire Station | Fire Search and Rescue |                     | Clarks | 32.027003 | -92.138919 |                |            |                   |
| Clarks Town Hall              | Civil Government       | Nearby: Main Street | Clarks | 32.026502 | -92.139422 |                |            |                   |
| Clarks Community Center       | Civil Government       | Nearby: Main Street | Clarks | 32.02658  | -92.139428 |                |            |                   |

#### Town of Columbia

| Name of Building                        | Purpose of Building        | Address                                 | City     | Latitude  | Longitude  | Assessed Value | Date Built | Construction Type |
|---|----------------------------|---|----------|-----------|------------|----------------|------------|-------------------|
| Caldwell Parish Sheriff                 | Law Enforcement            | 201 Main Street #2                      | Columbia | 32.105359 | -92.075365 |                |            |                   |
| Columbia Elementary                     | Education                  |   | Columbia | 32.103042 | -92.074909 |                |            |                   |
| Columbia High School                    | Education                  |   | Columbia | 32.060219 | -92.096599 |                |            |                   |
| Union Central Elementary                | Education                  | 649 Louisiana 849                       | Columbia | 32.076219 | -92.079717 |                |            |                   |
| Northeast Louisiana Ambulance           | Emergency Medical Services | Nearby: 180-298 Ball Park Road          | Columbia | 32.111113 | -92.075411 |                |            |                   |
| Fire Station                            | Fire Search and Rescue     | 500 Boyd                                | Columbia | 32.104695 | -92.079281 |                |            |                   |
| East Columbia Volunteer Fire Department | Fire Search and Rescue     | Nearby: 100-128 Community Center Street | Columbia | 32.112207 | -92.071039 |                |            |                   |
| Unknown                                 | Fire Search and Rescue     | Nearby: Templeton Bend Road             | Columbia | 32.16352  | -91.979471 |                |            |                   |

|   |                            |                                 |          |           |            |  |  |  |
|---|----------------------------|---------------------------------|----------|-----------|------------|--|--|--|
| Ward 5 Fire Department  | Fire Search and Rescue     | Nearby: Louisiana 846           | Columbia | 32.148369 | -92.158153 |  |  |  |
| Edgar Volunteer Fire Department - Edgar Howard Memorial Station | Fire Search and Rescue     | Nearby: 434-442 Edgar Road      | Columbia | 32.200198 | -92.00882  |  |  |  |
| Fire Lookout Tower  | Fire Search and Rescue     | Nearby: 9400-9598 Louisiana 846 | Columbia | 32.122702 | -92.171683 |  |  |  |
| Columbia Town Hall  | Civil Government           | Nearby: 302 Pearl Street        | Columbia | 32.105676 | -92.073975 |  |  |  |
| Caldwell Parish Courthouse                                      | Civil Government           | 201 Main Street #1              | Columbia | 32.105623 | -92.074482 |  |  |  |
| Neil Riser State Senator - District 32                          | Civil Government           | Nearby: Court                   | Columbia | 32.105369 | -92.07467  |  |  |  |
| Village Of Grayson Sewerage & Water Maintenance                 | Civil Government           | Nearby: 116-198 Short Oak       | Columbia | 32.05364  | -92.109898 |  |  |  |
| Columbia Council on Aging                                       | Civil Government           | 307 Main Street                 | Columbia | 32.104789 | -92.075817 |  |  |  |
| Caldwell Council on Aging                                       | Civil Government           | 307 Main Street                 | Columbia | 32.104517 | -92.075647 |  |  |  |
| Caldwell Parish School Board                                    | Civil Government           | Caldwell Parish School Board    | Columbia | 32.105113 | -92.074868 |  |  |  |
| Caldwell Parish Public Works                                    | Civil Government           | Nearby: Louisiana 4             | Columbia | 32.07768  | -92.108979 |  |  |  |
| Columbia Development Center                                     | Civil Government           | 201 Main Street                 | Columbia | 32.075868 | -92.108386 |  |  |  |
| Columbia Project Engineer Office                                | Civil Government           | 343 Ball Park Road              | Columbia | 32.110316 | -92.074395 |  |  |  |
| East Columbia Water System - Bill Payment Office                | Civil Government           |                                 | Columbia | 32.118874 | -92.066    |  |  |  |
| Caldwell Memorial Hospital                                      | Hospital or Medical Center |                                 | Columbia | 32.103625 | -92.07576  |  |  |  |
| Fresnius Medical Care   | Hospital or Medical Center | 7720 U.S. 165 #3                | Columbia | 32.083294 | -92.093021 |  |  |  |
| Citizen's Medical Center  | Hospital or Medical Center | 7939 U.S. 165                   | Columbia | 32.077466 | -92.094546 |  |  |  |
| Citizens Medical Center - Citizen's Rural Clinic                | Hospital or Medical Center | Nearby: 495 Collins Road        | Columbia | 32.076832 | -92.094067 |  |  |  |

|                                   |                            |                 |          |           |           |  |  |  |
|-----------------------------------|----------------------------|-----------------|----------|-----------|-----------|--|--|--|
| Caldwell Parish Health Unit       | Hospital or Medical Center | 421 Main Street | Columbia | 32.075222 | -92.09448 |  |  |  |
| Holum Water System (Office/Tower) | Civil Government           | 6252 Hwy 561    | Columbia | 32.1809   | -91.98806 |  |  |  |
| Ward 4 & 5 Water System           | Civil Government           | 148 McIlwain Rd | Columbia | 31.98056  | -92.17434 |  |  |  |

| Village of Grayson                          |                                     |                               |         |           |            |                |            |                   |
|---|-------------------------------------|-------------------------------|---------|-----------|------------|----------------|------------|-------------------|
| Name of Building                            | Purpose of Building                 | Address                       | City    | Latitude  | Longitude  | Assessed Value | Date Built | Construction Type |
| Grayson High School                         | Education                           | Nearby: 148-174 Carrie Street | Grayson | 32.048693 | -92.108771 |                |            |                   |
| Grayson Volunteer Fire Department Station 2 | Fire Search and Rescue              | Nearby: Highway 126           | Grayson | 32.049658 | -92.108128 |                |            |                   |
| Fire Station                                | Fire Search and Rescue              | 5228 Highway 126              | Grayson | 31.979148 | -91.962465 |                |            |                   |
| Caldwell Corrections Center                 | Prisons and Correctional Facilities | Nearby: 1053-1111 Main Street | Grayson | 32.037372 | -92.137348 |                |            |                   |
| LCS Caldwell Detention Center               | Prisons and Correctional Facilities | Nearby: 701 Louisiana 845     | Grayson | 32.036735 | -92.13761  |                |            |                   |
| LA DOTD - Grayson Storage Site              | Civil Government                    | Nearby: 5333-5545 Highway 126 | Grayson | 32.050944 | -92.124036 |                |            |                   |
| Village of Grayson Municipal Complex        | Civil Government                    | Nearby: Highway 126           | Grayson | 32.049562 | -92.107907 |                |            |                   |

## Vulnerable Populations

| Vulnerable Populations Worksheet  |                  |          |          |             |              |
|-----------------------------------|------------------|----------|----------|-------------|--------------|
| Caldwell Parish and Jurisdictions |                  |          |          |             |              |
| All Hospitals (Private or Public) | Address          | City     | Zip Code | Latitude    | Longitude    |
| Caldwell Memorial Hospital        | 411 Main St      | Columbia | 71418    | 32.103625   | -92.0757601  |
| Citizen's Medical Center          | 7939 US Hwy 165  | Columbia | 71418    | 32.07746584 | -92.0945458  |
| Nursing Homes (Private or Public) | Address          | City     | Zip Code | Latitude    | Longitude    |
| Haven Nursing Center              | 7726 US Hwy 165  | Columbia | 71418    | 32.082705   | -92.0936759  |
| Mobile Home Parks                 | Address          | City     | Zip Code | Latitude    | Longitude    |
| Byrds Mobile Home Park            | Bryd Dr          | Grayson  | 71435    | 32.0385305  | -92.11793899 |
| Riverton Mobile Home Park         | Riverton Camp Rd | Columbia | 71418    | 32.17883762 | -92.10842833 |
| Everett Estates Mobile Home Park  | Sidney Ln        | Columbia | 71418    | 32.07916    | -92.09386    |

National Flood Insurance Program (NFIP)

| National Flood Insurance Program (NFIP)   |  |   |   |  |
|---|--|---|---|--|
|   | Unincorporated Caldwell Parish   | Town of Clarks  | Town of Columbia  | Village of Grayson   |
| <b>Insurance Summary</b>  |  |   |   |  |
| How many NFIP policies are in the community? What is the total premium and coverage?  | # of Policies: 267; Total Premiums: \$142,767; Total Coverage: \$37,242,400              | # of Policies: -0-; Total Premiums: \$-0-; Total Coverage: \$-0-                    | # of Policies: 11; Total Premiums: \$7,256; Total Coverage: \$2,299,000             | # of Policies: -0-; Total Premiums: \$-0-; Total Coverage: \$-0-                 |
| How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage? | # of paid claims: 565; Total amount of paid claims: \$5,618,787; Substantial Damage: 129 | # of paid claims: 2; Total amount of paid claims: \$32,560; Substantial Damage: -0- | # of paid claims: 15; Total amount of paid claims: \$178,289; Substantial Damage: 2 | # of paid claims: 1; Total amount of paid claims: \$-0-; Substantial Damage: -0- |
| How many structures are exposed to flood risk within the community?   |  |   |   |  |
| Describe any areas of flood risk with limited NFIP policy coverage.   |  |   |   |  |
| <b>Staff Resources</b>  |  |   |   |  |
| Is the Community FPA or NFIP Coordinator certified?   | Yes  |   |   |  |
| Is flood plain management an auxiliary function?  | Yes  |   |   |  |
| Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability) | To administer the NFIP for permitting, inspections, GIS, and Education/Review            |   |   |  |
| What are the barriers to running an effective NFIP program in the community, if any?  | Funding and manpower   |   |   |  |
| <b>Compliance History</b>   |  |   |   |  |
| Is the community in good standing with the NFIP?  | Yes  | Yes   | Yes   | Yes  |
| Are there any outstanding compliance issues(i.e., current violations)?  | No   | No  | No  | No   |
| When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact(CAC)?   | CAV: 8/29/2013; CAC: 8/18/2004   | CAV: N/A; CAC: 7/28/2011  | CAV: 4/24/2008; CAC: 12/4/2003  | CAV: N/A; CAC: 6/25/2004   |
| Is a CAV or CAC scheduled or needed? If so when?  | No   | No  | No  | No   |
| <b>Regulation</b>   |  |   |   |  |
| When did the community enter the NFIP?  | E = 5/2/1973; R = 4/3/1978   | E = 9/1/2010; R = 11/1/2010   | E = 5/1/1973; R = 6/1/1978  | E = 1/16/1979; R = 7/9/1981  |
| Are the FIRMs digital or paper?   | Both   | Digital   | Digital   | Digital  |

| Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways? | Meets minimum state requirements | Meets minimum state requirement | Meets minimum state requirement | Meets minimum state requirement |
|---|----------------------------------|---------------------------------|---------------------------------|---------------------------------|
| <b>Community Rating System (CRS)</b>  |                                  |                                 |                                 |                                 |
| Does the community participate in CRS?  | No                               | No                              | No                              | No                              |
| What is the community's CRS Class Ranking?  | N/A                              | N/A                             | N/A                             | N/A                             |
| Does the plan include CRS planning requirements?  | N/A                              | N/A                             | N/A                             | N/A                             |